ABSTRACT BOOK

ORAL COMMUNICATIONS

ORAL COMMUNICATIONS

THEME :
DIAGNOSIS

Abstract #: ICDS00082

Title: Post-Mortem Immuno-Pathological Findings in the Cerebellum of Coeliac Disease patients with concomitant Idiopathic Neurological Disorders

Presenting author: Maxine Rouvroye

Co-authors: Maxine ROUVROYE (1), Annemieke ROZEMULLER (2), Paul VAN DER VALK (2), Hetty BONTKES (3), Chris MULDER (4), Anne-Marie VAN DAM (5), Gerd BOUMA (1) - (1)Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Gastroenterology and Hepatology, AG&M research institute, Pays-Bas, (2)Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Pathology, Pays-Bas, (3)Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Clinical Chemistry, Medical Immunology Laboratory, Pays-Bas, (4)Amsterdam UMC, Department of Gastroenterology and Hepatology, AG&M research institute, Pays-Bas, (5)Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Anatomy and Neurosciences, Pays-Bas

ABSTRACT CONTENT

Objectives
In the past decades, various neurodegenerative disorders, like ataxia, have been associated with coeliac disease (CD). However, the underlying neuropathological mechanism is still unclear. We postulate that an erroneous immune-mediated response by means of CD8+ T-cells inflicting neuronal damage is at the base of the aetiology. Our aim was to profile different lymphocytes in the cerebellum and their proximity to (vanished) Purkinje cells (PC).

Methods
Post-mortem cerebellar tissue was collected of deceased CD patients with concomitant neurological disorders (Neuro-CD). Gender- and age-matched spinocerebellar ataxia (SCA) controls and non-neurological controls (NNC) were selected based on clinical reports and pathological findings. Paraffin-embedded sections were stained for CD3, CD8 and Calbindin. Per patient, 10 stretches of 900mu were screened for CD3+ and CD8+ T-cells in all cerebellar layers. A total of 18.000mu of Purkinje cell layer was inspected for PCs.

Results
Cerebellar tissue of sixteen patients was included (5 Neuro-CD, 5 SCA, 6 NNC). Groups did not differ in gender or age of death. More CD3+ and CD8+ cells were observed in the Neuro-CD group (median [IQR]); Neuro-CD 145 [80-264], SCA 12 [9-35], NNC 21 [10-51] (p =0.010) and Neuro-CD 156 [30-253], SCA 10 [8-17], NNC 5 [3-16] (p =0.010); respectively. In Neuro-CDs, more CD8+ cells were found in the PC layer compared to SCAs and NNCs (p =0.007). Extensive loss of PCs was observed in the Neuro-CD group in comparison to the other groups (p =0.004).

Conclusion
In this post-mortem study we counted significantly more CD3+ and CD8+ lymphocytes and demonstrated a significant loss of Purkinje cells in the cerebella of Neuro-CD patients vs SCA and non-neurological controls. These findings strengthen our hypothesis of a T-cell-mediated response in the cerebellum of patients affected by Neuro-CD. Future research should focus on further characterisation of these CD8+ T-cells and exploring possible target epitopes.

Conflicts of interests
Nothing to declare.

ORAL COMMUNICATIONS

THEME :
DIAGNOSIS

Abstract #: ICDS00152

Title: Simultaneous transcriptional characterisation and clonal inference of disease-specific plasma cells in coeliac disease

Presenting author: Ida Lindeman

Co-authors: Ida LINDEMAN (1), Justyna POLAK (2), Linn M. EGGESBØ (1), Omri SNIR (2), Knut E. A. LUNDIN (3), Shuo-Wang QIAO (1), Ludvig M. SOLLID (1) - (1)K. G. Jebsen Centre for Coeliac Disease Research, University of Oslo and Department of Immunology, University of Oslo and Oslo University Hospital-Rikshospitalet, Norvège, (2)Department of Immunology, University of Oslo and Oslo University Hospital-Rikshospitalet, Norvège, (3)Department of Gastroenterology, Oslo University Hospital-Rikshospitalet and K. G. Jebsen Centre for Coeliac Disease Research, University of Oslo, Norvège

ABSTRACT CONTENT

Objectives
Plasma cells (PCs) are terminally differentiated lymphocytes of the B-cell lineage secreting large amounts of antibodies. PCs are especially abundant in the lamina propria of the small intestine. Coeliac disease (CD) can be characterised by plasmacytosis in the lamina propria and the presence of high numbers of disease-specific PCs, of which most target the autoantigen transglutaminase 2 (TG2) and a smaller fraction target gluten peptides. The contribution of PCs toward the pathogenesis of CD has yet to be resolved.

Methods
We sorted single CD38+ TG2-specific, gliadin-specific or non-TG2/gliadin-specific PCs from untreated CD patients, CD patients on a gluten-free diet and non-CD controls. We performed single-cell RNA-sequencing of the sorted cells and reconstructed their B-cell receptors and identified clonally related cells with the computational tool BraCeR.

Results
A significantly higher fraction of the disease-specific compared to non-disease-specific intestinal PCs in untreated CD patients (n=10) were CD19+CD45+, a compartment of PCs that has previously been shown to be short-lived. Furthermore, we found that intestinal PCs express mRNA for molecules associated with antigen presentation and cross-talk with T cells, such as HLA class II, cytokines and cytokine receptors. Lastly, we investigated clone-specific transcriptional signatures among the disease-specific PCs.

Conclusion
Our findings support previous reports showing that PCs may have functions in addition to antibody secretion. These results suggest that PCs may have a more active role in immunological diseases than previously thought, through cross-talk with helper T cells. We anticipate that our findings could provide a basis for studies involving targeted therapy against PCs in CD and potentially also in other autoimmune diseases.

Conflicts of interests
The authors declare no conflicts of interests.

ORAL COMMUNICATIONS

THEME :
DIAGNOSIS

Abstract #: ICDS00171

Title: IgA anti-tTG co-localization for identification of Celiac Associated Liver Diseases

Presenting author: Prasenjit Das

Co-authors: Prasenjit DAS, Rimlee DUTTA, Asif IQBAL, Alka SINGH, Vineet AHUJA, Siddhartha DATTAGUPTA, Govind MAKHARIA - (1)All India Institute of Medical Sciences New Delhi, Inde

ABSTRACT CONTENT

Objectives
The summary of evidence points towards direct involvement of liver in patients with celiac disease; there however is a lack of methods to demonstrate celiac specific lesion in the liver. IgA anti-tissue transglutaminase (anti-TG2) immunostaining of the intestinal biopsies has been reported to be specific for CeD.

Methods
146 treatment-naive patients with CeD were investigated for liver dysfunction based on hyper-transaminasemia or evidence of chronic liver disease based on ultrasound and fibroscan. Those having liver abnormalities underwent liver biopsies, and the biopsies were examined microscopically for type of histological lesions. IgG anti-tTG and IgA co-localization were performed by both multicolor immunohistochemical and confocal microscopic techniques on paraffin embedded tissue. They were followed on a gluten-free diet, and follow-up biopsies were done in a subset. Liver biopsies from other causes of chronic hepatitis were used as controls.

Results
Twenty-seven patients (18.5%) had either biochemical or structural liver abnormalities, of whom 25 consented for liver biopsies. The lesions observed were chronic hepatitis (12%), autoimmune hepatitis (12%), steatohepatitis (12%), obliterative portal venopathy (8%), granuloma (4%), cirrhosis (8%) and sinusoidal dilatation (44%). While liver biopsies from all patients with CeD showed IgA/ anti-tTG colocalization either in sinusoidal lining cells or focally in hepatocyte cytoplasm; none of the controls showed similar colocalization. Overall, the IgA/ anti-tTG co-localization technique showed 100% sensitivity, 77% specificity and 85% positive predictive value for diagnosing celiac associated liver disease. Follow-up liver biopsies could be done in 5 patients; four of them showed complete resolution of histological lesions and disappearance of IgA/ anti-tTG co-localization.

Conclusion
Data of present study adds to body of evidence that liver lesions in patients with CeD are celiac specific and may have been caused by a similar pathogenetic mechanism as that in intestinal lesions.

Conflicts of interests
All authors declare no conflict of interest.

ORAL COMMUNICATIONS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00221

Title: Mass Screening for celiac disease in school-age children: the CELI-SCREEN multicenter study.

Presenting author: Elena Lionetti

Co-authors: Elena LIONETTI (1), Simona GATTI (1), Giulia NASPI CATASSI (2), Anil K VERMA (1), Francesco VALITUTTI (2), Antonella BELLANTONI (3), Linda BALANZONI (4), Mara CANANZI (4), Mauro CINQUETTI (4), Elisa D'ANGELO (5), Ruggiero FRANCAVILLA (6), Monica MONTUORI (2), Basilio MALAMISURA (5), Francesca PENAGINI (7), Chiara Maria TROVATO (2), Gian Vincenzo ZUCCOTTI (7), Carlo CATASSI (1) - (1)Università Politecnica delle Marche, Italie, (2)Università La Sapienza, Italie, (3)Bianchi Melacrino Morelli Hospital, Italie, (4)G Fracastoro Hospital, Italie, (5)Ospedale di Cava de Tirreni, Italie, (6)Università degli studi di Bari, Italie, (7)Università di Milano, Italie

ABSTRACT CONTENT

Objectives
Celiac disease (CD) is one of the most common lifelong disorders, affecting approximately 1% of the population. Few data are available about possible recent changes of CD frequency. Currently, the preferred diagnostic strategy for CD is case-finding, with more than 50% of cases remaining undiagnosed because asymptomatic. We aimed to investigate: a) the current prevalence of CD in Italy by mass screening strategy and b) the added value of mass screening to the CD diagnosis according to standard care.

Methods
The screening was performed in 8 provinces through out Italy, and was a two-step process: (a) determination of the HLA predisposing genes on a drop of finger blood (first-level); (b) determination of total serum IgA and IgA anti-transglutaminase in children showing HLA positivity (second-level). Diagnosis of CD was confirmed following the ESPGHAN (European Society of Pediatric Gastroenterology, Hepatology and Nutrition) criteria.

Results
7,695 children aged 5-11 years agreed to participate (80% of the eligible) and 3239 (42%) showed CD-compatible haplotypes. Overall, 139 children satisfied the diagnostic criteria for CD. The known CD cases identified by standard care were 35. The overall estimated prevalence of CD in the eligible population was 1.5% (95% CI: 1.2-1.9). The percentage of CD cases identified by mass screening was 75%.

Conclusion
The prevalence of CD in Italian children is 1.5%, significantly higher than in the past. Without a mass screening strategy 75% of CD patients would remain undiagnosed.

Conflicts of interests
Carlo Catassi served as consultant for Dr Shaer.

ORAL COMMUNICATIONS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00002

Title: Metagenomic analysis of fecal virome identifies specific enteroviruses and adenoviruses as potential triggers of celiac disease autoimmunity in the TEDDY study

Presenting author: Katri Lindfors

Co-authors: Katri LINDFORS (1), Jake LIN (1), Hye-Seung LEE (2), Heikki HYOTY (1), Richard LLOYD (3), Matti NYKTER (1), Kalle KURPPA (1), Edvin LIU (4), Sibylle KOLETZKO (5), Marian REWERS (4), William HAGOPIAN (6), Jorma TOPPARI (7), Anette ZIEGLER (8), Beena AKOLKAR (9), Jeffrey KRISCHER (2), Daniel AGARDH (10) - (1)Tampere University, Finlande, (2)University of South Florida, États-Unis, (3)Baylor College of Medicine, États-Unis, (4)University of Colorado Denver, États-Unis, (5)Ludwig Maximilian University, Allemagne, (6)Pacific Northwest Diabetes Research Institute, États-Unis, (7)University of Turku, Finlande, (8)Technische Universität München, Allemagne, (9)National Institute of Diabetes and Digestive and Kidney Diseases, États-Unis, (10)Lund University, Suède

ABSTRACT CONTENT

Objectives
Frequent gastrointestinal infections including those by rota- or adenovirus have been associated with celiac disease. Further, reovirus infection was recently proposed to trigger celiac disease. By using comprehensive virome sequencing from stool samples periodically collected from children prior to seroconversion to celiac disease autoimmunity (CDA), we investigated whether a distinct viral exposure was associated with subsequent appearance of CDA.

Methods
Children at elevated HLA risk for celiac disease were prospectively followed in The Environmental Determinants of Diabetes in the Young (TEDDY) study, and a cohort of 86 CDA nested case-control pairs (NCC) were identified. A CDA case was defined as persistently positive for tissue transglutaminase autoantibodies (tTGA). A control was defined as negative for tTGA at least 6 months after the corresponding case seroconverted. Serial stool samples (n=2206) collected monthly up to the time of seroconversion were included in the analysis. Stool virome composition was determined by Illumina next generation sequencing, virus profiling using Vipie and then computational capsid serotyping. Virus exposures were compared within NCC pairs by conditional logistic regression to estimate odds ratios (OR).

Results
Enteroviruses occurred more frequently among cases than controls (OR 1.4, 95% CI 1.0-1.9, p=0.03). When adjusting for HLA DR-DQ, cases were more often positive for coxsackie A serotypes (OR 3.2, 95% CI 1.1-9.2, p=0.03) and echovirus (OR 2.0, 95% CI 1.0-3.8, p=0.05). Species B adenoviruses were also associated with CDA (OR 6.5, 95% CI 1.0-42.2, p=0.05), although the number of infections varied greatly between individuals. The frequencies of astro-, noro-, rota- or reoviruses were not statistically different among cases and controls in this cohort.

Conclusion
Specific entero- and adenovirus infections may proceed the onset of CDA, supporting the notion that multiple viruses may trigger celiac disease in children at HLA risk.

Conflicts of interests
None

ORAL COMMUNICATIONS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00013

Title: Gluten intake and risk of celiac disease

Presenting author: Carin Andrén Aronsson

Co-authors: Carin ANDRÉN ARONSSON (1), Hyeseung LEE (2), Elin M HÅRD AF SEGERSTAD (1), Ulla UUSITALO (2), Jimin YANG (2), Sibylle KOLETZKO (3), Edwin LIU (4), Kalle KURPPA (5), Polly J BINGLEY (6), Jorma TOPPARI (7), Anette G ZIEGLER (8), Jinxiong SHE (9), William HAGOPIAN (10), Marian REWERS (11), Beena AKOLKAR (12), Jeffrey KRISCHER (2), Suvi M VIRTANEN (13), Jill M NORRIS (14), Daniel AGARDH (1) - (1)Department of Clinical Sciences, Lund University, Suède, (2)Health Informatics Institute, University of South Florida, États-Unis, (3)Dr von Hauner Childrens Hospital, Ludwig Maximilians University, Allemagne, (4)Digestive Health Institute, University of Colorado, États-Unis, (5)Tampere Centre for Child Health Research, University of Tampere and Tampere University Hospital, Finlande, (6)School of Clinical Sciences, University of Bristol, Royaume-Uni, (7)Department of Pediatrics, Turku University Hospital, and Institute of Biomedicine, University of Turku, Finlande, (8)Institute of Diabetes Research, Helmholtz Zentrum Munchen, and Klinikum rechts der Isar, Technische Universität München, and Forschergruppe Diabetes e.V, Allemagne, (9)Center for Biotechnology and Genomic Medicine, Medical College at Augusta University, États-Unis, (10)Pacific Northwest Diabetes Research Institute, États-Unis, (11)Barbara Davis Center for Diabetes, University of Colorado School of Medicine, États-Unis, (12)National Institute of Diabetes & Digestive & Kidney Diseases, États-Unis, (13)National Institute for Health and Welfare, Department of Public Health Solutions, Finlande, (14)Department of Epidemiology, University of Colorado, États-Unis

ABSTRACT CONTENT

Objectives
The aim was to investigate if the amount of gluten intake is associated with development of celiac disease autoimmunity (CDA) and celiac disease in genetically at-risk children.

Methods
Between 2004 and 2010, 8,676 children carrying HLA-genotypes associated with celiac disease, were enrolled into a 15-year follow-up study. Participants were followed at six clinical centers in Finland, Germany, Sweden and the US. In 6,757 children screening for celiac disease with tissue transglutaminase autoantibodies (tTGA) was performed annually from age of 2 years. Gluten intake were available in 6,605 (98%) children. Gluten intake was estimated from 3-day food records collected at age 6, 9, and 12 months and semiannually thereafter until age 5 years. The primary endpoint was CDA, defined as 2 consecutive positive tTGA results. The secondary endpoint was celiac disease confirmed by intestinal biopsy or tTGA levels >100 units (cutoff for normal <1.3 units) in 2 consecutive samples to achieve a 95% specificity. Associations between gluten intake and risk of CDA and celiac disease were assessed using joint modeling and Cox regression, adjusted for known confounders.

Results
During a median follow-up time of 9.0 years (interquartile range; 7.6, 10.5), CDA developed in 1,216 children (18%) and celiac disease in 447 children (7%). Incidence peaked at age 2 to 3 years for both endpoints. For every 1-gram/day increase, daily gluten intake increased the risk of CDA by 30% (HR 1.30, 95% CI 1.22-1.38) and celiac disease by 50% (HR 1.50, 95% CI 1.35-1.66). The effect was comparable at any age during the first 5 years of life, but a daily gluten intake at 2 years was independtly associated with risk of CDA and celiac disease. In a Cox regression, gluten intake >2g/day at 2 years predicted increased risk of both CDA (HR 1.49, 95% CI 1.16-1.91) and celiac disease (HR 1.75, 95% CI 1.10-2.81), adjusted for confounding factors.

Conclusion
Higher gluten intake prior to 5 years of age increased the risk of CDA and celiac disease in genetically predisposed children.

Conflicts of interests
None to report

ORAL COMMUNICATIONS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00169

Title: How long should children with a first-degree coeliac relative be followed and screened?

Presenting author: Ilma R Korponay-Szabó

Co-authors: Ilma R KORPONAY-SZABÓ (1), Judit GYIMESI (2), Tamás KEREKES (2), M Luisa MEARIN (3), Sibylle KOLETZKO (4), Jernej DOLINSEK (5) - (1)Heim Pál National Paediatric Institute and University of Debrecen, Hongrie, (2)Heim Pál National Paediatric Institute, Hongrie, (3)Leiden University Medical Center, Pays-Bas, (4)Ludwig-Maximilian University, von Hauner Children Hospital, Allemagne, (5)University Medical Center Maribor, Slovénie

ABSTRACT CONTENT

Objectives
Family members of patients with coeliac disease (CeD) have 10-40% risk of CeD during lifetime and most affected subjects develop the disease between the age of 2-6 years according to prospective cohort studies. In this study we investigated whether 9 and 12 years old children have new seroconversion and whether gluten consumption habits influence the prevalence.

Methods
First-degree family members (FDR) presenting for screening were prospectively enrolled and followed by measuring serum transglutaminase 2-specific (TGA) and endomysial (EMA) antibodies at age 3 and 6. Children currently at age 9 and 12 were called for new blood drawings. The investigated cohorts included 134 children from the PREVENTCD study (www.preventcd.com) with randomised early gluten introduction at age 4 or 6 months, a wild cohort (n=302) born in the same years but starting gluten as wished by parents, and other FDR persons with multiple screenings. CeD diagnosis was confirmed by histology. Results were compared with prevalence data of cross-sectional FDR screening performed first time at the specified age time-points. HLA-DQ testing was performed if a genetic sample was available.

Results
Altogether 1007 FDR children at risk had an evaluation by TGA testing at age 9 (n=506) or 12 (n=501), or both. No cases occurred in children who were negative for both HLA-DQ2 and DQ8 alleles and gluten introduction time did not influence prevalence. From the children who were still negative at age 3, 10.2% (19/185) developed CeD by age 6, and from those still negative at age 6, 12.0% (3/25) developed CeD by age 9, but no new cases occurred between 9 and 12 years of age. Higher proportions of positives were found at 9 years of age (66/362, 18.2%) or 12 years of age (51/326, 15.6%, $p<0.01$), if screening has not been implemented before these timepoints or the index patient was diagnosed only at that time.

Conclusion
Periodic screening of children at risk should be continued until the age of 9 years.

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Conflicts of interests
None

ORAL COMMUNICATIONS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00062

Title: Tolerogenic Immune-Modifying Nanoparticles Containing Gliadin Restore Tolerance and Abrogate Disease in Murine Models of Coeliac Disease

Presenting author: Tobias Freitag

Co-authors: Tobias FREITAG (1), Joseph PODOJIL (2), Marcel MESSING (1), Leif ANDERSSON (1), Katarzyna LESKINEN (1), Päivi SAAVALAINEN (1), Nicholas KING (3), Lonnie SHEA (4), Stephen MILLER (5), Seppo MERI (1), Daniel GETTS (6) - (1)University of Helsinki, Finlande, (2)Cour Pharmaceuticals, États-Unis, (3)University of Sydney, Australie, (4)University of Michigan, États-Unis, (5)Northwestern University, États-Unis, (6)Cour Pharmceuticals, États-Unis

ABSTRACT CONTENT

Objectives
In coeliac disease (CD), tolerance to gluten (gliadin) proteins from cereals is lost. Tolerogenic immune modifying nanoparticles (TIMP) are effective at restoration of antigen-specific immune tolerance in various autoimmune conditions. The identification of gliadins as dietary antigens and drivers of immune-mediated pathology in CD suggests that TIMP containing gliadin (TIMP-GLIA) may serve as a cure.

Methods
Here, we tested immunomodulatory effects of TIMP-GLIA vs. control TIMP in 3 different mouse models of CD, 1) a delayed-type hypersensitivity, 2) a HLA-DQ8 transgenic, and 3) a gliadin memory T cell enteropathy model. Nanoparticles were administered intravenously.

Results
Treatment with TIMP-GLIA reduced gliadin-specific T cell proliferation, inflammatory cytokine secretion, circulating gliadin-specific IgG/IgG2c, earswelling, gluten- dependent enteropathy, and body weight loss in mouse models of CD. Therapeutic effects were antigen-specific, and dose-dependent. RNA sequencing and Foxp3 RT-qPCR of gliadin-restimulated splenocytes from HLA-DQ8 transgenic mice revealed a tolerogenic signature of TIMP-GLIA in T cells and antigen-presenting cells.

Conclusion
The results demonstrate efficacy of TIMP-GLIA in modulating the immune response to gliadin in vivo, by inducing regulatory T cell tolerance and reversing T helper 1/T helper 17 cell skewing. Safety and efficacy testing of TIMP-GLIA in restoring gluten tolerance in CD patients is warranted.

Conflicts of interests
N.K, S.M, L.S and D.G are share holders of Cour Pharmaceutical Development Company. N.K, S.M, L.S and D.G are inventors on patent applications describing TIMP-GLIA. Based on an agreement between the University of Helsinki and Cour Pharmaceuticals Development Company, T.F. received funding to conduct experiments.

ORAL COMMUNICATIONS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00160

Title: Phospolipid profile at 4 months of age predicts the onset of celiac disease in at risk infants.

Presenting author: Renata Auricchio

Co-authors: Renata AURICCHIO (1), Martina GALATOLA (1), Donatella CIELO (1), Angela AMORESANO (2), Marianna CATERINO (2), Riccardo TRONCONE (3), Margherita RUOPPOLO (2), Luigi GRECO (4) - (1)Department of Translational Medical Sciences, University of "Federico II, Italie, (2)Department of Chemical Science, University Federico II, Italie, (3)Department of Traslationa Medical Science, University Federico II, Italie, (4)Department of Traslational Medical Science, University Federico II, Italie

ABSTRACT CONTENT

Objectives
Despite genetic and epigenetic studies, the celiac disease (CeD) pathological molecular mechanism remains unclarified. The lipid profile of small infants has been proposed as a potential biomarker for autoimmune diseases, that appear before any signs or symptoms of the disease. The present study explored the serum phospholipid profile of a group of infants at risk for celiac disease, followed up to 8 years to monitor the onset of CeD.

Methods
We compared 30 patients who developed the disease with 20 age- and sex-matched peers with similar genetic profiles who remained healthy within 8 years (named Not Yet CeD, NY-CeD). Serum phospholipids were analysed by chromatography coupled to mass spectrometry at 4 months, before exposure to gluten, and again at 12 months of age, when none of the infants showed any marker of disease. In the 30 CeD patients, we also analysed the serum at the time of diagnosis (> 24 months).

Results
The serum phospholipid profile was fairly constant across 4 and 12 months of age and, in CeD, up to 24–36 months. The lipidomic profile was dramatically different in infants who developed CeD when compared to that of control NY-CeD peers. Specifically, lysophosphatidylcholine, phosphatidylcholine, alkylacyl-phosphatidylcholine, phosphoethanolamines, phosphatidylserines, phosphatidylglycerol and phosphatidylinositol were found to be differentially represented in CeD versus NY-CeD. A small increase in alkylacyl-phosphatidylcholine and lysophosphatidylcholine, together with the duration of breast-feeding, allows the discrimination of infants who develop celiac disease before 8 years of age from those at a similar genetic risk who remained healthy.

Conclusion
We identified a specific serum phospholipid signature that predicts the onset of celiac disease in HLA at-risk infants years before the appearance of antibodies specific for CeD in the serum and before any clinical symptoms, even before gluten introduction into the diet at 4 months.

Conflicts of interests
Authors declair no conflict of interest.

ORAL COMMUNICATIONS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00166

Title: Absence of clinical symptoms and negative serological tests could not predict gut mucosal recovery in celiac patients. Correlation of gut mucosal damage with the presence of urine gluten peptides

Presenting author: Angel Cebolla Ramirez

Co-authors: Angel CEBOLLA RAMIREZ (1), Ángela RUÍZ-CARNICER (2), Marta GARZON (3), Blanca FOMBUENA (4), Veronica SEGURA (2), Francisco GARCIA (3), Beatriz ESPIN (3), Carmen RICO (3), Federico ARGÜELLES (5), Alfonso RODRIGUEZ-HERRERA (6), Cristobal CORONEL (7), Lourdes GOMEZ (3), Manuel ROMERO (2), Isabel COMINO (2), Carolina SOUSA (2), Angeles PIZARRO (2) - (1)Biomedal, Espagne, (2)Universidad de Sevilla, Espagne, (3)Hospital Universitario Virgen del Rocio, Espagne, (4)IBIS, Espagne, (5)Hospital Universitario Virgen Macarena, Espagne, (6)IHP, Espagne, (7)Salud Amante Lafon Health Care Center, Espagne

ABSTRACT CONTENT

Objectives
Treatment for celiac disease (CD) is a lifelong gluten-free diet (GFD). Available methods as dietary interviews and celiac serology to assess GFD compliance are insufficiently sensitive to detect occasional dietary transgressions and endoscopies to assess mucosal healing is invasive, expensive and not a practical method for serial monitoring. We compared clinical symptoms, dietary questionnaires, and serological tests with the determination of gluten immunogenic peptides (GIP) in the urine to predict gut mucosal recovery in CD.

Methods
A study was conducted including 21 de novo CD patients, 77 CD patients in GFD during more than 24 months and 21 healthy controls. GIP in urine, tissue transglutaminase antibodies, dietary questionnaire (CDTA), histology, clinical manifestations and epidemiological parameters were analysed.

Results
A 25% (19/77) of CD patients with more than 24 months of GFD showed Marsh III mucosal atrophy and a 19.5% had Marsh I. In addition, 80% (15/19) of celiac patients with Marsh III were asymptomatic, 68.5% (13/19) of them showed negative celiac serology and 75% had a good adherence to GFD according to CDTA but 85% (16/19) of them had detectable level of GIP in urine. In contrast, 92% (31/34) of CD patients with no detectable GIP in urine showed no villous atrophy in duodenal biopsies. The determination of GIP in urine showed a NPV of 91% and a sensitivity of 84% in the prediction of duodenal villous atrophy in celiac patients on GFD.

Conclusion

The detection of GIP in urine in patients with GFD allows to detect transgressions which correlated with the presence of duodenal histological lesions. Persistent villus atrophy could not be shown with negative serology, symptoms or dietary questionnaires. The repeated absence of GIP in urine appeared to reliably predict the recovery of the gut mucosa in CD.

Conflicts of interests
AC owns stock in Biomedal.

ORAL COMMUNICATIONS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00027

Title: Tissue alarmins and adaptive cytokine induce dynamic and distinct transcriptional responses in tissue-resident intraepithelial cytotoxic T lymphocytes

Presenting author: Maria Zorro

Co-authors: Maria ZORRO (1), Iris JONKERS (1), Raul AGUIRRE-GAMBOA (1), Toufic MAYASSI (2), Cezary CISZEWSKI (2), Sebo WITHOFF (1), Yang LI (1), Cisca WIJMENGA (1), Bana JABRI (2) - (1)UMCG, Pays-Bas, (2)University of Chicago, États-Unis

ABSTRACT CONTENT

Objectives
Tissue-resident CD8+ intraepithelial cytotoxic T lymphocytes (IE-CTLs) are effector memory cells that can mediate tissue destruction in patients with complex immune disorders like celiac disease (CeD) and inflammatory bowel disease (IBD). Tissue alarmins, including interleukin (IL)-15 and Interferon b (IFNb), and cytokines produced by antigen specific T cells, like IL-21, are upregulated in the intestinal microenvironment of these patients and are thought to trigger CTL activation. However, their respective contribution in the reprogramming of CTLs, and in particular IE-CTLs, underlying the changes that lead to tissue destruction are not fully understood.

Methods
We performed stimulations of primary human IE-CTL cell lines with IL-15, IFNb or IL-21. Subsequently, we measured dynamic transcriptional responses over multiple timepoints with RNA-seq and profiled genome-wide H3K27ac levels with ChIP-seq.

Results
Analysis of the dynamics of transcriptomic and epigenomic profiles in primary IE-CTLs revealed massive and distinct temporal changes in response to the tissue alarmins, while the impact of IL-21 was limited. Only anti-viral pathways were induced in response to all the three stimuli, albeit with differences in dynamics and strength. Moreover, IL-15 and IFNb promote unique transcriptional changes, with IL-15 inducing genes involved in protein and RNA synthesis pathways and IFNb activating cell cycle genes. Changes in gene expression were mostly independent of changes in H3K27ac, suggesting that other regulatory mechanisms may contribute to the robust transcriptional response. Interestingly, we found that the dynamically differentially expressed genes (DEGs), in particular genes involved in the IFN pathway, were enriched in autoimmune disease risk loci.

Conclusion
Tissue alarmins IL-15 and IFNb evoke a pronounced response in human IE-CTLs, indicating that tissue-derived stress signals have the strongest potential to reprogram IE-CTLs, whereas IL-21 may play more a cooperative than direct role in the transcriptional response of tissue-resident CTLs. Moreover, the enrichment of DEGs in autoimmune risk loci under conditions that emulate the inflammatory environment in patients with autoimmune diseases highlights the importance of IE-CTLs and identifies genes that may play a prominent role in disease pathophysiology.

Conflicts of interests
No conflicts of interest to declare

ORAL COMMUNICATIONS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00030

Title: Independent and cumulative effects of celiac disease susceptibility loci differentially contribute to various clinical phenotypes

Presenting author: Juliana X Miranda Cerqueira

Co-authors: Juliana X Miranda CERQUEIRA (1), Päivi SAAVALAINEN (2), Kalle KURPPA (3), Pilvi LAURIKKA (4), Lotta KOSKINEN (2), Dawit YOHANNES (2), Katri KAUKINEN (5), Katri LINDFORS (1) - (1)Celiac Disease Research Center, Faculty of Medicine and Healthy Technology, Tampere University, Finlande, (2)Research Programs Unit, Immunobiology, and Haartman Institute, Department of Molecular Genetics, University of Helsinki, Finlande, (3)Tampere Center for Child Health Research, Tampere University Hospital and Tampere University, Finlande, (4)Celiac Disease Research Center, Faculty of Medicine and Healthy Technology,Tampere University, Finlande, (5)Celiac Disease Research Center, Faculty of Medicine and Healthy Technology - Tampere University, Department of Internal Medicine - Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
Celiac disease (CeD) is characterized by a variable combination of gluten-related signs and symptoms but the reasons for this variability are obscure. In this study, we investigated whether established 39 CeD risk single nucleotide polymorphisms (SNPs), individually or combined in a genetic risk score (GRS), contribute to the risk of different celiac phenotypes.

Methods
In a well-characterized Finnish cohort of 625 non-related CeD patients and 1.817 National population-based controls, we tested the association of independent 39 non-HLA CeD risk SNPs, previously genome-wide identified, with CeD phenotypes at diagnosis. We built a GRS from 11 associated SNPs in our cohort by summing their risk alleles and, based on their distribution in controls, phenotypes were stratified by GRS-tertiles. High (3rd tertile) and medium (2nd tertile) tertiles were compared to the reference low tertile (1st tertile) using logistic regression.

Results
Of the tested 39 SNPs, 11 were associated with CeD risk in our study. Of these, IL12A-rs17810546 and OLIG3-rs2327832 were both associated with malabsorption and OLIG3-rs2327832 with anemia. In addition, both UBE2E3-rs13010713 and IL21-rs13151961 were protective against severe intestine lesion. Moreover, CCR1-rs13098911 was associated with increased risk of CeD related symptoms in childhood.TLR8-rs5979785 and SH2B3-rs653178 were uniquely associated with early CeD onset and concomitant Type 1 Diabetes, respectively. As regards the GRS, patients in the high and medium tertiles had higher risk for severe small bowel mucosal damage [Odds ratios (ORs) 1.71 and 1.72, respectively] and anemia (ORs 1.75 and 1.85, respectively). Further, patients in the medium tertile had higher risk for having CeD related symptoms during childhood (OR, 1.72).

Conclusion
Independent CeD susceptibility loci are associated with distinct CeD phenotypes. Moreover, some phenotypes are associated with cumulative CeD loci. Thus, our study suggests that both independent and cumulative effects of CeD SNPs differentially contribute to celiac phenotypes.

Conflicts of interests
None.

ORAL COMMUNICATIONS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00067

Title: Kinetics and transcriptomics of gluten-specific T cells in blood after gluten challenge

Presenting author: Stephanie Zühlke

Co-authors: Stephanie ZÜHLKE (1), Eivind Gard LUND (1), Omri SNIR (2), Louise Fremgaard RISNES (1), Shiva DAHAL-KOIRALA (1), Asbjørn CHRISTOPHERSEN (1), Ludvig Magne SOLLID (1), Knut Erik Aslaksen LUNDIN (1) - (1)K.G. Jebsen Coeliac Disease Research Centre, Department of Immunology, University of Oslo, Norvège, (2)Department of Internal Medicine, University of Tromsø, Norvège

ABSTRACT CONTENT

Objectives
Gluten-specific CD4+ T cells can be detected in blood from coeliac disease (CD) patients with HLA-DQ:gluten tetramers on day 6 after gluten challenge and have been characterized by cellular surface markers. However, many functional aspects remain to be studied to identify new approaches for diagnosis, therapy monitoring and outcome measures for clinical trials.

Methods
Treated CD participants (n=23) underwent one single gluten challenge (n=6) or challenge for three days (n=17). Blood samples were taken at several time points, stained with HLA-DQ:gluten tetramers and analysed with flow cytometry or FACS-sorted and collected for RNA sequencing (n=6).

Results
All participants increased in gut-homing HLA-DQ:gluten tetramer-positive T effector memory cells (tetramer+β7+ TEM) cell numbers after 3-day gluten challenge, plateauing between day 6-8. 1-dose challenge also induced a rise of tetramer+β7+ TEM cells. Large inter-individual differences in cell numbers were observed thereby clouding clear statistical differences at group level between pre- and post-challenge samples. The expression of the activation marker CD38 increased promptly ($p<0.01$) even before a rise in tetramer+β7+ TEM cell numbers with no difference in kinetics between the 1-dose and 3-day challenge protocols. Tetramer+β7+TEM cells up-regulated transcription of markers of activation (CD28, CD38, CD161, CD82), chemokine receptors (CCR9, CXCR3, CXCR6, CCR6), markers of gut homing (CD49, CD103) and IL-21.

Conclusion
Day 6-8 is an appropriate time window for collection of gluten-specific T cells after 3-day gluten challenge. 1-dose challenge increased both tetramer+β7+ TEM cells numbers and CD38 expression indicating that a single gluten challenge might be sufficient for diagnostic purposes. Tetramer+β7+ TEM cells display an activated phenotype and transcribe IL-21.

Conflicts of interests
None

ORAL COMMUNICATIONS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00097

Title: Characterisation of Clinical and Immune Reactivity to Barley and Rye Consumption in Children with Celiac Disease

Presenting author: Melinda Hardy

Co-authors: Melinda HARDY (1), Amy RUSSELL (2), Catherine PIZZEY (3), Claerwen JONES (4), Katherine WATSON (2), Nicole LA GRUTA (4), Donald CAMERON (5), Jason TYE-DIN (6) - (1)Immunology Division, The Walter and Eliza Hall Institute of Medical Research; Department of Medical Biology, The University of Melbourne, Australie, (2)Immunology Division, The Walter and Eliza Hall Institute of Medical Research, Australie, (3)Department of Gastroenterology, The Royal Melbourne Hospital; Murdoch Childrens Research Institute, The Royal Children's Hospital, Australie, (4)Monash Biomedicine Discovery Institute nd Department of Biochemistry and Molecular Biology, Monash University, Australie, (5)Murdoch Childrens Research Institute and Department of Gastroenterology, The Royal Children's Hospital, Australie, (6)Immunology Division, The Walter and Eliza Hall Institute of Medical Research; Department of Medical Biology, The University of Melbourne; Department of Gastroenterology, The Royal Melbourne Hospital; Murdoch Childrens Research Institute, The Royal Children's Hospital, Australie

ABSTRACT CONTENT

Objectives
Barley and rye are major components of the western diet and historic feeding studies indicate they cause clinical effects similar to wheat in people with celiac disease (CD). The toxicity of these cereals has been attributed to sequence homology to immunogenic wheat sequences, but in adults with CD we have shown they stimulate unique T cell populations, indicating a critical contribution to gluten immunity independent of wheat. The nature of the clinical and immune response to these grains in CD children is sparse. We undertook a barley and rye feeding study to characterize clinical and T-cell responses in children with CD.

Methods
42 children (aged 3-17yrs) with HLA-DQ2.5+ CD consumed a barley or rye meal for 3 days. Gluten-specific T cells isolated from blood on day 6 were tested for reactivity against a panel of barley (hordein) and rye (secalin) peptides. T cell clones specific to dominant peptides were generated and tested for grain cross-reactivity. T cell receptor sequencing was performed on sorted single cells. T cell responses were compared to those of CD adults.

Results
90% of children experienced adverse symptoms, mostly gastrointestinal, and independently, 61% had detectable gluten-specific T cell responses targeting peptides identical or homologous to those immunogenic in adults with CD. Deamidation was important for peptide reactivity. Homozygosity for HLA-DQ2.5 predicted a stronger T cell response. Clone and T cell receptor repertoire studies showed striking similarities in the gluten-specific T cells and their cross-reactivity between CD children and adults.

Conclusion
Barley and rye induce a consistent range of clinical and T cell responses in CD children from young age to adolescence. The findings highlight the importance of a series of dominant, mostly deamidated, hordein and secalin peptides pathogenic in children with CD, independent of wheat, that closely corresponds to that seen in adults with CD.

Conflicts of interests
MH and JTD are co-inventors of patents pertaining to use of gluten peptides in therapeutics, diagnostics and nontoxic gluten. JTD consults for ImmusanT Inc.

ORAL COMMUNICATIONS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00118

Title: NMR based Metabonomics of Intestinal Mucosal Biopsies, Blood and Urine to Identify Potential Biomarker(s) for Celiac Disease

Presenting author: Govind Makharia

Co-authors: Govind MAKHARIA (3), Deepti UPADHYAY (2), Alka SINGH (3), Prasenjit DAS (4), Siddhartha GUPTA (4), Govind MAKHARIA (3), Nr JAGANNATHAN (2), Uma SHARMA (2) - (1)All India Institute of Medical Sciences, Inde, (2)Departments of NMR & MRI Facility, All India Institute of Medical Sciences, Inde, (3)Department of Gastroenterology & Human Nutrition, All India Institute of Medical Sciences, Inde, (4)Department of Pathology, All India Institute of Medical Sciences, Inde

ABSTRACT CONTENT

Objectives
Demonstration of villous abnormality is an integral part of diagnosis of celiac disease, however this is invasive. We investigated metabolome of intestinal mucosal biopsies, blood and urine using nuclear magnetic resonance spectroscopy (NMR) based metabonomics in order to find non-invasive biomarker(s).

Methods
Intestinal mucosal biopsies, blood plasma and urine were collected from CD patients (n=60). Patients with functional dyspepsia were recruited as disease controls (DC; n=30) for the comparison of metabolic profile of intestinal mucosal biopsies while healthy controls (HC; n=30) for the comparison of metabolome of blood plasma and urine. Intestinal mucosal biopsies following perchloric acid extraction, blood plasma and urine were subjected to proton NMR spectroscopy at 700 MHz. Multivariate analysis was carried out to explore the metabolic differences between CD patients and controls. Corresponding variable importance in projection (VIP) score plot showing metabolites having VIP score (>1) had a potential to discriminate between two groups.

Results
Orthogonal partial least squares discriminant analysis model showed clear differentiation between CD patients and controls using all three biological specimens. VIP score plot identified 8 differential metabolites including proline, arginine, glycine, glutamate, fumarate, formate, choline and allantoin in intestinal mucosal biopsies which could distinguish CD from controls. Metabolome of blood plasma with 8 metabolites (proline, arginine, alanine, glycine, glucose, acetate, creatine and creatinine) and urine with 7 metabolites (proline, allantoin, β-hydroxybutyrate, pyruvate, succinate, tryptophan and aminohippurate), respectively with VIP >1 could distinguish CD from controls.

Conclusion
A panel of metabolic biomarkers in the intestinal biopsies, plasma and urine has a potential to differentiate CD from controls and serve as a biomarkers.

Conflicts of interests
The authors have no conflicts of interest.

ORAL COMMUNICATIONS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00159

Title: The intraepithelial γδ tcr repertoire is more diverse in coeliac disease patients than in healthy subjects

Presenting author: Linn M. Eggesbø

Co-authors: Linn M. EGGESBØ (1), Louise F. RISNES (1, 2), Ralf S. NEUMANN (1), Knut E. A. LUNDIN (1, 3), Asbjørn CHRISTOPHERSEN (1), Ludvig M. SOLLID (1, 2) - (1)K. G. Jebsen Centre for Coeliac Disease Research, University of Oslo, 0424 Oslo, Norway, Norvège, (2)Department of Immunology, University of Oslo and Oslo University Hospital-Rikshospitalet, 0372 Oslo, Norway, Norvège, (3)Department of Gastroenterology, Oslo University Hospital-Rikshospitalet, 0372 Oslo, Norway, Norvège

ABSTRACT CONTENT

Objectives
Patients with coeliac disease (CD) demonstrate increased levels of intraepithelial lymphocytes (IELs) expressing the γδ T-cell receptor (TCR). The role of these γδ IELs in CD pathogenesis remains unclear. While some studies have investigated the γδ TCR repertoire in healthy subjects, few have done so in the context of CD.

Methods
Here we have characterised, by doing single-cell γ and δ TCR sequencing, the intraepithelial γδ TCR repertoire of untreated CD patients (n=8; altogether 1821 single cells), gluten-free diet treated CD patients (n=5; altogether 436 single cells) and healthy subjects (n=7; altogether 1068 single cells).

Results
We observed that the γδ TCR repertoire in CD patients is different from that of healthy individuals, with usage of both Vδ1 and Vδ3 being increased in the patients. Looking at TCR γδ pairing profiles we found alterations in CD compared to the healthy state, with similar profiles in untreated and treated CD. Particularly, the Vγ4Vδ1 pairing, which is prevalent among gut IELs, was less used in CD patients. Further, we demonstrated that untreated CD patients have a more diverse γδ TCR repertoire than healthy individuals with presence of fewer expanded T-cell clones. We also looked at CDR3 sequences that were shared among individuals (i.e. public sequences). While we found presence of public CDR3γ sequences, we found no such public CDR3δ sequences. Interestingly, while many of the public CDR3γ sequences were found in all three study groups, there were a few sequences that were observed only in CD patients.

Conclusion
These data demonstrate that the intraepithelial γδ TCR repertoire is modified both in the untreated and treated disease state of CD.

Conflicts of interests
None

ORAL COMMUNICATIONS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00198

Title: B-cell tolerance and antibody production to the celiac disease autoantigen transglutaminase 2 (TG2)

Presenting author: M. Fleur Du Pre

Co-authors: M. Fleur DU PRE (1), Jana BLAZEVSKI (2), Alisa E. DEWAN (1), Jorunn STAMNAES (1), Chakravarthi KANDURI (3), Geir Kjetil SANDVE (3), Marie K. JOHANNESEN (1), Kathrin HNIDA (2), Lars FUGGER (4), Gerry MELINO (5), Shuo-Wang QIAO (1), Ludvig M. SOLLID (1) - (1)KG Jebsen Coeliac Disease Research Centre, University of Oslo and Department of Immunology, Oslo University Hospital, Norvège, (2)Department of Immunology, University of Oslo, Norvège, (3)KG Jebsen Coeliac Disease Research Centre, University of Oslo and Department of Informatics, University of Oslo, Norvège, (4)5Oxford Centre for Neuroinflammation, Nuffield Department of Clinical Neurosciences, Division of Clinical Neurology and Medical Research Council Human Immunology Unit, Weatherall Institute of Molecular Medicine, John Radcliffe Hospital, University of Oxford, Royaume-Uni, (5)Department of Experimental Medicine, TOR, University of Rome “Tor Vergata”, Italie

ABSTRACT CONTENT

Objectives
Among the most disease-specific autoantibodies in humans are those reactive with transglutaminase-2 (TG2) in celiac disease. IgA anti-TG2 antibodies are diagnostic for this disorder, and strikingly, the antibodies are only formed when celiac patients are consuming cereal gluten proteins, strongly suggesting that gluten-specific T cells are involved in the generation of these autoantibodies. We here addressed B-cell tolerance TG2 and provide insights on how anti-TG2 autoantibodies are formed.

Methods
We generated immunoglobulin knock-in (Ig KI) mice that express a celiac patient-derived anti-TG2 B-cell receptor equally reactive to human and mouse TG2. We studied B-cell development in the presence and absence of the autoantigen by crossing the Ig KI mice to TG2-/- mice.

Results
Autoreactive B cells in TG2+/+ mice were indistinguishable from their naive counterparts in TG2-/- mice with no signs of clonal deletion, receptor editing or B-cell anergy. The autoreactive B cells appeared ignorant to their antigen and they produced autoantibodies when T-cell help was provided.

Conclusion
Our findings support a model of celiac disease where gluten-reactive T cells provide help to autoreactive TG2-specific B cells by involvement of hapten-carrier like gluten-TG2 complexes, and they point to a general mechanism of autoimmunity with autoantibodies being produced by ignorant B cells on provision of T-cell help.

Conflicts of interests
None

ORAL COMMUNICATIONS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00039

Title: Non-responsive and Refractory Coeliac Disease: The Largest UK Experience from the NHS England Rare Diseases Collaborative Network

Presenting author: Hugo A Penny

Co-authors: Hugo A PENNY (1), Elizabeth Mr BAGGUS (1), Anupam REJ (1), Annalisa SCHIEPATTI (1), Lauren J MARKS (1), Nick TROTT (1), Marios HADJIVASSILIOU (2), David S SANDERS (1) - (1)Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Royaume-Uni, (2)Academic Department of Neuroscience, Royal Hallamshire Hospital, Royaume-Uni

ABSTRACT CONTENT

Objectives
Non-responsive coeliac disease (NRCD) is defined by persisting symptoms or laboratory abnormalities in patients with coeliac disease (CD) despite a gluten-free diet (GFD). Causes of NRCD are heterogeneous, with refractory CD (RCD) being associated with poor prognosis. The aims of this study were to identify the aetiologies for persisting symptoms in patients with NRCD referred to a national UK centre for CD, and to assess mortality rates in each group.

Methods
Data on all adult CD patients, including those with persisting symptoms and tertiary referrals, was collected prospectively from 1998-2018. Patients were systematically investigated to establish the aetiology of their continued symptoms, including referral to a specialist coeliac dietitian to identify any lapses in GFD adherence or gluten cross-contamination.

Results
2199 patients had confirmed CD (67% female, mean age at diagnosis 42.8 ± 18.5). Of these patients, 292 (13%) had persisting symptoms. The leading causes for persisting symptoms in patients without RCD were gluten contamination (22%), functional/IBS (20%), pancreatic exocrine insufficiency (7%), reflux dysmotility (5%), and microscopic colitis (5%). 74 patients had RCD; 56 had RCD I (71% female, mean age at CD diagnosis 41.8 ± 19.0) and 18 had RCD II (33% female, mean age at CD diagnosis 55.4 ± 13.3). After a median follow up of 40.5 months (IQR 21.8-73.3), mortality was 7% in the RCD I group, compared to 39% in the RCD II group ($p=0.019$). Higher age at diagnosis of CD is a predictor for having RCD in patients with persisting symptoms ($p<0.001$).

Conclusion
This is the largest UK study of NRCD and RCD. The contemporary mortality data in RCD II remains poor. Patients with suspected RCD should be referred to the National Centre for consideration of novel therapies such as anti-interlukin-15 therapy or stem cell transplantation.

Conflicts of interests
None

ORAL COMMUNICATIONS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00226

Title: The genetic landscape of type II Refractory Celiac Disease and Enteropathy Associated T-Cell Lymphoma reveals recurrent activating mutations of the JAK1/STAT3 axis

Presenting author: Sascha Cording

Co-authors: Sascha CORDING (1), Amélie TRINQUAND (1), Georgia MALAMUT (2), Nicolas GUEGAN (1), Sofia BERRABAH (1), Ludovic LHERMITTE (3), Patrick VILLARESE (3), Sophie KALTENBACH (4), Bertrand MERESSE (5), Thierry MOLINA (6), Julie BRUNEAU (6), Sherine KHATER (7), Christophe CELLIER (7), Olivier HERMINE (8), Elizabeth MACINTYRE (3), Vahid ASNAFI (3), Nadine CERF-BENSUSSAN (1) - (1)Laboratory Intestinal Immunity, Imagine Institute, France, (2)Department of Gastroenterology, Hôpital Cochin, AP-HP, Paris, France., France, (3)Biological Haematology, Necker-Enfants Malades University Hospital, AP-HP, Paris, France., France, (4)Cytogenetics Department, Necker-Enfants Malades University Hospital, AP-HP, Paris, France., France, (5)Laboratory of Inflammatory and digestive diseases, Lille Inflammation Research International Center, Lille, France., France, (6)Pathology Department, Necker-Enfants Malades University Hospital, AP-HP, Paris, France., France, (7)Department of Gastroenterology, Hôpital Européen Georges Pompidou, AP-HP, Paris, France., France, (8)Clinical Haematology, Necker-Enfants Malades University Hospital, AP-HP, Paris, France, France

ABSTRACT CONTENT

Objectives
High-grade enteropathy-associated T lymphoma (EATL) is a rare but most severe complication of celiac disease (CeD), that is frequently preceded by low-grade clonal intraepithelial lymphoproliferation, called type II refractory CD (RCDII). Herein, the genetic landscape of RCDII and EATL was analyzed in order to identify the genetic driver(s) of lymphocyte transformation in CeD.

Methods
Unbiased analysis using whole-exome sequencing (WES) and comparative genomic hybridization was applied in 10 patients to biopsy-derived RCDII cell lines (n=9) or and to RCDII (CD103+sCD3-iCD3+) lymphocytes purified from peripheral blood (n=2). Next-generation sequencing with a panel of 100 genes involved in T cell lymphoproliferation and targeted amplicon sequencing of selected mutations identified by WES were next applied to biopsies from 50 RCDII, 21 EATL (including 12 cases paired with autologous RCDII samples), 7 type I RCD (RCDI) and 8 uncomplicated CeD.

Results
Approximately 80% RCDII and 90% EATL, but neither CeD nor RCDI displayed somatic mutations in the JAK/STAT pathway. Confirming and extending our published results in 12 RCDII cases, JAK11093 and STAT3 gain-of-function mutations were the most frequent genetic abnormalities in conjunction with loss-of-function mutations in negative regulators of this pathway. Moreover, work in progress indicates that additional mutations in pathways controlling cytokine response or gene regulation can be found and that mutational fitness underlies disease progression from RCDII to EATL.

Conclusion
We propose that mutations in the JAK1/STAT3 pathway license the emergence of lymphomas in the cytokine-rich CeD intestine and might be targeted for therapeutic purpose or support diagnostics.

Conflicts of interests
The authors declare no conflict of interest.

ORAL COMMUNICATIONS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00236

Title: Characterization of a large cohort of children with non-celiac auto-immune enteropathies

Presenting author: Fabienne Charbit-Henrion

Co-authors: Fabienne CHARBIT-HENRION (1), Marianna PARLATO (2), Bernadette BEGUE (2), Remi DUCLAUX-LORAS (2), Sylvain HANEIN (3), Christine BOLE (4), Patrick NITSCHKE (5), Frederic RIEUX-LAUCAT (6), G GENIUS GROUP (7), Frank RUEMMELE (1), Nadine CERF-BENSUSSAN (2) - (1)INSERM, UMR1163, Laboratory of Intestinal Immunity, and Imagine Institute; Université Paris Descartes-Sorbonne Paris Cité; Paediatric Gastroenterology, Hepatology and Nutrition Unit, Hôpital Necker-Enfants Malades, Assistance Publique-Hôpitaux de Paris, France, (2)INSERM, UMR1163, Laboratory of Intestinal Immunity, and Imagine Institute; Université Paris Descartes-Sorbonne Paris Cité, France, (3)INSERM, UMR 1163 Translational Genetic, and Imagine Institute, France, (4)Genomic Platform, Imagine I, France, (5)Bioinformatics Platform, Imagine Institute; Université Paris Descartes-Sorbonne Paris Cité, France, (6)INSERM, UMR1163, Immunogenetics of Paediatric Autoimmunity, and Imagine Institute, France, (7)GENetically ImmUne–mediated enteropathieS) from the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN), France

ABSTRACT CONTENT

Objectives
An expanding number of monogenic disorders can cause non-celiac autoimmune enteropathy (AIE). Herein, we have screened a cohort of 63 children suffering from non-celiac AIE in order to identify underlying molecular mechanisms, and to adapt treatment.

Methods
Sixty-three children with severe non-celiac AIE presenting with chronic diarrhea, villous atrophy, with or without autoimmune antibodies and or extra-intestinal manifestations were recruited in 45 pediatric centers through an international collaborative network [ESPGHAN GENIUS working group] Methods to molecular diagnosis included functional tests followed by Sanger sequencing, custom-made targeted next-generation sequencing, and in selected cases, whole exome sequencing of parents-child trios. Genetic findings were validated clinically and/or functionally.

Results
Molecular diagnosis was achieved in 36/63 children [57%]. According to defective pathways, patients could be split into three categories. The vast majority had mutations impairing regulatory T cells development or function (FOXP3: 20; IL2RA: 2; MALT1: 2, and 2 siblings with mutation in a novel candidate gene involved in TGFbeta signaling). A second group had mutations enhancing JAK-STAT activation that led to hyper activation of effector T cells (STAT3 gain-of-function: 1; 1 patient with a mutation in a novel candidate gene regulating STAT3). The third group had mutations affecting both effector and regulatory T cell activation (LRBA: 6; CTLA4: 1). One patient had a NEUROG3 mutation responsible for chronic diarrhea and early-onset diabetes that was erroneously ascribed to autoimmunity.

Conclusion
Mendelian inherited mutations in genes controlling T cell regulation or activation are frequent causes of non-celiac AIE in children. Early molecular diagnosis is essential to guide therapy and identify targets for possible pharmacological options, such as JAK-inhibitors or CTLA4 analogs.

Conflicts of interests
None

POSTERS

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00010

Final poster ID: P1-01

Title: Is it a biased association? Review of the co-prevalence of eosinophilic esophagitis and celiac disease.

Presenting author: Jennifer Hong

Co-authors: Jennifer HONG, Runa WATKINS, Samra BLANCHARD - (1)University of Maryland Children's Hospital, États-Unis

ABSTRACT CONTENT

Objectives
Celiac disease (CD) and eosinophilic esophagitis (EoE) are distinct immunologic disorders of the gut. EoE is a Th2 mediated disease, leading to esophageal dysfunction symptoms and esophageal eosinophilia (EE) of ≥ 15 eosinophils per high power field, persisting on a proton pump inhibitor (PPI) to exclude other etiologies of EE. CD is a Th1 process affecting the small intestine in genetically susceptible individuals due to gluten sensitivity, manifesting in intraepithelial lymphocytosis, crypt hyperplasia and villous atrophy. In spite of disparate pathologies, literature has suggested that the two may be related. This is a review of the literature on the coprevalence of EoE and CD.

Methods
Electronic searches of adult and pediatric studies were performed using the keywords EoE and CD were conducted in OVID, Scopus and PubMed databases. Adult and pediatric studies were included. For each study, the reported coprevalance of EoE and CD, study size, design, population, EoE definition criteria and where available, response of EoE gluten free diet (GFD) were collected.

Results
The search yielded 25 pertinent references. The study group was derived from a population diagnosed with CD in 8 (36%) studies; EoE in 4 (16%); CD or EoE in 6 (24%); 3 (12%) were population studies, and 3 (12%) were case reports or series. All required esophageal and duodenal biopsies as inclusion criteria. The co-prevalence of CD and EoE was 0-10.8%. Three (12%) studies required a PPI trial for EoE diagnosis. Fourteen studies reported the effect of GFD on inducing remission of comorbid EoE and CD. The response was 0-80%, compared to 100% in case reports which reported this measure.

Conclusion
The posited link of EoE and CD should be approached with skepticism. There is publication bias favoring reporting a positive association. There is also detection bias. As triple biopsies are not required for follow up of established CD or EoE, there is a heightened suspicion and likelihood of concomitant disease in the studied groups. This effect is amplified in adult populations, in whom it is not standard of practice to obtain biopsies from normal appearing mucosa. In fact, population-based studies report no relation between CD and EoE. Further, few studies require a PPI trial in the diagnosis of EoE. Hence, the co-prevalence of CD and EoE may be confounded by gastroesophageal reflux or PPI responsive EoE. There is also variable success of GFD in inducing EE remission in comorbid EoE and CD, suggesting that different processes underlie these diseases. Therefore, the EoE and CD association may be overestimated.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00015

Final poster ID: P1-02

Title: Don't jump into the Marsh: Awareness of Celiac Disease overdiagnosis in adult community practices

Presenting author: Runa Watkins

Co-authors: Runa WATKINS, Samra BLANCHARD, Elaine PUPPA, William TWADDELL - (1)University of Maryland, États-Unis

ABSTRACT CONTENT

Objectives
Celiac disease (CD) is an immune mediated systemic disorder caused by ingestion of gluten resulting in small intestinal damage. While serologic testing is recommended, the gold standard of diagnosis continues to be small intestinal biopsy, but the interpretation of histology requires the proper context of symptoms, serology and genetics. This study was performed to provide awareness of the Marsh classification to community adult gastroenterologists and describe requirements for proper diagnosis of CD.

Methods
A retrospective chart review from 2017 to 2019 of 97 adult patients who were referred to the University of Maryland's Center for Celiac Disease was performed. We reviewed all biopsies with our GI pathologist and compared it to initial biopsy reports.

Results
A total of 6 cases of adult patients diagnosed with CD by their community gastroenterologist (GI) after their endoscopy for evaluation of gastrointestinal symptoms. Their histologic findings were consistent with Marsh 1 histology; intraepithelial lymphocytosis with preservation of villous architecture. These biopsies were initially read as CD by community pathologists. All six patients had histology reviewed by our GI pathologist and findings were all consistent with peptic duodenitis. Four patients (67%) presented with negative celiac serologies and two patients were placed on a gluten free diet (GFD) without having serologies checked. One patient was given a diagnosis despite having negative genetic testing. All were placed on a GFD with no further work up. None of the patients had a work up for peptic disease or other causes of duodenitis.

Conclusion
Diagnosis of CD is made by histology, but only in the right context, which includes symptoms, serologies and exclusion of other disorders. Patients should have all data obtained prior to making a diagnosis of CD with Marsh 1 histology in adult community GI practices. We recommend serologies and genetic testing prior to proceeding with a GFD.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00022

Final poster ID: P1-03

Title: Blood AND Guts? - Improving the Diagnostic Accuracy for Coeliac Disease

Presenting author: Richard Charlesworth

Co-authors: Richard CHARLESWORTH (1), Linda AGNEW (1), Nicholas ANDRONICOS (1), David SCOTT (2) - (1)University of New England, Australie, (2)HUnter New England Area Health Service, Australie

ABSTRACT CONTENT

Objectives
Coeliac disease (CD) is an autoimmune condition which is increasing in prevalence, with around 1% of the population now thought to be affected. With this rise in patients affected by CD, it is important that the condition can be diagnosed accurately and efficiently. Currently, the condition is diagnosed by examining both serological and histological markers, however there is debate as to the accuracy of these tests, particularly for milder manifestations of CD. Therefore, our overall aim is to develop novel and more specific diagnostics using a battery of biomarkers of CD.

Methods
We have previously shown that coeliac diagnostic accuracy can be increased with histological and gene expression data from intestinal biopsies [1, 2].

1. Charlesworth Richard, P.G., et al., Celiac disease gene expression data can be used to classify biopsies along the Marsh score severity scale. Journal of Gastroenterology and Hepatology, 2018. 0(ja).

2. Charlesworth, R.P., et al., Can the sensitivity of the histopathological diagnosis of coeliac disease be increased and can treatment progression be monitored using mathematical modelling of histological sections?–A pilot study. Advances in medical sciences, 2017. 62(1): p. 136-142.

Results
As current diagnostics rely on subjective examination, we have demonstrated that accurate CD diagnosis can be achieved by using discriminant predictive equations derived solely from objective measures. These measures include villus length and width, the number of inflammatory cells and the expression of key genes including IFNG, CD19, IL18 and CD203c.

Conclusion
Current work in our laboratory is aimed at refining these equations to find key predictive algorithms to define CD severity. We also hypothesised that circulating peripheral cytokine markers will correlate to coeliac pathology and that this can be used as a basis for developing more accurate and less invasive assays.

Conflicts of interests
The authors have no confilcts of interest to declare.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00024

Final poster ID: P1-04

Title: The Predictive Value of Serum Cytokines for Distinguishing Celiac Disease from non-celiac gluten sensitivity and healthy subjects

Presenting author: Mohammad rostaminejad

Co-authors: Mohammad ROSTAMINEJAD (1), Fatemeh MASAEBI (2), Mohamad Amin POURHOSEINGHOLI (2), Mehdi AZIZMOHMMAD LOOHA (2), Navid MOHSENI (2), Mohammad Reza ZALI (1) - (1)Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran, Iran, République Islamique d', (2)MSc, student, Depatment of Biostatistics, Faculty of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran, Iran, République Islamique d'

ABSTRACT CONTENT

Objectives
It is established that in celiac disease and non-celiac gluten sensitivity (NCGS), the level of some inflammatory cytokines are increased in compare with healthy subjects, therefore the primary interest in our research was proposing an accurate diagnostic tool in patients with CD, NCGS compare with healthy individuals in Iranian population.

Methods
In January 2016, the serum samples were examined from 171 participants including 110 CD patients, 46 healthy individuals and 15 NCGS. The commercial ELISA kits were used for detection of the level of following cytokine's: IL-1, IL-6, IL-8, IL-15 and IFN-γ. The receiver operating characteristic (ROC) curve analysis and Youden Index were used for determination of the optimal thresholds for high sensitivity and specificity of inflammatory and pro-inflammatory cytokines as the detection tool of CD, NCGS and healthy control groups.

Results
the overall area under the roc curve (AUC) value for all cytokines was 79%. In NCGS group, AUC, values for IL-1, IL-8, and IFN-γ obtained 71%, 78% and 70%, respectively. For detection of CD, among all inflammatory cytokines, IL-15 with the cut point of 68.79 ng/ml obtained the highest sensitivity (82.7%) and specificity (56.5%). In NCGS group, IL-8 had the highest sensitivity (74.5%) and specificity (73.3%) with 29.51 ng/ml as the cutoff point. In control group, none of the AUC values were greater than 70%.

Conclusion
The result showed that IL-8 and IL-15, in their optimal cut off points, are proposed as a potential marker for distinguishing CD from NCGS and healthy control. These results recommended that cytokine's levels evaluation is useful tool for diagnosis of CD and NCGS in a clinical practice; however, further research is needed to assess the role of cytokines profile for diagnosis of CD and NCGS.

Conflicts of interests
we have no Conflicts of interests

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00033

Final poster ID: P1-05

Title: Intestinal transglutaminase 3 and transglutaminase 2-specific plasma cell responses in dermatitis herpetiformis patients undergoing a gluten challenge

Presenting author: Minna Hietikko

Co-authors: Minna HIETIKKO (1), Hanna SANKARI (1), Kalle KURPPA (2), Katri KAUKINEN (3), Eriika MANSIKKA (4), Heini HUHTALA (5), Kaija LAURILA (1), Timo REUNALA (6), Kaisa HERVONEN (6), Teea SALMI (4), Katri LINDFORS (1) - (1)Coeliac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University, Finlande, (2)Tampere Center for Child Health Research, Tampere University and Tampere University Hospital, Finlande, (3)Coeliac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University and Department of Internal Medicine, Tampere University Hospital, Finlande, (4)Coeliac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University and Department of Dermatology, Tampere University Hospital, Finlande, (5)Faculty of Social Sciences, Tampere University, Finlande, (6)Department of Dermatology, Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
Dermatitis herpetiformis (DH), a cutaneous manifestation of celiac disease, is characterised by gluten-dependent autoantibodies targeting transglutaminase (TG) 3 and 2. Plasma cells secreting such antibodies have been identified in the small bowel mucosa and in celiac disease, the frequency and gluten-responsiveness of TG2-specific plasma cells have been described. The aim of this study was to investigate intestinal TG3- and TG2-specific plasma cells and their dynamics in DH patients undergoing a gluten challenge.

Methods
Small intestinal mucosal biopsies and serum samples were obtained from 19 long-term treated DH patients prospectively undergoing a gluten challenge of up to one year. As controls, 18 untreated and 15 treated celiac disease patients as well as 7 non-celiac subjects with dyspepsia were included. Serum TG3- and TG2-targeting autoantibody levels were measured. The percentage of TG3- and TG2-specific plasma cells of all lamina propria plasma cells in biopsy sections was investigated by immunofluorescence staining.

Results
At pre-challenge, TG3- and TG2-specific plasma cells were absent in all but two treated DH patients. After the gluten challenge, TG3-specific plasma well were found in 56% and TG2-specific plasma cells in 72% of the DH patients. The percentage of both cell types increased statistically significantly from pre- to post-challenge ($p<0.01$ for both subsets). Moreover, the percentage of both cell types correlated with the levels of corresponding serum antibodies after the gluten challenge. No intestinal TG3-specific plasma cells were detected in any of the controls while adhering to gluten-containing diet.

Conclusion
We conclude that intestinal TG3-specific plasma cells are specific for DH and that both TG2- and TG3-specific plasma cell populations are gluten-responsive in DH. However, a longer gluten exposure might be required for the plasma cells to appear in all DH patients.

Conflicts of interests
-

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00047

Final poster ID: P1-06

Title: High levels of anti-tissue transglutaminase antibodies predict biopsy proven celiac disease in children with type 1 diabetes

Presenting author: Mara Cerqueiro Bybrant

Co-authors: Mara CERQUEIRO BYBRANT (1), Elina UDÉN (2), Filippa FREDERIKSEN (1), Anna GUSTAFSSON (2), Carl-Göran ARVIDSSON (3), Anna-Lena FUREMAN (4), Gun FORSANDER (5), Ulf SAMUELSSON (6), Helena ELDING LARSSON (2), Sten Anders IVARSSON (2), Åke LERNMARK (2), Johnny LUDVIGSSON (7), Claude MARCUS (1), Auste PUNDZIUTE-LYCKÅ (5), Martina PERSSON (1), Stefan SÄRNBLAD (8), Karin ÅKESSON (9), Eva ÖRTQVIST (1), Annelie CARLSSON (2) - (1)Karolinska Institutet, Suède, (2)Lund University, Suède, (3)Region Västmanland, Suède, (4)Region Jämtland Härjedalen, Suède, (5)Västra Götalandsregionen, Suède, (6)Region Östergötland, Suède, (7)Linköping University, Suède, (8)Örebro Universitet, Suède, (9)Region Jönköpings län, Suède

ABSTRACT CONTENT

Objectives
To explore if high levels of antibodies against tissue transglutaminase (10x over the positive reference limit) can predict screening detected celiac disease (CD) in children with Type 1 Diabetes (T1D).

Methods
We studied 2035 children with T1D, diagnosed from May 2005 to December 2010 from the national prospective Better Diabetes Diagnosis study (BDD). All children had been screened for celiac autoimmunity at diagnosis, thereafter yearly, using antibodies against tissue-transglutaminase (anti-tTG), and were human leukocyte antigen (HLA)-genotyped. Data on repeated celiac serology and confirmed CD were obtained from the children´s journal. A total of 119 individuals with positive serology had performed a small intestinal biopsy. The histopathological evaluations were graded according to the Marsh-Oberhuber classification.

Results
Celiac autoimmunity with positive anti-tTG was found in 141 (6.9 %) screened children, and CD was confirmed in 113 (5.6 %) out of the 119 children who underwent biopsy procedure. The degree of mucosal damage correlated to anti-tTG levels. All of the children (n=60) with anti-tTG 10 times over the positive reference limit were found to have a gluten-induced enteropathy verified by biopsy. All but one of the children diagnosed with CD had HLA-DQ2 and/or DQ8. The most frequent genotype was HLA DQ2/DQ8 (42%). The only child lacking HLA DQ2/DQ8 had Down's syndrome and a HLA-DQ9 allele.

Conclusion
Anti-tTG 10x over the positive reference limit indicates a gluten-induced enteropathy in children with T1D screened for CD. Therefore biopsies could be omitted in this patient group, implying a possible extension of the 2012 criteria from the European Society for Pediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN).

Conflicts of interests
All authors declare no conflicting interest relevant to this article to disclose.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00048

Final poster ID: P1-07

Title: Inter and Intra-assay variation in the diagnostic performance of anti-tissue transglutaminase antibody assays in two ethnic population

Presenting author: Govind Makharia

Co-authors: Govind MAKHARIA (1), Prashant SINGH (2), Alka SINGH (1), Jocelyn SILVESTER (2), Vikas SACHDEV (1), Xinhua CHEN (2), Hua XU (2), Daniel LEFFLER (2), Vineet AHUJA (1), Donald DUERKSEN (3), Ciaran KELLY (2) - (1)AIIMS, Inde, (2)BIDMC, États-Unis, (3)University of Manitoba, Canada

ABSTRACT CONTENT

Objectives
To compare diagnostic performance of 4 commonly used anti-tissue transglutaminase antibody (tTG) assays in Caucasian and Indian population.

Methods
Sera of adult CD patients (150 Indian; 140 Caucasian) were obtained from a tertiary care center in India and the Manitoba Celiac Disease Cohort. CD was diagnosed by positive tTG, histology (≥modified Marsh 2) and unequivocal clinical response to gluten-free diet. Controls (N=86 at each site) had gastrointestinal symptoms with normal duodenal histology and celiac serology. Sensitivity and specificity were calculated using manufacturer cut-offs. If necessary, optimal cut-offs were calculated using Youden's index. Concordance at high titers [≥10-fold upper limit of normal (ULN)] was examined.

Results
tTG assay sensitivity ranged from 76%-93% in Indian and 76%-98% in Caucasian patients. Specificity ranged from 90%-99% in Indian and 95%-100% in Caucasian patients. There was significant intra-assay variation between two ethnic population and the assay with the highest sensitivity in the Caucasian patients (98%) had the lowest sensitivity in the Indian patients (76%). Sensitivity of tTG assays could be improved without compromising specificity if separate cut-offs were used for different ethnic population. Among 169 CD patients with tTG ≥10-fold ULN on at least one assay, 1.2%-4.1% were seronegative on other assays. The accuracy to detect titer ≥10-fold ULN in these 169 patients ranged from 60-89% amongst the 4 assays.

Conclusion
The diagnostic performance of tTG assays varies significantly within and between ethnic population. Concordance among tTG assays is poor even at high serological titers. Manufacturer provided assay cut-offs might not be optimal for non-Caucasian population. In patients with high pretest probability of CD, screening with a single tTG assay may be inadequate.

Conflicts of interests
Inova and Thermofisher provided assays.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00059

Final poster ID: P1-08

Title: Automated Analyzers are Suited for Diagnosing Celiac Disease Following the ESPGHAN 2012 Criteria

Presenting author: Raanan Shamir

Co-authors: Raanan SHAMIR (1, 2), Firas RINAWI (1), Yifat HARITAN (1), Baruch YERUSHALMI (3), Michal KORI (4), Sara MORGENSTERN (5), Sarit PELEG (6), Lidia OSYNTSOV (7), Raul COLODNER (8), Orit ROZENBERG (8) - (1)Institute for Gastroenterology, Nutrition and Liver Disease, Schneider Children's Medical Center, Clalit Health Services, Israël, (2)Sackler Faculty of Medicine, Tel Aviv University, Israel, Israël, (3)Pediatric Gastroenterology Unit Soroka University Medical Center, Israël, (4)Pediatric Gastroenterology Unit, Kaplan medical Center, Rehovot, Israël, (5)Pathology Department, Rabin Medical Center, Petach Tikva, Israël, (6)Pediatric Gastroenterology Unit, Haemek medical Center, Israël, (7)Institute for Pathology, Soroka University Medical Center, Israël, (8)Haemek medical Center Laboratory, Israël

ABSTRACT CONTENT

Objectives
The ESPGHAN 2012 guidelines, enabled for the first time, a non-biopsy approach in the diagnosis of Coeliac disease (CD). The aims of this study were to prospectively assess 4 tTg IgA assays of 4 random –access (automated) analyzers and examine their accuracy in diagnosing CD without a biopsy.

Methods
We enrolled 109 consecutive paediatric patients with positive tTG who were referred for intestinal biopsy and 77 paediatric patients who were referred for endoscopy for other reasons and served as controls. All participants had a blood sample taken during endoscopy. Samples were tested with 4 tTg IgA assays on automated analyzers and one Elisa kit. All intestinal biopsies were evaluated by a local pathologist, a central pathologist and a celiac expert, blinded to each other. CD was diagnosed when full agreement was reached. Histological findings were correlated with tTg IgA results. Analytical performance of the assays included precision with controls and samples, lot to lot variation, and carryover.

Results
In our cohort, all tested tTg IgA automated assays showed sensitivities above 98% and specificities above 99%. ROC analysis demonstrated AUC (area under the curve) >0.99 for all 4 analyzers. The positive predictive value (PPV) were all >0.98 and the negative predictive value (NPV) were >0.97. The Elisa kit had sensitivity of 95%, specificity of 92%, AUC of 0.96, PPV of 0.98 and NPV of 0.93. Two of the assays performed all precisions with coefficient of variation (cv) lower than 10%. Lot to lot variation was similar for the 4 analyzers. No carryover was found with any of the analyzers.

Conclusion
CD can be accurately diagnosed without biopsy based on tTgIgA levels > 10 times the ULN using the 4 high volume (automated) random-access analyzers used in our study.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00063

Final poster ID: P1-09

Title: Diagnostic Yield of Small Bowel Ultrasonography compared to Video Capsule Endoscopy for the diagnosis of complicated Celiac Disease

Presenting author: Andrea Costantino

Co-authors: Andrea COSTANTINO (1), Erica CENTORRINO (1), Stefania ORLANDO (2), Mirella FRAQUELLI (1), Maurizio VECCHI (1), Luca ELLI (1) - (1)Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Italie, (2)Ospedale Maggiore, Italie

ABSTRACT CONTENT

Objectives
No studies compared videocapsule enteroscopy (VCE) and small bowel ultrasonography (B-US) findings in celiac disease (CD). The aim of this study is to compare the diagnostic yield (DY) of VCE and B-US in CD.

Methods
We retrospectively evaluated patients undergoing VCE and B-US for the suspicion or in the follow-up of known complicated CD.

Complications were suspected in the presence of alarm symptoms, elevation of anti-tTGA despite 12 months of GFD, known or suspected refractory CD (RCD). Ultrasound examinations were considered pathological in the presence of dilated small bowel loops (> 2.5 cm), increase small bowel wall thickness (> 0.3 cm), lymph nodes enlargement (> 1 cm), mesenteric hypertrophy, large amount of free abdominal fluid.

US findings were compared to VCE as reference standard.

We evaluated the diagnostic yields of the two techniques and we searched for the final diagnosis at the end of the diagnostic process.

Results
72 patients underwent the examinations for the suspicion of CD complications while 8 patients had a known complicated celiac disease (2 RCD I, 5 RCD II, 1 EATL in remission). Among these patients the DY of the two techniques were 35% for B-US and 55% for VCE ($p < 0,05$).

At the end of the diagnostic process three patients developed neoplastic complications: in these cases both VCE and B-US had detected pathological lesions.

B-US was also able to identify pathological findings in all patients with RCD II. B-US examination was positive for the following findings in RCD: small bowel loops dilatation (5), increased bowel parietal thickness (2), lymph nodes enlargement (3) and mesenteric hepertrophy (1).

Conclusion
In case of celiac disease's complications VCE has a higher ability of detecting pathological lesions.

B-US has a lower DY but could have a role in the exclusion of severe celiac disease's complications (RCD, EATL, adenocarcinoma).

Since B-US is cheap and allows the visualization of small bowel wall and adjacent structures it should be proposed together with VCE in these patients.

Conflicts of interests

No conflict of interests.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00064

Final poster ID: P1-10

Title: The impact of clinical presentation of coeliac disease on diagnostic delays in children in Central Europe

Presenting author: Petra Riznik

Co-authors: Petra RIZNIK (1), Luigina DE LEO (2), Jasmina DOLINSEK (3), Judit GYIMESI (4), Martina KLEMENAK (1), Berthold KOLETZKO (5), Sibylle KOLETZKO (6), Ilma Rita KORPONAY-SZABÓ (4), Tomaz KRENCNIK (1), Tarcisio NOT (2), Goran PALCEVSKI (7), Daniele SBLATTERO (8), Matej VOGRINCIC (9), Katharina Julia WERKSTETTER (6), Jernej DOLINSEK (1) - (1)University Medical Centre Maribor, Department of Paediatrics, Gastroenterology, Hepatology and Nutrition Unit, Slovénie, (2)IRCCS Burlo Garofolo Trieste, Institute for Maternal and Child Health, Italie, (3)Municipality of Maribor, Project Office, Slovénie, (4)Heim Pál National Paediatric Institute, Coeliac Disease Centre, Hongrie, (5)Stiftung Kindergesundheit (Child Health Foundation) at Dr. von Hauner Children's Hospital, LMU, Allemagne, (6)Dr. von Hauner Children's Hospital, Clinical Medical Centre, LMU, Allemagne, (7)University Hospital Rijeka, Department for Gastroenterology, Paediatric clinic, Croatie, (8)University of Trieste, Italie, (9)University Medical Centre Maribor, Department of Informatics, Slovénie

ABSTRACT CONTENT

Objectives
Due to a broader use of serological screening tests, more coeliac disease (CD) patients with non-classical presentation have been diagnosed during the past decades. However, limited awareness of the diversity of clinical presentation of CD among health care professionals (HCP) contributes to continued frequently missed diagnoses. We assessed the impact of the clinical presentation on diagnostic delays in children with CD in Central European (CE) region.

Methods
Paediatric gastroenterologists (PaedGI) in five CE countries retrospectively reported data of their CD patients aged <19 years, diagnosed in 2016. Patients were classified as classical CD (signs and symptoms of malabsorption), non-classical CD (any other symptoms) and dermatitis herpetiformis Duhring (DHD). We analysed diagnostic delays in relation to clinical presentation at CD diagnosis.

Results
Data from 393 symptomatic children (65% female, median age 7 years, range 7m-18.5y) from Croatia, Germany, Hungary, Italy and Slovenia were analysed. Patients with classical CD had a slightly shorter median diagnostic delay (6m) compared to those with non-classical CD (7m) and DHD (8m) (NS). Further analysis showed that the median duration from first symptoms to the first visit to the PaedGI was the same (5m) in children with classical CD (n=264) and non-classical CD (n=122) whereas it tended to be slightly longer (7m) in children with DHD (n=7) (NS). Median duration from the first visit to the PaedGI to the confirmation of CD was found to be significantly longer in non-classical compared to classical presentation ($p<0.05$).

Conclusion
Clinical presentation at CD diagnosis has some, although relatively small effect on diagnostic delays. Delays were longer in patients presenting with non-classical symptoms or DHD compared to malabsorption. Lack of awareness about different clinical presentations of CD may contribute to prolonged delays. Further efforts to raise the awareness and knowledge among HCPs appear necessary.

*Study was co-financed by Interreg CE programme (CE 111, Focus IN CD)

Conflicts of interests
Authors declare no conflicts of interest.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00066

Final poster ID: P1-11

Title: The influence of diagnostic delays on growth of children with coeliac disease in Central Europe

Presenting author: Petra Riznik

Co-authors: Petra RIZNIK (1), Luigina DE LEO (2), Jasmina DOLINSEK (3), Judit GYIMESI (4), Martina KLEMENAK (1), Berthold KOLETZKO (5), Sibylle KOLETZKO (6), Ilma Rita KORPONAY-SZABÓ (4), Tomaz KRENCNIK (1), Tarcisio NOT (2), Goran PALCEVSKI (7), Daniele SBLATTERO (8), Matej VOGRINCIC (9), Katharina Julia WERKSTETTER (6), Jernej DOLINSEK (1) - (1)University Medical Centre Maribor, Department of Paediatrics, Gastroenterology, Hepatology and Nutrition Unit, Slovénie, (2)IRCCS Burlo Garofolo Trieste, Institute for Maternal and Child Health, Italie, (3)Municipality of Maribor, Project Office, Slovénie, (4)Heim Pál National Paediatric Institute, Coeliac Disease Centre, Hongrie, (5)Stiftung Kindergesundheit (Child Health Foundation) at Dr. von Hauner Children's Hospital, LMU, Allemagne, (6)Dr. von Hauner Children's Hospital, Clinical Medical Centre, LMU, Allemagne, (7)University Hospital Rijeka, Department for Gastroenterology, Paediatric clinic, Croatie, (8)University of Trieste, Italie, (9)University Medical Centre Maribor, Department of Informatics, Slovénie

ABSTRACT CONTENT

Objectives
Undiagnosed and untreated coeliac disease (CD) can seriously affect nutritional status and growth of affected children. The aim of our study was to assess the influence of diagnostic delays on growth in newly diagnosed children with CD in the Central European (CE) region.

Methods
Paediatric gastroenterologists in five CE countries retrospectively reported data of their CD patients aged <19 years with CD diagnosis confirmed in 2016. Z-scores for weight and height of children with CD at the time of diagnosis were calculated, based on the World Health Organization reference, and related to diagnostic delays measured as the time interval from the symptom onset to confirmation of the diagnosis.

Results
Data from 393 symptomatic children (65% female) diagnosed at a median age of 7 years (range 7m-18.5y) from Croatia, Germany, Hungary, Italy and Slovenia were included. The median delay from onset of symptoms to confirmation of the diagnosis was 6m (range 0m-10y). At the time of CD diagnosis, median z-score for weight was -0.44 (min -4.59; max 3.53) and for height -0.07 (min -4.60; max 7.29). No differences were found between girls and boys. Twenty-six of the included children (6.6%) had diagnostic delays longer than 3 years. They had lower weight and shorter stature compared to those with the delays of less than one year (z-score for weight: -0.93 and -0.39 respectively, $p<0.05$; z-score for height: -0.50 and -0.04 respectively; NS). There was a weak negative correlation between diagnostic delays and z-scores for weight ($r=-0.105$) and height ($r=-0.115$) (both $p<0.05$).

Conclusion
Children with CD had slightly lower body mass at the time of diagnosis but similar height compared to healthy children. Longer diagnostic delays lead to progressively lower body mass and, to a lesser degree, also to shorter stature. Efforts are needed to prevent long diagnostic delays and resulting complications, which may permanently affect child development as well as final height and health in adulthood.

*Study was co-financed by Interreg CE programme (CE 111, Focus IN CD)

Conflicts of interests
Authors declare no conflicts of interest.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00071

Final poster ID: P1-12

Title: Positive Celiac Disease serology in risk groups: a diagnostic challenge.

Presenting author: Ester Donat

Co-authors: Ester DONAT (1), Maria ROCA (2), Etna MASIP (1), Begoña POLO (1), David RAMOS (3), Carmen RIBES-KONINCKX (1) - (1)Pediatric Gastrohepatology Unit. Hospital Universitari i Politècnic La Fe., Espagne, (2)Unidad de Enfermedad Celiaca e Inmunopatología Digestiva, Instituto de Investigación Sanitaria La Fe, Espagne, (3)Patology Unit. Hospital Universitari i Politècnic La Fe., Espagne

ABSTRACT CONTENT

Objectives
To evaluate whether celiac disease (CD) diagnosis can be safely established without performing a small bowel biopsy (SBB) according to the ESPGHAN 2012 criteria also in asymptomatic patients

Methods
All SBB performed in our centre (January 2013-December 2017) to pediatric patients with suspected CD without symptoms (risk groups: diabetes, other autoimmune disease, CD-relatives, etc)

Results
42 out of 228 SBB pertained to asymptomatic paediatric patients. 27/42 had TG2 10xULN, positive EMA and HLA DQ2/DQ8.

Looking in detail into these 27 patients, in 22 cases histology was Marsh 2-3, thus confirming CD. In the remaining 5 children the results were:

- 4 patients had Marsh 0-1; TG2 subepitelial deposits were positive in two, in one it was difficult to interpret and in the last one TG2 deposits were not available. Two children were first-degree relatives, one DMID and the other one was a girl with scleroderma.

- In 1 case, although the sample was not correctly oriented to ascertain villous height, no increase in the number of intraepithelial lymphocytes (LIE) and also no crypt hyperplasia were observed, so it was probably a Marsh 0 lesion as well. In the SBB Giardia lamblia were found. TG2 subepitelial deposits were positive. She was a first-degree relative daughter of a CD confirmed case.

The other 15 out of 42, had all of them TG2 level below 10 times ULN, additionally one case was negative for DQ2/DQ8 and another one had an IgA deficiency. In two of these cases (one of them the girl negative for DQ2/DQ8) CD could not be confirmed by histology, in the remaining cases CD diagnosis was made.

Conclusion
In 11,9% of asymptomatic patients, despite having TG2x10 times ULN, positive EMA and HLA DQ2/DQ8, CD diagnosis could not be fully established. This is the reason why omitting SBB in these patients is questionable as real benefit of gluten free diet in these potential cases remains to be ascertained.

Conflicts of interests
None declared.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00072

Final poster ID: P1-13

Title: The occurrence of gluten associated antibodies and the level of I-FABP in adult patients with diarrhea-predominant irritable bowel syndrome

Presenting author: Joanna, Beata Bierla

Co-authors: Joanna, Beata BIERLA (1), Ewa KONOPKA (1), Ilona TROJANOWSKA (1), Emilia MAJSIAK (2), Bozena CUKROWSKA (1) - (1)The Children's Memorial Health Institute, Pologne, (2)Polish-Ukrainian Foundation of Medicine Development, Pologne

ABSTRACT CONTENT

Objectives
Irritable bowel syndrome (IBS) is recognized according Rome III criteria and up to 40% of IBS patients have diarrhea as the predominant symptom (IBS-D) and there is considerable overlap of clinical symptoms with celiac disease (CD). Recently published meta-analysis (2017) presented that biopsy proven CD was significantly higher in IBS patients compared with healthy controls (OR=4,48). The aim of study was serological screening of gluten associated antibodies in adult IBS-D patients compared to the level of intestinal-fatty acid binding protein (I-FABP) – the protein indicating enterocyte damage.

Methods
Sera of IBS-D patients (n =50) were diluted 1:100 and specific antibodies against tissue transglutaminase 2 (tTG2) and deamidated gliadin peptide (DPG)-IgA and -IgG as well as total IgA were done using the Polycheck® Autoimmune Screening Assay. I-FABP was measured by ELISA kit (Hycult Biotech).

Results
Out of 50 IBS-D patients 15 had increased gluten associated antibodies (30%). Three of them (6%) presented specific CD antibodies: tTG2-IgA and DPG-IgA/-IgG, and those patients were directed into endoscopy for histopathological examination. The I-FABP level of these patients was slightly increased 553±260 pg/mL. In 3 patients (6%) the levels of CD specific antibodies (tTG2-IgA and tTG2-IgG in 1 patient with IgA deficit) were in grey zone with increased anti-DGP antibodies. The mean level of I-FABP in this group of patients was 372±126 pg/mL and was comparable to the levels found in patients with normal total IgA level (n=8) with antibodies in grey zone only in class IgG (388±293 pg/mL) as well as in IBD-D patients without gluten associated antibodies (307±303 pg/mL).

Conclusion
The results indicate the efficacy of CD serological screening in IBS-D group, and I-FABP may be an additional marker indicating epithelial damage in active CD.

Conflicts of interests
Not declared.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00073

Final poster ID: P1-14

Title: Nutritional quality of a gluten-free diet at low content of FODMAP in patients with Celiac Disease

Presenting author: Luca Elli

Co-authors: Luca ELLI (1), Leda RONCORONI (1), Karla Amada BASCUÑAN (2), Nicoletta PELLEGRINI (3), Alice SCRICCIOLO (1), Vincenza LOMBARDO (1), Luisa DONEDA (4), Maurizio VECCHI (5) - (1)Fondazione IRCCS Cà Granda-Ospedale Maggiore Policlinico, Italie, (2)Department of Nutrition, Medical School, University of Chile, Chili, (3)Human Nutrition Unit, Department of Food and Drug, University of Parma, Italie, (4)Department of Biomedical, Surgical and Dental Sciences, University of Milan, Italie, (5)Department of Pathophysiology and Transplantation, University of Milan, Italie

ABSTRACT CONTENT

Objectives
Restrictive diets, such as a gluten-free or restricted in Fermentable, Oligosaccharides, Disaccharides, Monosaccharides, and Polyols (FODMAP), are used to improve gastrointestinal (GI) symptoms in individuals with gluten-related disorders. We evaluated the diet quality of Celiac Disease (CD) patients participating in a randomized, double-blind intervention-controlled study assessing the effect of a gluten-free diet (GFD) with a low-FODMAP diet (LFD) on GI symptoms.

Methods
CD patients (n=58) with persistent GI symptomatology were recruited. They were (mean±SD) 41.1±10.1 years old, mainly women (94%), and had a BMI of 21.8±2.9 kg/m2. Patients were allocated to follow a LFD/GFD or a regular-GFD (R-GFD) for 21 days. Patients received an individualized dietary plan. Diet was assessed through a validated food-frequency questionnaire at baseline and by a 7-day weighed food records at the end of the intervention.

Results
At baseline, mean daily energy intake was 1999.8±501.6 kcal with 15.3±2.7, 41.3±6.0, and 42.3±7.2% of energy coming from proteins, fat, and carbohydrates, respectively. Proportion of patients who did not meet recommended dietary intake was high: folates and vitamin D (both >96%), iron and calcium (both >78%), and dietary fiber (>53%). After the intervention, a decrease in energy intake ($p < 0.0002$) and percentages of fat (32.8±3.5), and an increase in carbohydrates (52.3±4.4)(both $p<0.0001$) was observed; also, an increase in the adequacy of folates ($p<0.015$) and decrease in calcium ($p < 0.005$) was observed. When comparing both treatments, the LFD/GFD group showed higher total cholesterol and sodium intake (both $p<0.05$), and lower consumption of legumes ($p<0.03$) compared with the R-GFD group.

Conclusion
An insufficient dietary adequacy of critical nutrients characterized CD patients under GFD. Nutritional quality of a LFD/GFD do not show overall differences compared with a R-GFD. Even when the use of both restrictive diets has been shown to improve persistent GI symptoms, a careful nutritional surveillance and counseling in these patients is needed.

Conflicts of interests
No conflict of interest.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00085

Final poster ID: P1-15

Title: Overlooked Celiac Crisis in Children in the World of Changing Clinical Patterns

Presenting author: Cristina Ungureanu

Co-authors: Cristina UNGUREANU (1), Lorena VATRA (2), Florin BREZAN (3), Andrei HOSTIUC (1), Adina ENE (1), Alina POPP (3) - (1)National Institute for Mother and Child Health, Bucharest, Romania, Roumanie, (2)SCUC “Marie-Curie”, Bucharest, Romania, Roumanie, (3)National Institute for Mother and Child Health, Bucharest, Romania, University of Medicine and Pharmacy “Carol Davila” Bucharest, Romania, Roumanie

ABSTRACT CONTENT

Objectives
The classical presentation of celiac disease (CD) in the severe form of celiac crisis, with failure to thrive and a typical malabsorption syndrome, is nowadays considered extremely rare. We here present a series of seven clinical cases with unidentified celiac crises admitted in our Department of Pediatrics during the year 2018.

Methods
Demographic, laboratory and histology data were collected from the clinical charts after signed informed consent.

Results
The children (5 males and 2 girls, median age 24 months, range 16 -31) were remitted because of ascites and pericardial effusion (2 case), severe bleeding disorder (1), severe protein-losing enteropathy (1), arrhythmias due to hypopotassemia (1), hepatitis (1) and recurrent acute respiratory infections presented with failure to thrive and severe wasting syndrome (1). All but one had been followed up in the primary care without suspicion of celiac disease. The duration of symptoms had lasted 3 to 14 months. In the referral center the children were primarily evaluated for kidney disease (1 case), hematological disorder (1), cystic fibrosis (2) and liver disease (3). After extensive diagnostic work up, also celiac disease was thought of, 6/7 had high antitissue transglutaminase IgA titers over 10 xULN (ELISA quantitative measurement) and one presented with a medium titer of 88 U/l. All were positive for EMA up to a serum dilution of 1:4000. Intestinal lymphangiectasis was found in one child in addition to celiac disease. Upper gastrointestinal endoscopies were done in five of the children showing severe crypt hyperplastic villous atrophy of the duodenal mucosa. All seven children rapidly improved on gluten-free diet.

Conclusion
The severe classical presentation of CD is still present in the general population and it can be overlooked in routine clinical both primary and tertiary care. Classical severe childhood celiac disease has not disappeared.

Conflicts of interests
The authors declare no conflict of interests

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00088

Final poster ID: P1-16

Title: Gliadin Specific Peripheral T Cell Response In Dermatitis Herpetiformis Patients Undergoing A Gluten Challenge: A Biomarker For Predicting Clinical Relapse?

Presenting author: Esko Kemppainen

Co-authors: Esko KEMPPAINEN (1), Suvi KALLIOKOSKI (1), Andrea DE KAUWE (2), Eriika MANSIKKA (3), Heini HUHTALA (4), Päivi SAAVALAINEN (2), Timo REUNALA (3), Kaisa HERVONEN (3), Katri KAUKINEN (5), Teea SALMI (3), Katri LINDFORS (1) - (1)Celiac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University, Finlande, (2)Department of Medical and Clinical Genetics, University of Helsinki, Finlande, (3)Celiac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University and Department of Dermatology, Tampere University Hospital, Finlande, (4)Faculty of Social Sciences, Tampere University, Finlande, (5)Celiac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University and Department of Internal Medicine, Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
In celiac disease (CeD), dietary gluten induces T cell response, which can be measured from peripheral blood mononuclear cells (PBMCs) after 3-day gluten challenge by an ELISpot method. However, no such studies exist in dermatitis herpetiformis (DH), a cutaneous manifestation of CeD. We aimed to compare the peripheral T cell response to gluten in DH and CeD patients and further, to investigate whether results could predict clinical relapse during continued gluten-containing diet (GCD) in DH.

Methods
Treated HLA-DQ2+ DH (n=15, median 22 y on gluten-free diet (GFD)) and CeD (n=18, median 7 y on GFD) patients underwent a 3-day wheat challenge. At day 6, PBMCs were collected and T cell responses to whole gliadin and DQ2-glia-α1a/α2 and DQ2-glia-ω1/ω2 peptides were measured with interferon-γ (IFN-γ) ELISpot. DH patients continued GCD diet for 12 months or until clinical or serological relapse.

Results
Altogether 47 % of the DH patients and 83 % of the CeD patients were responders to deamidated gliadin or/and peptides (p=0.026). DH patients had a significantly higher response to α-gliadin compared to ω-gliadin (p=0.019) similarly to CeD patients (p=0.006). In DH patients, T cell response to both peptides correlated with the level of serum deamidated gliadin peptide antibodies at relapse but not with endomysial, transglutaminase (TG) 2 or TG3 autoantibodies. The ELISpot results of DH patients' T cells did not predict clinical relapse on continued GCD.

Conclusion
Our results show that DH patients' T cells respond to gliadin in ELISpot similarly to CeD patients, but the response rate was lower in DH. This is possibly due to significantly longer duration of GFD in DH patients prior to the 3-day gluten challenge. The development of gluten-specific T cell response in long-term treated patients may thus be prolonged and this method as such is not optimal to predict clinical relapse in DH patients having adhered to GFD for long time.

Conflicts of interests
None.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00093

Final poster ID: P1-17

Title: Celiac Disease in Patie--nts with Cirrhosis and Hypert-----ransaminasemia: A Systematic Review and Meta-analysis

Presenting author: Govind Makharia

Co-authors: Govind MAKHARIA (1), Shakira YOOSUF (2), Prashant SINGH (2), Ashank KHAITAN (1), Tor STRAND (3, 4), Vineet AHUJA (1), Daniel LEFFLER (2, 5), Ciaran KELLY (2) - (1)Department of Gastroenterology, All India Institute of Medical Sciences, Inde, (2)Division of Gastroenterology, Department of Medicine, Beth Israel Deaconess Medical Center, États-Unis, (3)Innlandet Hospital Trust, Norvège, (4)Centre for International Health, University of Bergen,, Norvège, (5)Takeda Pharmaceuticals, États-Unis

ABSTRACT CONTENT

Objectives
We conducted a systematic review and meta-analysis to determine pooled prevalence of celiac disease (CD) in patients with cirrhosis (overall) and cryptogenic cirrhosis, hypertransaminasemia (overall), and cryptogenic hypertransaminasemia.

Methods
PubMed and EMBASE were searched up to October 2018. Case series and case-control studies applying serological tests and/or duodenal biopsy for CD on subjects with cirrhosis, cryptogenic cirrhosis, hypertransaminasemia or unexplained hypertransaminasemia were included. The pooled estimates of seroprevalence and biopsy-proven prevalence of CD were calculated for these four groups.

Results
Of 6329 articles screened, 23 articles were included in the final analysis. The pooled seroprevalence (95% CI) of CD was 12.1% (2.3-26.9%) in patients with cirrhosis and 16.3% (4.7-32.6%) in cryptogenic cirrhosis.The pooled prevalence (95%CI) of biopsy proven CD was 0.9% (0.2-1.8%) in patients with cirrhosis and 3.7% (1.4-6.8%) in cryptogenic cirrhosis. The pooled seroprevalence (95%CI) of CD was 4% (0.5-10.1%) in patients with hypertransaminasemia and 5.9% (3.1-9.3%) in cryptogenic hypertransaminasemia. The pooled biopsy proven prevalence (95%CI) of CD was 1% (0.2-2.2%) in patients with hypertransaminasemia and 5.9% (3.1-9.3%) in cryptogenic hypertransaminasemia. In 97.7% (87.7-99.9%) of patients with cryptogenic hypertransaminasemia, LFTs had normalized within 1 year of starting gluten-free diet (GFD).

Conclusion
The prevalence of CD in cryptogenic cirrhosis and cryptogenic hypertransaminasemia is significantly higher than that in the general population. However, the prevalence of CD in all-cause cirrhosis and hypertransaminasemia is not increased. GFD led to normalization of serum transaminases in most cases of hypertransaminasemia found to have CD. Patients with cryptogenic liver disease should be screened for CD.

Conflicts of interests
All outside the submitted work:

Takeda (C.P.K, D.A.L), Cour (C.P.K), Glutenostics (C.P.K), Innovate (C.P.K), ImmunogenX (C.P.K), Aptalis (C.P.K) pharmaceuticals.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00094

Final poster ID: P1-18

Title: Prevalence and Diagnostic Outcomes of Seronegative Villous Atrophy in Children

Presenting author: Marleena Repo

Co-authors: Marleena REPO (1), Ida GUSTAFSSON (1), Alina POPP (2), Katri KAUKINEN (3), Pauliina HILTUNEN (4), Taina ARVOLA (5), Juha TAAVELA (6), Laura KIVELÄ (1), Kalle KURPPA (4) - (1)Center for child health research, Tampere University, Finlande, (2)Carol Davila University of Medicine and Pharmacy, Roumanie, (3)Department of Internal Medicine, Tampere University Hospital and Celiac Disease Research Center, Tampere University, Finlande, (4)Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, Finlande, (5)Hämeenlinna Central Hospital, Hämeenlinna, Finland and Allergy Centre, Tampere University Hospital, Finlande, (6)Department of Internal Medicine, Central Finland Central Hospital, Finlande

ABSTRACT CONTENT

Objectives
The diagnostics of celiac disease usually begin by measuring transglutaminase 2 antibodies (TG2ab), which might disregard seronegative patients. However, the prevalence and diagnostic outcomes of children with seronegative duodenal atrophy remain unclear. We investigated these issues in two countries with markedly different health care systems and disease profiles.

Methods
Comprehensive medical data and results of TG2ab and endomysium antibody (EmA) measurements, when available, were collected from 1172 Finnish and 264 Romanian children who had undergone diagnostic endoscopy with systematic duodenal sampling in 2007-2014, prospectively since 2012. Celiac disease-associated HLA and intestinal IgA deposits were utilized for differential diagnostics in prospective series. Furthermore, research database of 509 Finnish children with celiac disease was examined for earlier seronegative patients.

Results
Celiac disease was diagnosed in 307 Finnish and 83 Romanian children in the endoscopy cohorts. No seronegative patients were found, although some had only tTGab or EmA positive, and three children had IgA deficiency. Non-celiac duodenal atrophy was detected in eight Finnish and 32 Romanian children. The most common diagnoses in them were inflammatory bowel disease (n=5, 63%) in Finland and bacterial or parasitic infections (n=16, 50%) in Romania. One Finnish and five Romanian children received no diagnosis even in special investigations. None of them became seropositive or developed celiac disease during a long-term follow-up of up to 11 years. There were no earlier TG2ab/EmA negative celiac disease patients in the Finnish celiac disease database, although again some had only the other antibody test positive.

Conclusion
Pediatric seronegative celiac disease is rare in the era of modern serological assays. Other reasons for duodenal injury should therefore be searched, taking into consideration possible country differences.

Conflicts of interests
None.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00109

Final poster ID: P1-19

Title: Assessment of celiac disease severity by video capsule endoscopy with the celiac enteropathy - villous atrophy scale (CE-VAST)

Presenting author: Jenifer Siegelman

Co-authors: Jenifer SIEGELMAN (1), Suzanne K. LEWIS (2), Joseph D. FEUERSTEIN (3), Elliot GREENBLATT (4), Uday BANGIA (4), Daniel A. LEFFLER (5), Daniel S. MISHKIN (6), Joseph A. MURRAY (7), Ozlem YARDIBI (1), Reena SIDHU (8) - (1)Takeda Pharmaceuticals, États-Unis, (2)Department of Medicine, Celiac Disease Center, Columbia University Medical Center, États-Unis, (3)Department of Medicine, Division of Gastroenterology, Beth Israel Deaconess Medical Center, Harvard Medical School, États-Unis, (4)inviCRO LLC, États-Unis, (5)Takeda Pharmaceuticals; Department of Medicine, Division of Gastroenterology, Beth Israel Deaconess Medical Center, Harvard Medical School, États-Unis, (6)Division of Gastroenterology, Atrius Health, Harvard Medical School, États-Unis, (7)Division of Gastroenterology and Hepatology, Mayo Clinic, États-Unis, (8)Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Royaume-Uni

ABSTRACT CONTENT

Objectives
For investigations of celiac disease (CeD) severity, video capsule endoscopy (VCE) has potential advantages over duodenal biopsy by being minimally invasive and providing a high-resolution magnified examination of mucosa, enabling evaluation of enteropathy throughout the small bowel. We have developed a scale for evaluating the degree of enteropathy in CeD VCE frames (Celiac Enteropathy - Villous Atrophy Scale [CE-VAST]) and assessed its inter-reader reliability.

Methods
In a pilot experiment, 4 gastroenterologists with VCE expertise used a visual analog scale to score disease severity in 10 regions from 10 VCE frames demonstrating a spectrum of disease from healthy plush villi through complete villous atrophy obtained from 4 patients with symptomatic CeD. In a confirmatory experiment, 6 gastroenterologists with expertise in VCE scored 15 regions for disease severity from VCE recordings of 5 patients with CeD. Inter-scorer correlation coefficients were determined.

Results
When CE-VAST was used to evaluate disease severity from CeD VCE frames, gastroenterologists had high inter-scorer agreement. In the pilot experiment, inter-scorer correlation coefficients were 0.81–0.96 and mean inter-scorer correlation coefficients of individual scorers were 0.87–0.92. Confirmatory experiment findings supported the pilot study results, with inter-scorer correlation coefficients being 0.85–0.98.

Conclusion
Numerical scoring of disease severity in CeD VCE images showed high inter-scorer agreement, supporting further development of this novel, single-domain visual assessment scale for severity of CeD enteropathy. Further studies are needed to confirm utility of this scale in CeD assessment for research and clinical practice.

Conflicts of interests
SKL: Consultant: Takeda Pharmaceuticals, Invicro

JS, DAF and OY: Employed: Takeda Pharmaceuticals

JDF and RS: Consultant: Takeda Pharmaceuticals

DSM: Owner/consultant: GI reviewers, LCC

JAM: Consultant: Lilly, Amgen, Celimmune, ImmunosanT, in

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00111

Final poster ID: P1-20

Title: Celiac disease and associated dermatological manifestations : a study of 280 patients

Presenting author: Ferdaouss Lamarti

Co-authors: Ferdaouss LAMARTI (1), Imane BENELBARHDADI (1), Mehdi KHALLAAYOUNE (2), Mariame MEZIANE (2), Karima SENOUCI (2), Badreddine HASSAM (2), Fatima-Zahra AJANA (1) - (1)Medicine C Department, Avicenne hospital, Mohammed V University, Maroc, (2)Department of dermatology, Avicenne hospital, Mohammed V University, Maroc

ABSTRACT CONTENT

Objectives
The purpose of this study is to describe the main dermatological manifestations observed during celiac disease (CeD) and to determine the role of gluten free diet (GFD) on their evolution.

Methods
This is a prospective study spread over the year 2018 including 280 patients followed for CeD. The diagnosis of associated skin or mucosal manifestation was based on clinical arguments and specific examinations.

Results
52.5% had at least one associated dermatological manifestation. Nail and hair disorders as weakness or hairloss were found in 26.53%. Oral cavity disorders including glossitis and aphthous stomatitis were present in 9.86 % of cases. Pruritus and xerosis were found in 3.4%. 2.04% of patients had lichen planus. Dermatitis herpetiformis was found in 1.36%. Alopecia areata and rosacea were found in a proportion of 1.7 % for each. Acne, chronic urticaria, eczema, psoriasis, erythema nodosum and vitiligo were present in 1.02%. The other associations found were frontal fibrosing alopecia (0.68%), angioma (0.68%), atopic dermatitis (0.34%) and Behçet's disease (0.34%). Mucosal, nail and hair disorders (except alopecia areata and frontal fibrosing alopecia) were treated by GFD only. An improvement was noted in 97.14% of cases. For all other diseases the GFD was associated to specific treatment.

Conclusion
Several dermatological manifestations could be associated with CeD. Nail and hair disorders are frequent and show a good response to GFD. Mucosal manifestations are also common and in the majority of cases GFD is a sufficient treatment. It is important to emphasize that sometimes the only manifestation of CeD is dermatological. The early recognition of these associated skin diseases may facilitate the diagnosis of CeD.

Conflicts of interests
No conflicts of interest.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00121

Final poster ID: P1-21

Title: Neurlogical manifestations of celiac disease

Presenting author: ANASS Rahaoui

Co-authors: Anass RAHAOUI, Imane BENELBARHDADI, Khaled ABDELWALY, Fatimazahra AJANA - (1)IBN SINA University Hospital,, Maroc

ABSTRACT CONTENT

Objectives
The aim of our study is to highlight the interest of the gluten-free diet on evolution of these magnifestation.

Methods
This is a retrospective study of a series of 284 patients with celiac disease who were treated in our departement "Medicine C" during a period of 23 years.

Results
Of the 284 celiac patients 22 patients had a neurological impairment (7.74%) .Sixteen women and six men with a female predilection of 2.6 .The average age of our patients was 35.5 years. (16 to 55 years old)The neurological involvement was associated with gastrointestinal signs in all patients at the time of diagnosis of celiac disease (95.45%), single patient had an isolated neurological involvement and by which celiac disease was discovered (cerebellar syndrome). The neurological manifestations represented by lower limbs paresthesia ,hypotonia in 11 cases (50%), migraine-like headaches in 4 cases (18.18%), gait and balance disorders related to cerebellar syndrome in 2 cases (9.1%), confusion state in one case (4.54%), epileptic seizures in 2 cases (9.1%), ischemic stroke (ICVS) in 1 case (4.54 %) and psychological manifestations in the form of sleep disorder in 1 case (4.54%). In the long term, the evolution was good with total disappearance of neurological signs and normalization of EMG in 14 patients (63.6%).

Conclusion
Migraine and peripheral neurological manifestations respond to the gluten-free diet. Axial neurological disorders seem to have a severe prognosis in our series.

Conflicts of interests
No conflit of interest to disclose

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00130

Final poster ID: P1-22

Title: Celiac disease and inflammatory bowel disease Association: A report of 8 cases

Presenting author: Khaled Abdelwali

Co-authors: Khaled ABDELWALI, Imane BENELBARHDADI, Anass RAHAOUI, Fatimazahra AJANA - (1)Ibn Sina university hospital, Maroc

ABSTRACT CONTENT

Objectives
The objective of the study is to specify the frequency and evolutionary profile of celiac disease (CeD) and IBD association

Methods
This is a retrospective study between 1995 and 2018.The diagnosis of CeD was based on the assay of anti tissue transglutaminase, antiendomysium and on the histopathological study showing an IEL> 30% with villous atrophy. That of IBD was focused on clinical , endoscopic, radiological, histological arguments

Results
Eight cases of CeD and IBD were diagnosed in a cohort of 284 MC, 847 Crohn's disease and 500 ulcerative colitis. The frequency of the association was 2.55% in the CeD cohort, 0.82% in Crohn's disease, and 0.2% in UC. With female predominance (seven women and one man). All patients were on a gluten-free diet (GFD). The evolution was marked by the persistence of diarrhea in 3 cases (37.5%), weight loss in 2 cases (25%) and rectorrhagia, in 3 cases (37.5%). We eliminated resistance to GSR. Gastrointestinal Fibroscopy and radiological examination showed colonic Crohn's disease in four patients (50%), gastrocolic in three patients (37.5%) and UC in one patient (12.5%). GFD was followed by treatment of IBD with clinical and endoscopic improvement

Conclusion
The coexistence CeD and IBD is possible whatever rare. It should be inspected when there is good compliance with the GFD but persistence or appearance of other suggestive symptoms

Conflicts of interests
No conflicts of interestas

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00132

Final poster ID: P1-23

Title: Endoscopy to Evaluate Suspected Celiac, is Visual Assessment of Esophagus and Stomach Enough?

Presenting author: M Cristina Pacheco

Co-authors: M Cristina PACHECO (1), Nicole GREEN (2), Jane DICKERSON (3), Dale LEE (2) - (1)Seattle Children's Hospital Department of Laboratories, University of Washington Department of Pathology, États-Unis, (2)Seattle Children's Hospital Department of Gastroenterology and Hepatology, University of Washington Department of Pediatrics, États-Unis, (3)Seattle Children's Hospital Department of Laboratories, University of Washington Department of Laboratory Medicine, États-Unis

ABSTRACT CONTENT

Objectives
Endoscopy(END) with duodenal (DUO) biopsy (BX) remains the standard for diagnosis of celiac disease (CD) in pediatric patients in the United States. At the time of END patients frequently undergo BX of the esophagus (ESOPH) and stomach (STOM) in addition to the DUO. The aim of our study was to determine whether visual assessment (VA) of the ESOPH and/or STOM could predict need for BX of these sites and to determine frequency of interventions made based on these BX in patients undergoing BX for elevated tissue transglutaminase IgA (TTG).

Methods
Pathology (PATH) records were searched for END with indication listed as abnormal, celiac, or TTG. The medical record was used to verify elevated TTG within 1 year prior to BX and no prior diagnosis of CD, eosinophilic esophagitis, or inflammatory bowel disease and BX from at least ESOPH or STOM in addition to DUO. PATH report, END report, and follow-up were obtained from the record and slides from the DUO were scored according to Marsh. END VA and PATH results were dichotomized, normal/abnormal, and PATH was used as gold standard for sensitivity (SEN) and specificity (SPEC) calculations.

Results
239 patients were included, mean age 10.5 years. 214 ESOPH BX were performed. ESOPH END VA had SEN of 41% and SPEC of 95%. 19 (8%) patients had drug therapy or referral related to results of the ESOPH BX and 9 (5%) of these patients had visually normal END. 236 BX were performed of the STOM and VA had SEN of 20% and SPEC of 88%. 19 (8%) patients had drug therapy based on findings, and of these, 13 (6%) had visually normal END. Of the 239 DUO BX, 175 were significant for Marsh type 1, 2, or 3 PATH and 176 patients started a strict gluten free diet; 7 patients had DUO PATH not attributed to CD.

Conclusion
Concurrent BX of the ESOPH and STOM at the time of DUO BX for suspected CD yields unsuspected PATH in a number of cases leading to medical intervention. Given low SEN of VA and cost of END, benefits of doing these BX may outweigh cost and risk.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00133

Final poster ID: P1-24

Title: The Utility of IgA Based Serologic Markers in Diagnosing Celiac Disease in Children ≤24 Months of Age

Presenting author: Imad Absah

Co-authors: Imad ABSAH (1), Muhammad Rehan KHAN (2), Jocelyn SILVESTER (1), Brandon SPARKS (3), Ivor HILL (3) - (1)Mayo CLinic, États-Unis, (2)Boston Children's Hospital, États-Unis, (3)Nationwide Children's Hosptial, États-Unis

ABSTRACT CONTENT

Objectives
Immunoglobulin A based serologic markers are highly sensitive and considered the first line tests for screening and diagnosing (CD) in both adults and children. However, current recommendation is to do IgG based test in addition to the IgA based test out of concern for the TTG-IgA being less reliable in the younger children. We aimed to assess the sensitivity of anti TTG-IgA in children ≤24 months of age.

Methods
We conducted a multicenter retrospective study of children ≤ 24 months with CD diagnosis, by reviewing the electronic records of Mayo Clinic, Nationwide Children's Hospital and Boston Children's Hospital (1997-2018). Demographics, notes, labs and pathology reports were reviewed for data collection. Small bowel biopsy (SBB) findings were classified according to modified Marsh classification into Marsh1 if they had intraepithelial lymphocytes (IEL's) only, Marsh 3b with partial villous atrophy (VA) and 3c with complete VA. This study was approved by the local institutional IRB's at all 3 study sites.

Results
A total of 147 children aged ≤24 months were identified based on clinical presentation and biopsy findings suggestive of CD. Mean age of diagnosis was 18 months (SD of 4.4) with male to female ratio of 1:2.3. Serum IgA level was measured in 126 children, mean 118 (SD 92) and 5 (4%) were IgA deficient. SBB showed Marsh 1 in 8.2%, Marsh 3b in 21.8% and Marsh 3c in 70% of children. Kruskal-Wallis Test was utilized showed high correlatiotn between anti TTG IgA value and histologic findings (p value 0.003). Anti TTG-IgA level was significantly higher in children with Marsh 3c as compared to Marsh 3b (p-value 0.009) or Marsh 1 (p-value 0.010). All five patients with IgA deficiency were diagnosed based on IgG based serologic markers (4 had positive TTG-IgG and 1 had positive DGP-IgG).

Conclusion
In this cohort positive anti TTG IgA correlated with the presence of villous atrophy and CD diagnosis, suggesting that as long as serum IgA level is normal, IgA based TTG test is reliable and should remain the recommended screening test in all children including ≤24 months of age.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00134

Final poster ID: P1-25

Title: Coeliac disease and reproductive disorders: correlation and evolution under gluten-free diet

Presenting author: Manal Mahmoudi

Co-authors: Manal MAHMOUDI, Imane BENELBARHDADI, Camelia BERHILI, Amal CHAKKOR, Nawal LAGDALI, Fatima-Zahra AJANA - (1)Medicine C Department Avicenne Hospital Mohamed V University, Maroc

ABSTRACT CONTENT

Objectives
The aim of our study is to estimate the risk of reproductive disorders in a cohort of 284 patients with the coeliac disease and their evolution under Gluten free diet.

Methods
It's a retrospective and descriptive study including 284 patients with coeliac disease enrolled within period of 23 years from 1995 to 2018 in Medicine C Department at Avicenne Hospital Mohamed V University

Results
About 284 patients suffering from coeliac disease,77 patients presented reproductive disorders, either 27,1% with Odds Ratio (OR) was 8,3 (95% confidence interval [CI] 1,78–37,26). The sex ratio was 0,10. The mean age was 31 years ranging from 14 to 53 years.The reproductive disorders were never isolated but always associated with digestive or extra digestive symptoms at the time of the diagnosis of coeliac disease.These disorders were manifested by : retarding puberty in 10 cases 12,9%, secondary amenorrhea in 8 cases, Irregular cycle 13 cases, absence of development of secondary sexual characters in 8 cases 10,4%, spontaneous abortion in 7 cases, menometrorrhagia in 7 cases, primary sterility in 5 cases, precocious menopause in 8 cases, premature labor in 3 cases, primary amenorrhea in 7 cases, and intra-uterine fœtal death in one case. All our patients benefited from a Gluten Free Diet.15 patients were excluded from the study, 3 patients died, and 15 patients are still under follow up. Of the 44 patients stayed, the evolution of the reproductive disorders under Gluten Free Die was good in 41 cases 93%,with normalization of the cycles in 15 cases,The cycle was returned in 8 cases, development of secondary sexual characters in 6 cases,fertility was returned in 4 cases... In our series we found two risk factors for the development of these disorders in cases of MC which are: the diagnostic delay OR equal to 4 and a gluten-free diet not followed OR 12.

Conclusion
Reproductive disorders related to the coeliac disease were frequent and variable. In our study, these disorders well responded to the gluten free diet in 93% of cases, and these disorders were reversible under Gluten free diet.

Conflicts of interests
No conflicts of interests

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00135

Final poster ID: P1-26

Title: Is celiac disease a cause of venous thrombosis? Experience of a Moroccan university department.

Presenting author: Soukaina Zertiti

Co-authors: Soukaina ZERTITI, Imane BENELBARHDADI, Fatima-Zahra AJANA - (1)Medicine C Department, Avicenne Hospital, Mohammed V university, Maroc

ABSTRACT CONTENT

Objectives
The main of our study is to determine the prevalence and characteristics of thrombosis during celiac disease and to objectify the contribution of gluten-free diet (GFD) combined with anticoagulant treatments in their treatment.

Methods
It is a retrospective and descriptive study of 12 thrombosis observations among a cohort of 284 patients diagnosed with celiac disease between 1995 and December 2018. Thrombosis characteristics and associated risk factors were studied.

Results
The prevalence of thrombosis in our series is 4.28% which were venous thrombosis in all cases. All our patients were female, with a mean age of 42,5 years with extremes [21-64 years].

Thrombotic events preceded the diagnosis of celiac disease in 36.3% of cases, or were concomitant to diagnosis in 45.4% of cases.

The thrombosis site was dominated by the portal trunk (n = 5), the spleno-mesareic trunk (n = 2), more severe localizations in 3 cases (one case of cerebral thrombophlebitis, one case of massive pulmonary embolism complicating thrombosis of the common femoral vein and one case of multifocal thrombosis), Budd-Chiari syndrome (n = 1) and thrombosis of the popliteal vein (n = 1).

Risk factors for thrombosis were identified, it was hyper-homocysteinemia in 41.6% (n = 5), a deficit of protein C and S in 27.2% (n = 3), Anti-phospholipid antibodies were positive in 27.2% (n = 3) and severe hypoalbuminemia (<10g / l) in 1 patient. Note that one of our patients was on oral contraception.

Our patients were put on anticoagulant treatment associated with GFD. The evolution was marked by the death of 2 patients (the patient who had cerebral thrombophlebitis and the one who had a massive pulmonary embolism).

Conclusion
Our study confirms the association of venous thrombosis with celiac disease. The well-followed gluten-free diet associated with anticoagulant treatment had allowed venous repermeabilisation in our celiac patients in 83.3% of cases.

Conflicts of interests
No conflict of interest.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00144

Final poster ID: P1-27

Title: Significance of the severity of diagnostic lesion in pediatric celiac disease: do we need the biopsy for prognostic reasons?

Presenting author: Sofia Kröger

Co-authors: Sofia KRÖGER (1, 2), Kalle KURPPA (3), Taina ARVOLA (4), Heini HUHTALA (5), Katri KAUKINEN (6), Katri LINDFORS (7), Laura KIVELÄ (8) - (1)Tampere Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital - Tampere (Finland), Finlande, (2)Faculty of Medicine and Health Technology, Tampere University, Finlande, (3)Tampere Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, Finlande, (4)Tampere Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, and 3Department of Pediatrics, Hospital District of Kanta-Häme, Hämeenlinna, Finlande, (5)Faculty of Social Sciences, Tampere University, Finlande, (6)Department of Internal Medicine, Tampere University Hospital, and Celiac Disease Research Center, Tampere University, Finlande, (7)Celiac Disease Research Center, Tampere University, Finlande, (8)Tampere Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, and New Children's Hospital, Helsinki University Hospital, Helsinki, Finlande

ABSTRACT CONTENT

Objectives
Current guidelines allow non-invasive diagnosis of celiac disease in selected children. We investigated whether the severity of histopathology at diagnosis is associated with other diagnostic features or long-term health outcomes thus having also a prognostic significance.

Methods
Comprehensive medical data of 906 children diagnosed with celiac disease by duodenal biopsy were collected. Furthermore, a specific study questionnaire evaluating long-term health outcomes, PGWB questionnaire for health-related quality of life and GSRS for gastrointestinal symptoms were sent to 503 currently adult patients.

Results
Altogether, 34% of patients had partial, 40% subtotal and 26% total villous atrophy at diagnosis. Children with a more advanced lesion were diagnosed during earlier years (median 2007 vs 2006 vs 2001, $p<0.001$), less often by screening (30% vs 25% vs 17%, $p<0.001$) and had more anemia (16% vs 21% vs 32%, $p<0.001$) and growth disturbances (22% vs 36% vs 54%, $p<0.001$). They also had lower hemoglobin (median 126 g/l vs 124 g/l vs 121 g/l, $p=0.002$) and higher TG2ab (median 64 U/l vs. 120 U/l vs. 120 U/l, $p<0.001$) values. There was no difference between the histopathology groups in gender (girls 63%), age (median 7.7 [IQR 4.4, 11.9]) or other diagnostic features. Altogether 212 adults answered the questionnaires median of 18 years after the diagnosis. Severity of diagnostic histopathology in the responders was comparable to the whole cohort and it was not associated with the presence of celiac disease-associated complications or comorbidities, persistent symptoms, adult height, self-perceived health or quality of life.

Conclusion
Presence of advanced histological damage is associated with more severe clinical features at childhood diagnosis but not with poorer long-term health outcomes in celiac disease. The results indicate that duodenal biopsy is not needed for prognostic purposes in children.

Conflicts of interests
None.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00146

Final poster ID: P1-28

Title: Dermatitis Herpetiformis in Childhood and Linking Dermopathy to Enteropathy

Presenting author: Arunjot Singh

Co-authors: Arunjot SINGH, Lydia RAMHARACK, Aisha SATTAR, Lionola JUSTE - (1)Children's Hospital of Philadelphia, États-Unis

ABSTRACT CONTENT

Objectives
Dermatitis herpetiformis (DH) is a rare, gluten-sensitive dermopathy that remains poorly characterized in children. Our aim is to measure the incidence of pediatric DH and improve understanding of the clinical presentation along with its natural history to celiac disease (CD).

Methods
This retrospective cohort study included patients from 2007-2019 at the Children's Hospital of Philadelphia. Patients were identified using ICD-9 codes for DH and included in analysis if there was histologic confirmation of DH by skin biopsy. Data gathered included demographics, pathology reports, celiac serologies, symptoms, diet and medications. Descriptive statistics and paired t-test using Microsoft Excel was used for analysis.

Results
Twenty patients were identified with DH through the query of which 11 met inclusion criteria. Majority identified as non-Hispanic white (82%), female (73%) with ages 5-19 years at diagnosis. The primary gastrointestinal symptom reported is abdominal pain, and extraintestinal, joint pains. In DH cases with celiac serologies performed (n=10), five had a positive screen. In those positive, four had severe intestinal damage (Marsh 3a or greater) on endoscopy and one had normal pathology. All serology negative cases with endoscopy (n=3) had unremarkable duodenal histology. Limitations include starting a gluten-free diet or pharmacotherapy (steroids/dapsone) prior to celiac testing. Mean time between diagnosis of DH and endoscopy was 168 days.

Conclusion
DH can present in children of all ages, although the low incidence and diagnostic challenges impede our clinical understanding. There may be a stronger correlation between symptoms of CD in this DH cohort than previously reported. Specificity of celiac serology may also differ in DH patients, although there remains a strong association with CD that needs to be studied further to enhance diagnostics and prospective drug trials.

Conflicts of interests
The authors have no conflicts of interest.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00148

Final poster ID: P1-29

Title: Severe hepatopathy and celiac disease.

Presenting author: Mohammed Firwana

Co-authors: Mohammed FIRWANA, Imane BENELBERHDADI, Ayoub AOMARI, Fatima Zahra AJANA - (1)Medecin c CHU Rabat University mohammed 5, Maroc

ABSTRACT CONTENT

Objectives

Celiac disease is an autoimmune enteropathy linked to gluten intolerance, a disease with a genetic predisposition. Hepatic injury is one of the most common extraintestinal manifestations. We report our experience on cases of severe cryptogenetic liver disease and celiac disease.

Methods

This is a descriptive retrospective study in the department of diseases of the digestive system Medicine C, including all cases of chronic liver disease associated with celiac disease. We excluded from this study the other causes of chronic liver disease.

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Results

Of a total of 248 cases of celiac disease observed in our department, 78 cases (31.5%) had chronic associated liver disease, including 05 cases of severe liver disease. There are 3 women and 2 men with a sex ratio F / H of 1.5, the average age was 35 years [25-57]. The diagnosis of celiac disease was made before the appearance of chronic liver disease in 04 patients with an average delay of 9.5 years, whereas only one patient had a chronic liver disease diagnosed 05 years before the discovery of celiac disease. The reason for consultation was mainly malabsorption diarrhea (5 cases). The physical examination found a syndrome of portal hypertension in 3 cases and is normal in 2 cases. In the biology, there was anemia in 4 cases including one case of pan cytopenia, one hepatic cytolysis in 4 cases. . The abdominal ultrasound showed a chronic hepatic appearance in 4 cases and normal in one case. The etiological balance of cytolysis was negative (B, C, autoimm, overload). Upper digestive endoscopy showed a rarefaction of duodenal folds in 3 cases, with signs of HTP in all patients. The histopathological study of the biopsies showed IEL> 30% with villous atrophy in all patients. The liver biopsy puncture, showed severe fibrosis (F3) in 03 cases and cirrhosis in 2 cases. All our patients are on gluten-free diet, . The evolution was marked by a stabilization of chronic liver disease and its complications.

Conclusion

Celiac disease can lead to severe chronic liver disease. 7.6% in our series. Gluten-free diet had a big impact on the stability of the disease (80%).

Conflicts of interests
pas de conflit d'interet

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00150

Final poster ID: P1-30

Title: Should we always perform bulbar biopsies in celiac disease?

Presenting author: ayoub Aomari

Co-authors: Ayoub AOMARI, Imane BENELBERHDADI, Mohammed FIRWANA, Fatima Zahra AJANA - (1)Medecin c CHU Rabat University mohammed 5

ABSTRACT CONTENT

Objectives
Celiac disease (CD) is an autoimmune inflammatory enteropathy that corresponds to an inappropriate mucosal immune response to gluten proteins. His diagnosis is mainly based on histological lesions at the 2nd and 3rd duodenum. The aim of this work is to check if bulbar biopsies can improve the diagnosis of this disease

Methods

This is a descriptive and analytical retrospective study that includes patients with certain celiac disease and in whom both bulbar biopsies and duodenal biopsies were performed.

Results
For a total of 284 patients followed for celiac disease, 44 patients meet the inclusion criteria. The average age of patients was 37.9 years [14-70]. There were 46 women and 15 men with a sex ratio F / H 3.6. Clinically, 68.18% had chronic diarrhea and abdominal pain, 23% had isolated abdominal pain and 14% had an isolated anemic syndrome. Upper gastrointestinal fibroscopy regained an appearance suggestive of celiac disease in 75%. The histological study showed an isolated bulbar wait with intraepithelial lymphocytosis (IEL)> 30% and villous atrophy in 5 cases (8.1%). The duodenum involvement associated with bulbar involvement was found in the rest of the patients, 56 cases (91%). It should be noted that in 09 cases (14%) the IEL was more marked at the bulbar than at the duodenal level

Conclusion

Bulbar biopsies made it possible to establish the diagnosis of celiac disease in 8.1% of cases, which justifies their achievement in this disease.

Conflicts of interests
pas de conflit d'interet

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00153

Final poster ID: P1-31

Title: Is there any correlation between serology and histology in celiac disease.. ?

Presenting author: MAHMOUDI Manal

Co-authors: Mahmoudi MANAL, Oussama KHARMACH, Imane BENELBARHDADI, Fatima Zohra AJANA - (1)Department C of the University Hospital of Rabat, University Mohammed V, Maroc

ABSTRACT CONTENT

Objectives
The celiac disease is an autoimmune enteropathy affecting the small intestine in genetically predisposed individuals induced by gluten ingestion. The diagnosis is evoked by clinical, biological, serological arguments but confirmed histologicaly (intraépithélial lymphocytes increase +/- villous atrophy). The aim of our work is to study the relationship between serological Antibody (Ab) rates in patients with celiac disease and the histological outcome of duodenal biopsy.

Methods
A retrospective study collecting over a period of 11 years patients followed for celiac disease, undergone an upper gastrointestinal endoscopy with duodenal biopsy and serological dosage of celiac disease Antibodies. We devided the patients into 3 categories : category I (type 0, 1 and 2 of Marsh), category II (type 3a), category III (type 3b and 3c). The Kruskal-Wallis test for nonparametric variables was used to study the relationship between the targeted parameters. Patients with seronegative celiac disease were excluded.

Results
112 patients were included, they were 34.52 years of mean age, with a female predominance (sex-ratio = 3.84), a family history of celiac disease was found in 11.9% of patients. All subjects were symptomatic with presence of celiac disease Ab. The endoscopic appearance was suggestive of celiac disease in 56.64% of cases. Histology concluded to Marsh type 0 in 7.14% of cases, type 1 in 7.14%, type 2 in 3.57%, type 3a in 8.92%, type 3b in 23.21%, type 3c in 50%. The statistical study showed that there is a significant relationship ($P < 0.001$) between the antibody level and the histological severity.

Conclusion
According to our study, the higher the level of the antibody, the more severe the histological involvement, vice versa. Hence, the interest of dosing of Ab after 6 months of starting gluten-free diet and repeat duodenal biopsy after 18 to 24 months of diet for celiac disease monitoring.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00163

Final poster ID: P1-32

Title: Comparison between axial and lateral/panoramic view capsule endoscopy in patients with celiac disease: results from a prospective randomized study

Presenting author: Luca Elli

Co-authors: Luca ELLI, Federica BRANCHI, Stefania ORLANDO, Gian Eugenio TONTINI, Francesca FERRETTI, Roberto PENAGINI, Maurizio VECCHI - (1)1 Division of Gastroenterology and Endoscopy - Center for Prevention and Diagnosis of Celiac Disease, Fondazione IRCCS Ca'Granda Ospedale Maggiore Policlinico, Italie

ABSTRACT CONTENT

Objectives
Small bowel capsule endoscopy (CE) is recommended in the management of complicated celiac disease (CD) to detect malignancies or to evaluate alterations of small bowel mucosa. However, published data derive from axial view capsule systems. No data are available about the use of the lateral/panoramic view capsules. The aim of this study was to evaluate diagnostic yield (DY) and efficacy of the lateral/panoramic vs axial view capsule system in CD patients.

Methods
Consecutive CD patients were enrolled in a prospective, randomized monocentric study. Each patient ingested an axial (PillCam SB3) and a lateral/panoramic (CapsoCam Plus) view capsule with an interval of 3h in a randomized order. Two physicians, expert in capsule endoscopy, evaluated the investigations blindly. In case of discordance a third expert reviewed the videos.

Results
25 CD patients were enrolled in the study (4 males, age at CE 51±16, age at CD diagnosis 42±20, years on a gluten free diet (GFD) 10±9). Indications at CE were: refractory CD in 9 cases, unresponsiveness to GFD in 11 and GFD uncompliance in 5. In 2(8%) cases CapsoCam was not retrieved by the patient. No interference between the two capsules was noted. In 20 cases the enteroscopy was complete in both Pillcam and CapsoCam. In the 23 analyzed cases, CapsoCam evidenced a positive finding in 15(65%) compared to the 13(56%) cases evidenced by Pillcam (not significant). Atrophy was detected by both the capsules. Considering the percentage small bowel mucosa presenting signs of atrophy, the mean values were 22%±35 and 20%±29 for lateral/panoramic and axial systems, respectively (not significant). Compared to duodenal histology, PillCam correctly identified the 85% of patients with SB atrophy, CapsoCam identified 78% of cases.

Conclusion
Lateral/panoramic view capsule endoscopy is effective in the detection of small bowel atrophy and presents a good sensitivity and specificity when compared to histology in CD patients.

Conflicts of interests

No conflicts of interests

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00164

Final poster ID: P1-33

Title: Compliance With Guideline Recommended Biopsy Protocol In Consecutive Incident Cases Of Celiac Disease: A Retrospective Study From A Tertiary Care Institution

Presenting author: William Kessler

Co-authors: William KESSLER - (1)Indiana University Medical Center, États-Unis

ABSTRACT CONTENT

Objectives
Several studies indicate that inadequate sampling occurs in the majority of cases performed evaluating for Celiac Disease (CeD) (Rostami 2011, Shaman 2017). We assessed the adherence to guideline-driven biopsy protocols for incident cases of CeD and characterized management patterns in a tertiary care institution without a dedicated CeD program.

Methods
We retrospectively evaluated 31 consecutive, incident cases from 2010 to 2019 of CeD at Indiana University Medical Center having undergone endoscopic biopsy for indications suggestive of CeD with Marsh-Oberhuber Type 3 pathology in the absence of other diagnoses. Age, gender, indication and description of duodenal mucosa, and biopsy data were recorded. Results were compared to two guideline recommendations. Baseline and follow up serologies, dietitian consultation, bone density testing, testing for abnormalities of malabsorption, and office follow up were measured.

Results
74.2% were female with a mean age of 44.7 (s.d. 16.3) years (range 19-87). The most common indications were iron deficiency anemia (38.7%) and chronic diarrhea (19.4%). Biopsies from 83.9% of cases were submitted in a single container; the number of biopsies ranged from 1 to 11 (mean of 5.6, (s.d. 2.66), median 5, [IQR= 5-7]). 96.7% of procedures included ≥ 4 biopsies and 50% of procedures included ≥ 6 biopsies. Abnormalities suggestive of CeD were described in 61.3% of cases. Office follow up and dietitian consultation occurred in 87.1% and 55% of cases, respectively. Bone density testing was ordered in 38.7% and was abnormal in 90% of studies.

Conclusion
Among consecutive incident patients with CeD, nearly all had at least 4 and half had at least 6 biopsies. Adherence is comparable to studies for taking ≥ 6 biopsies but substantially higher for ≥4 biopsies. The majority followed up with a gastroenterologist and were referred to a dietitian and, when obtained, had abnormal bone density. Bone density testing in CeD warrants greater attention.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00165

Final poster ID: P1-34

Title: High prevalence of irritable bowel sydrome diagnosis in patients referred to Adult Celiac Disease Clinic - lack of knowledge of differential diagnosis or insufficent recognition of guidelines?

Presenting author: Silvija Cukovic-Cavka

Co-authors: Silvija CUKOVIC-CAVKA, Ivana KNEZEVIC STROMAR, Marina PREMUZIC, Mislav JELAKOVIC, Ana KULIC, Nadan RUSTEMOVIC, Zeljko KRZNARIC - (1)University Hospital Centre Zagreb, Croatie

ABSTRACT CONTENT

Objectives
Differential diagnosis of celiac disease (CD) in adult population is very broad. Clinical symptoms of irritable bowel syndrome (IBS) very often overlap with CD especially in the field of altered gut motility. Sometimes symptoms are so similar that cause a confusion in the diagnostic approach. However, there are some other rare diseases they can mimic celiac disease picture. Differential diagnosis of duodenal mucosal atrophy also coud be a cause of doubt and wrong working diagnosis.

Methods
We analyzed retrospectivelly medical records of 301 patients (pts) referred by family doctors or local gastroenterologists (GIs) to Adult Celiac Disease Clinic at University Hospital Center Zagreb with suspicion on celiac disease. All pts were reviewed by gastroenterologist dedicated to diagnostics and treatment of adult celiacs.

Results
The final diagnosis of celiac disease was confirmed in 135 pts. The rest of the patients, 166/301, had non-celiac enteropathy: 108 pts had IBS, 36 had non-celiac gluten sensitivity, 7 pts had lactose intolerance, 5 pts had microscopic colitis, 4 of them had wheat allergy, 4 pts had diverticulosis, 1 had Whipple disease, and 1 had chronic intestinal pseudoobstruction. The most common differential diagnosis in pts referred to Adult Celiac Disease Clinic was IBS diagnosed in 65.06% (108/166) non-celiac patients with symptoms suggestive of CD.

Conclusion
Differential diagnosis of celiac disease in adults is very heterogenous and it's obvious that is very important to stress the greater need for implementation of guidelines in clinical practice, especially national celiac disease guidelines and Rome IV Criteria for diagnosing accurately CD and IBS in family practice and local GI Clinics.

Conflicts of interests
Authors declare no conflict o interests.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00172

Final poster ID: P1-35

Title: Comparative performance of commercial diagnostic antibody tests in celiac disease patients with and without intestinal abnormalities

Presenting author: Daan Castelijn

Co-authors: Daan CASTELIJN (1), Gary NORMAN (2), Krista HUFF (2), Jolien HOLLANDER (1), Mary Ann AURE (2), Michael MAHLER (2), Chris MULDER (3), Hetty BONTKES (3) - (1)Department of Clinical Chemistry, Medical Immunology Laboratory, AI&I Institute, Amsterdam UMC, Vrije Universiteit, Pays-Bas, (2)Research and Development, Inova Diagnostics, États-Unis, (3)Department of Gastroenterology and Hepatology, AG&M Research Institute, Pays-Bas

ABSTRACT CONTENT

Objectives

Most celiac disease (CD) antibody assays have high sensitivity and specificity, however discrepancies between serology and histology of duodenal biopsies occur. Previous work suggested that the QUANTA Flash chemiluminescent immunoassay (CIA) tissue transglutaminase antibody IgA(tTGA) assay may be more sensitive compared to the Thermo Fisher Phadia fluoroenzyme immunoassay (FEIA) tTGA assay. Our aim was to compare the performance of both assays in adult patients with undetectable to intermediate positive anti-tTGA titers.

Methods

Sera from adult patients selected based on tTGA titers below 100 AU/ml (Phadia FEIA)and histology, diet, and diagnosis were included in this retrospective study. Two groups were defined: CD patients with a Marsh score ≥3 (n=37, CD≥M3) and patients suspected of CD (based on serology and initial complaints), but determined not to have CD (n=9, Disease Controls, DC). CD diagnosis was based on clinical and laboratory parameters and responsiveness to gluten-free diet. Tissue transglutaminase IgA and deamidated gliadin peptide antibody (DGP) IgA and IgG levels measured by QUANTA Flash CIA (Inova Diagnostics) and EliA FEIA (Thermo Fisher) assays.

Results

Within the CD≥M3 group, 78.% were positive for tTGA by FEIA and 94.6% positive by CIA, while in the DC group respectively 55.6% and 77.8% of the sera were positive. For DGPA-A 33.3% (FEIA) and 75.8 % (CIA) of the CD≥M3 group was positive versus 11.1% and 33.3% respectively in the DC group. For DGPA-G, 72.7% (FEIA) and 75.8% (CIA) of the CD≥M3 patients were positive versus 66.7% and 55.6% in DC.

Conclusion

In this highly selected cohort, both tTGA and DGPA-A CIA assays demonstrated higher sensitivity compared to FEIA assays, however there was an increase in apparent false positives by CIA in a small group of patients initially suspected of CD who were eventually determined not to have CD. The performance of DGPA-G assays was similar on both platforms in this patient group.

Conflicts of interests

GLN, KAH, MAA, MM are employees of INOVA Diagnostics

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00177

Final poster ID: P1-36

Title: The Impact of gluten challenge with different doses of gluten in patients with irritable bowel syndrome

Presenting author: Mohammad Rostami-Nejad

Co-authors: Mohammad ROSTAMI-NEJAD (1), Kamran ROSTAMI (2), Saeede SAADATI (3), Amir SADEGHI (1), Hamid MOHAGHEGH-SHALMANI (1), Mohsen NOROUZINIA (1), Mohammad-Reza ZALI (1) - (1)Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (2)Department of Gastroenterology MidCentral District Health Board, Palmerston North Hospital, Nouvelle-zélande, (3)Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d'

ABSTRACT CONTENT

Objectives
The major dilemma in medical practice is the gluten tolerance assess in IBS patients and evaluation of symptoms in the different dosage of gluten challenge. For this purpose, we evaluated the effect of controlled gluten challenge on the symptoms of IBS patients.

Methods
In this trial, 20 participants were asked to follow low FODMAP+ strict gluten-free diet for 6 weeks. Then all patients received special bread containing 8 g/ gluten for 2 weeks. Those who had tolerance to the prescribed dose received 16 g/d for more 2 weeks. Then tolerated patients took 32 g/d for a further 2 weeks. All patient were asked to complete a symptoms questionnaire with an array of 10-cm visual analog scales (VASs) concerning the level of health condition satisfaction and severity of specific symptoms. Patients' symptom scores in the phase-0 (at the beginning of the study) and pre-grouping phase (after 6 weeks receiving FODMAP regimen and gluten-free diet) were compared between three groups.

Results
5 of 20 (25%) tolerated up to 8 g and rolled out, then 3 of 15 patients (20%) tolerated up to 16 g, and 7 of 12 patients (55%) 32 g gluten. There was no significant difference for symptoms' score in phase 0 between 3 groups. After 6 weeks of following gluten-free and low FODMAP diet, symptoms scores including pain severity (p=0.430), pain frequency (p=0.162), bloating (p=0.671), satiety (p=0.675), impact on community function (p=0.496), defecation time per day (p=0.495), defecation type (p=0.940), and total score (p=0.740) didn't have significant differences between three subgroups.

Conclusion
It seems that IBS patients are tolerance to high dosage of gluten and in addition to low FODMAP+ strict gluten-free diet other cause of symptoms should be considered.

Conflicts of interests
no conflict of interest

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00182

Final poster ID: P1-37

Title: How low FODMAP gluten free diet affect the anxiety level in patients with irritable bowel syndrome?

Presenting author: Mohsen Norouzinia

Co-authors: Mohsen NOROUZINIA (1), Mohammad ROSTAMI-NEJAD (1), Saeede SAADATI (2), Hamid MOHAGHEGH-SHALMANI (1), Amir SADEGHI (1), Kamran ROSTAMI (3), Mohammad Reza ZALI (1) - (1)Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (2)Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (3)Department of Gastroenterology MidCentral District Health Board, North Hospital, Nouvelle-zélande

ABSTRACT CONTENT

Objectives
Anxiety is a prevalent psychological manifestation in IBS patients which can exacerbate patients' symptoms. We designed a trial to evaluate the efficacy of FODMAP plus gluten-free diet on the anxiety level among IBS patients.

Methods
In this randomized controlled trial, participants were asked to follow a low FODMAP+ strict gluten-free diet for 6 weeks according to the Salerno expert criteria. Celiac disease and wheat allergy excluded if serology and histological evaluations and wheat-specific IgE levels were negative, respectively. Then all patients were randomly allocated to one of the following groups: Group A (n=15): continued low FODMAP and gluten free diet for more 6 weeks; Group B (n=10): received regular gluten containing diet for 6 weeks. Participants were asked to fill the Zung anxiety questionnaire, at the beginning and completion of the study. A symptoms questionnaire with an array of 10-cm visual analog scales (VASs) concerning the level of health condition satisfaction and severity of specific symptoms were completed weekly.

Results
Anxiety symptoms were reported in 47% of patients. Female patients had a higher anxiety index than male patients. Using ANCOVA test revealed that there was a significant reduction in getting upset and feeling panicky (p=0.04) for group B compared another group.

Conclusion
The result of this study showed that anxiety is prevalent in IBS patients, the woman is more affected than man and low FODMAP plus gluten-free diet has no significant effect on anxiety scores.

Conflicts of interests
no conflict of interest

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00184

Final poster ID: P1-38

Title: Neurocognitive and Behavioral Functioning Following Initiation of a Gluten Free Diet in Children with Celiac Disease

Presenting author: Lesley Small-Harary

Co-authors: Lesley SMALL-HARARY, Ada LEE, Sherin DANIEL, Denease FRANCIS, Janet FISCHEL, Anupama CHAWLA - (1)Stony Brook Children's Hospital, États-Unis

ABSTRACT CONTENT

Objectives
The goal of this pilot study is to determine if dietary elimination of gluten in children with Celiac Disease leads to improvement in neurocognitive and behavioral functioning.

Methods
This is a prospective study that assesses children in behavior and neurocognition both before the initiation of a gluten free diet (GFD) and six months later. Patients between 6-18 years of age who had both abnormal celiac serology and biopsy proven Celiac Disease were invited to enroll in the study. Three neuropsychological and behavioral assessments were used before and after a GFD:

1) The Kaufman Brief Intelligence Test, Second Edition (KBIT2)

2) The Conners Continuous Performance Test 3rd Edition (CPT3)

3) The Achenbach Child Behavior Checklist for Ages 6-18 (CBCL)

At six month point their serology was reassessed to follow compliance to the GFD and response to therapy.

Results
Fifteen patients completed pre and post testing. Using dependent T-tests for analysis, there was neither significant improvement nor worsening of intellectual assessment on the KBIT2 when comparing scores at diagnosis to scores 6 months after initiation of a GFD. Neither were there significant changes in attentional symptomatology (inattentiveness, impulsivity, sustained attention and vigilance) in the same time frame on the four measures of the CPT3. On the CBCL, parent ratings provided no significant increase or decrease in T-scores reflective of attentional characteristics consistent with DSM diagnosable ADHD. However, there was improvement in somatic symptoms reported by parents on the CBCL when comparing symptoms at diagnosis to 6 months after starting the GFD (p=0.051).

Conclusion
This study is consistent with other studies showing that patients with Celiac Disease improve clinically on a GFD. However, in our study we have found there is no effect of a GFD on neurocognitive and behavioral functioning. Our pilot project is the first to evaluate change in neurocognitive and behavioral characteristics prospectively and with several well-established measures both parent reported and in direct child assessment.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00189

Final poster ID: P1-39

Title: celiac disease associated with plummer-vinson syndrome

Presenting author: sanae Lajouad

Co-authors: Sanae LAJOUAD, Imane BENELBAGHDADI, Fatima Zahrae AJANA - (1)CHU Ibn SINA, Maroc

ABSTRACT CONTENT

Objectives
Plummer-Vinson syndrome (VPS), also known as sideropenic dysphagia. His association with celiac disease has been rarely reported. The aim of this work is to determine the clinical characteristics of patients with SPV on celiac disease and the evolutionary profile

Methods
This is a descriptive retrospective study spanning a period of 26 years, from January 1993 to January 2019 covering all the patients followed; in the service of Medicine C at Ibn Sina Hospital Rabat-Morocco; for SPV who have systematically benefited from jejunal biopsies in search of celiac disease

Results
From a total of 149 patients followed up for SPV, the prevalence of celiac disease was 6.1% (10 cases) had associated celiac disease. 8 cases diagnosed as part of etiological assessment of SPV. From 284 cases of celiac disease followed 10 patients had a SPV (3.5%) diagnosis of celiac disease was concomitant with SPV in 2 cases. There were 8 women and 2 men with a sex ratio M / F of 0.25. The average age was 28 years (19- 56 years). All patients had organic dysphagia, five cases (62.5%) had a clinical anemic syndrome associated with malabsorption diarrhea.

gastrointestinal fibroscopy showed a ring at the level of the kilian mouth in all cases. After esophageal dilatation by candles with different diameters fibroscopy showed a rarefaction of duodenal folds in 9 cases (90%) and a duodenum of normal appearance in one case (10%). The anatomopathological study of duodenal biopsies showed intraepithelial lymphocytosis (IPL)> 30% in all cases, moderate villous atrophy in 6 cases and severe in 4 patients. All our patients benefited from a martial treatment in combination with a gluten-free diet (GSR). The evolution was favorable in 8 patients after a single dilation session and a well followed RSG; 2 patients with poor GSR compliance also had recurrence of dysphagia.

Conclusion
The SPV on celiac disease remains rare, found only in 3.5% in our series; the good observance of the RSG allowed to improve the signs of malabsorption as well as the disappearance of the dysphagia in 80%.

Conflicts of interests
no conflicts of interests

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00197

Final poster ID: P1-40

Title: Neurocognitive effects of gluten exposure: Qualitative results of a nationwide survey

Presenting author: Jessica Edwards George

Co-authors: Jessica EDWARDS GEORGE (1), Kayla YATES (1), Kristin VOORHEES (2), Babatunde AIDEYAN (1), Kristen SWEET (2), Jennifer O'FLYNN (3), Daniel LEFFLER (3), Alice BAST (2) - (1)Northeastern University, États-Unis, (2)Beyond Celiac, États-Unis, (3)Takeda, États-Unis

ABSTRACT CONTENT

Objectives
Background and Objectives

Neurocognitive effects after gluten exposure (e.g. “celiac/brain fog”) are commonly described by patients with celiac disease (CD) and non-celiac gluten sensitivity (NCGS) though little data exists. In a 2013 national survey conducted by these authors, 89% of CD and 95% of NCGS respondents reported neurocognitive effects after gluten exposure. Symptoms included difficulty concentrating (72.4% of CD, 75.5% of NCGS); forgetfulness (60.3% of CD, 64.9% of NCGS); and grogginess (58.2% of CD, 69.2% of NCGS). The survey included an open-ended response question resulting in rich qualitative data. This study sought to analyze the responses and identify common themes.

Methods
Methods

Codes/themes were developed to categorize the neurocognitive symptoms reported by participant’s open-ended responses. The Health-Related Quality of Life Instrument (HRQOL) and results from Leffler et al. 2017 were used as the foundation for the codes/themes. Qualitative analysis software NVivo 11 was used for analyses. Two coders reviewed all open-ended responses and independently assigned codes to specific text references in the data. A preliminary coding query/inter-rater reliability analysis was completed, followed by an evaluation and reconciliation of coding disagreements between coders.

Results
Results

1,396 individuals with CD and NCGS completed the survey (82% CD, 18% NCGS). 90.14% of the sample experienced brain fog after gluten exposure. Respondents were asked to define their brain fog symptoms, and 32% did so. Final qualitative analyses are currently being completed, including inter-rater reliability statistics, and will be ready at time of meeting.

Conclusion
Conclusions

Describing the neurocognitive symptoms of gluten exposure in CD and NCGS patients is important for understanding the complex experience of neurocognitive fog. This examination of symptoms may help to develop evidence-based interventions for treatment.

Conflicts of interests
Daniel Leffler-Takeda

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00205

Final poster ID: P1-41

Title: CELIAC RELATED HEPATITIS - do we recognize the problem?

Presenting author: Ivana Knezevic Stromar

Co-authors: Ivana KNEZEVIC STROMAR (1), Silvija CUKOVIC-CAVKA (1), Marina PREMUZIC (1), Ana KULIC (2), Davor RADIC (1), Matea MAJEROVIC (1), Vibor SESA (1), Marina JURICIC (1), Rajko OSTOJIC (1), Zeljko KRZNARIC (1) - (1)University Hospital Center Zagreb, Division of Gastroenterology and Hepatology, Croatie, (2)University Hospital Center Zagreb,Department of Oncology, Division of Pathophysiology and Experimental Oncology, Croatie

ABSTRACT CONTENT

Objectives
Celiac disease is a chronic, immune-mediated disease. Clinical manifestations, in adult population, may be typical, but various extra-intestinal manifestation, including unexplained liver enzyme elevation are recognized.

Methods
In order to determine prevalence of patients with celiac hepatitis we have done retrospective analysis of records for the patients examined in Hepatology Outpatient Clinic in Tertiary Centre, in period of 18 months. Data regarding referral and final diagnosis as well as liver injury profile and the extent of workup done before referring to the tertiary centre, were analysed.

Results
446 patients (pts) were referred to us with initial diagnosis suggesting liver disease. Altered hepatogram had 299/446 pts (67%), and only in 30% of them (89/299 pts) correct screening for metabolic, viral, and autoimmune diseases was done. None of referred (0%) pts was screened for celiac disease. Finally, 53/299 pts were diagnosed with viral hepatitis, 109 NAFLD/NASH, 30 ALD, 16 haemochromatosis, 21 autoimmune liver disease, 6 Gilbert syndrome, 7 toxic liver injury. In 5 pts celiac disease was already established, but additional liver disease was diagnosed, in 2/5 NASH, 1/5 AIH, 2/5 PBC. There were still 52 pts with no diagnosis. In 9/52 pts (17%), celiac disease was diagnosed with anti tTg and biopsy of duodenal mucosa.

Conclusion
There is a rather high prevalence of celiac related liver injury in adult population. In our cohort of patients, it was 17%. The awareness of the problem is low. According to our data, celiac disease is not recognized as a possible cause of liver damage outside of tertiary centres. Celiac hepatitis, can be the sole manifestation of celiac disease in adult population. It can also be combined with other autoimmune diseases of the liver as well as with steatohepatitis. Celiac disease, as well as celiac related hepatitis should be recognized as early as possible to prevent further damage to the organs, so serology testing, tTg, should be done as a part of liver injury workup.

Conflicts of interests
Authors have no conflict of interests to declare.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00212

Final poster ID: P1-42

Title: A Case for Early Diagnosis of Celiac Disease & its Potential to Prevent Co-Existing Autoimmune Conditions

Presenting author: Patricia Bierly

Co-authors: Patricia BIERLY, Arunjot SINGH - (1)The Children's Hospital of Philadelphia, États-Unis

ABSTRACT CONTENT

Objectives
Autoimmune disease is a progression from begin to pathologic autoimmunity. Genetic influences and environmental triggers can cause the progression.Celiac Disease is an auto immune mediated enteropathy which effect the small intestines.Hashimoto's thyroiditis is chronic inflammatory autoimmune thyroid disease. Autoimmune hepatitis is chronic inflammatory autoimmune disease of the liver. This can occur alone or coexist with other autoimmune conditions. This case describes a patient who presented with anemia and abnormal thyroid studies.

Methods
Case report

Results
In 2016, a 9 year old female (MM) presents to Endocrinology with abnormal thyroid studies and anemia after having labs as part of a routine pediatric visit. Other labs of significance are EBV IgG positive, elevation of AST(84)and ALT(81). MM was subsequently diagnosed with Hashimoto's thyroiditis. In January 2018, MM was started on Levothyroxine for hypothyroidism.Due to persistent elevation in liver enzymes further labs obtained showed an abnormal celiac panel. MM proceeded to have a small intestine biopsy confirming Celiac. MM started a strict gluten free diet, celiac panel normalized within 8 months of dietary treatment. Liver enzymes on the gluten free diet initially improved, subsequently liver enzymes were elevated. Further serology testing revealed, MM had positive autoimmune markers and a liver biopsy confirmed autoimmune hepatitis. MM started Azathioprine, maintained a strict gluten free diet and continued Levothyroxine therapy.

Conclusion
Previous studies have suggested that delays in diagnosing celiac disease may increase risk of developing a co-existing autoimmune condition. Children diagnosed between 4-12 years old have a reported 16.4% risk of developing another autoimmune condition and the association between Celiac Disease and Hashimoto's thyroiditis is 4-6% and autoimmune hepatitis is 6-16%. This certainly makes a case that perhaps early screening of celiac disease and a gluten-free diet may have been helpful in reducing the risk and preventing this patient's thyroid and liver disease.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00218

Final poster ID: P1-43

Title: Titanium modified electrodes for gluten detection in food

Presenting author: Cristina Dumitriu

Co-authors: Cristina DUMITRIU, Cristian PIRVU - (1)1University Polytechnic of Bucharest, Faculty of Applied Chemistry and Materials Science, Roumanie

ABSTRACT CONTENT

Objectives
Gluten detection in food samples using a modified titanium electrode and electrochemical methods.

Methods
For gluten detection, titanium electrodes surface was modified. First we prepared Titanium dioxide nanotubes. In a second step we deposited a graphene oxide layer on top of nanotubes.

As method of detection, differential pulse voltammetry was used. Measurements were performed with a three electrodes system in a single compartment cell using a potentiostat/galvanostat from Autolab.

Results
Using scanning electron microscopy we showed presence of titanium dioxide nanotubes. On top of nanotubes we deposited graphene oxide by cyclic voltammetry.

Infrared spectra was recorded for peaks characteristic to graphene oxide and titanium dioxide presence.

Modified electrodes were subjected to electrochemical tests in buffer solutions with and without known quantities of pure gluten.

Modified electrodes where also used to test food samples.

Commercial Eliza test kit was also used to validate the results.

Conclusion
Gluten presence in food can be performed using electrochemical method - differential pulse voltammetry.

Conflicts of interests
We do not have any conflict of interests.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00237

Final poster ID: P1-44

Title: Celiac disase patients have lowere sence of coherence score than healthy controls

Presenting author: Efrat Broide

Co-authors: Efrat BROIDE (1), Dana ZELNIK YOVEL (1), Adi EINDOR-ABARBANEL (1), Haim SHIRIN (1), Timna NAFTALI (2) - (1)Assaf Harofeh Medical Center, Israël, (2)Meir Medical Center, Israël

ABSTRACT CONTENT

Objectives
Sense of Coherence (SOC), is a theoretical construct that was developed to explain why some people fall ill and others do not regardless of stressful events. In several multifactorial chronic diseases such as diabetes mellitus and systemic lupus erythematosus, SOC was reported to correlate with disease development. Aims: to compare the SOC scores of patients diagnosed with Celiac disease (CD) with matching healthy controls in order to investigate any possible correlation between low SOC scores and the presence of CD.

Methods
Patients completed questionnaires including demographic data and the 13 items SOC questionnaire. Patients in the cohort were matched to the healthy cohort according to: age, gender, education, level of income, employment status and marital status.

Results
239 CD patients and 124 healthy controls answered the 13-item SOC questionnaire. 124 patients were matched to the healthy cohort according to the propensity score value. CD patients had a median SOC score of 57 (IQR 52.25-62), and healthy matching controls of 65.5 (IQR 57-75)$p<0.001$.

Conclusion
SOC reflects a person's resources and orientation which enable individuals to cope with stressors in a health-promoting manner. Lower SOC score is correlated with the development of CD.

Conflicts of interests
none

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00249

Final poster ID: P1-45

Title: ESPGHAN Guidelines for Diagnosis of Coeliac Disease 2019

Presenting author: S Husby

Co-authors: S HUSBY (1), S KOLETZKO (2), I KORPONAY-SZABO (3), K KURPPA (4), Ml MEARIN (5), C RIBES-KONINCKX (6), S SHAMIR (7), R TRONCONE (8), R AURICCHIO (8), G CASTILLEJO (9), R CHRISTENSEN (10), J DOLINSEK (11), P GILLETT (12), A HRÓBJARTSSON (13), Sm NIELSEN (10), T KOLTAI (14), A POPP (15), K STØRDAL (16), K WERKSTETTER (2), M WESSELS (17) - (1)Odense University Hospital, Danemark, (2)Dr. von Hauner Children's Hospital, University Hospital, LMU Munich,, Allemagne, (3)Heim Pál National Paediatric Institute, Coeliac Disease Centre,, Hongrie, (4)Tampere Centre for Child Health Research, Tampere University, Finlande, (5)Leiden University Medical Center, Pays-Bas, (6)La Fe University Hospital, Espagne, (7)Schneider Children's Medical Center, Petach Tikva, Sackler Faculty of Medicine, Israël, (8)European Laboratory for the Investigation of Food-Induced Diseases, University Federico II, Italie, (9)Hospital Universitari Sant Joan de Reus, Espagne, (10)Department of Rheumatology, Odense University Hospital, Danemark, (11)University Medical Centre Maribor, Slovénie, (12)Royal Hospital for Sick Children, Royaume-Uni, (13)Centre for Evidence Based Medicine Odense (CEBMO), Odense University Hospital, Danemark, (14)Association of European Coeliac Society, Hongrie, (15)University of Medicine and Pharmacy "Carol Davila", National Institute for Mother and Child Health, Roumanie, (16)Norwegian Institute of Public Health, Oslo and Ostfold Hospital Trust, Norvège, (17)Rijnstate Hospital, Pays-Bas

ABSTRACT CONTENT

Objectives
The European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) 2012 coeliac disease (CD) diagnostic guidelines aimed to guide physicians in accurately diagnosing CD and permit omission of duodenal biopsies in selected cases. Here, an updated and expanded evidence-based guideline is presented.

Methods
Literature databases and other sources of information were searched for studies that could inform on ten formulated questions on symptoms, serology, HLA genetics, and histopathology. Eligible articles were assessed using QUADAS2. GRADE provided a basis for statements and recommendations.

Results
Various symptoms are suggested for case finding, with limited contribution to diagnostic accuracy. If CD is suspected, measurement of total serum IgA and IgA-antibodies against transglutaminase 2 (TGA-IgA) is superior to other combinations. We recommend against deamidated gliadin peptide antibodies (DGP-IgG/IgA) for initial testing. Only if total IgA is low/undetectable an IgG based test is indicated. Patients with positive results should be referred to a paediatric gastroenterologist/specialist. If TGA-IgA is ≥10 times the upper limit of normal (10xULN) and the family agrees, the no-biopsy diagnosis may be applied, provided endomysial antibodies (EMA-IgA) will test positive in a second blood sample. HLA DQ2-/DQ8 determination and symptoms are not obligatory criteria. In children with positive TGA-IgA <10xULN at least 4 biopsies from the distal duodenum and one from the bulb should be taken. Discordant results between TGA-IgA and histopathology may require re-evaluation of biopsies. Patients with no/mild histological changes (Marsh 0/I) but confirmed autoimmunity (TG2-IgA/EMA-IgA+) should be followed closely.

Conclusion
CD diagnosis can be accurately established with or without duodenal biopsies if given recommendations are followed.

Conflicts of interests
The study was sponsored by ESPGHAN

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00261

Final poster ID: P1-47

Title: MED ABOUT DATA HACKATHON – Making Early Diagnosis of Celiac Disease Possible

Presenting author: Liat Kosovich

Co-authors: Liat KOSOVICH (1), Marilyn G. GELLER (2) - (1)Celiac Association of Israel, Israël, (2)Celiac Disease Foundation, États-Unis

ABSTRACT CONTENT

Objectives
Celiac Association of Israel together with the Celiac Disease Foundation have partnered with the Israeli NPO ii2020, Teva pharmaceuticals, the Technion, Rambam Healthcare Campus and Maccabi Health Services in order to produce a hackathon, that focused on the theme of big data in digital health.

One of the challenges that were set for the event was to develop smart tools and algorithms that will enable an early diagnosis of celiac disease (CeD).

The aim of the celiac challenge was to yield novel information about celiac sufferers and to lead to a better diagnoses protocol of CeD than currently available, through the analysis of tens of thousands of patient records.

Methods
Participants of the hackathon were gathered for 24 hours and were given the opportunity to apply big data analysis to a database specially prepared for the event under all aspects of confidentiality and regulation challenges. The database contained information of confirmed CeD patients based on tTG-IgA>10 as well as a control group of individuals that have a negative tTG test.

Participants were able to develop algorithms and to check their validity live.

Then each algorithm was tested on a second database, in which the tTG-IgA data was concealed.

Results
120 entrepreneurs, doctors and software developers participated at the event. Out of 22 groups, 10 chose to compete in order to develop an algorithm that will lead to early diagnosis of CeD.

'CeliACT' team won first place at the event for their innovative solution: a product that runs on all the medical records in the health provider's database and alerts the doctor when patients with a high risk for CeD are found. The product is based on AI algorithms that were validated with AUC ~0.85.

Conclusion
The advent of big data has opened up a world of possibilities in the field of digital medicine.

Med About Data Hackathon was an innovative event, which explored such possibilities and has proven the ability of big data analysis to lead to better diagnoses protocols of CeD than currently available.

Conflicts of interests
None

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00267

Final poster ID: P1-48

Title: Assessment of new biomarkers for diagnosis and monitoring of celiac disease

Presenting author: Erika Monguzzi

Co-authors: Erika MONGUZZI (1), Rambabu SURABATTULA (1), Luca ELLI (2), Vincenza LOMBARDO (2), Daniel A. LEFFLER (3), Detlef SCHUPPAN (1) - (1)Institute for Translational Immunology and Research Center for Immune Therapy, University Medical Center, Allemagne, (2)Center for Prevention and Diagnosis of Celiac Disease, Gastroenterology and Endoscopy Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Italie, (3)Division of Gastroenterology, Beth Israel Deaconess Medical Center, Harvard Medical School, États-Unis

ABSTRACT CONTENT

Objectives
Celiac disease is an immune-based reaction to dietary gluten (storage protein for wheat, barley, and rye) that primarily affects the small intestine in subjects with a genetic predisposition. It usually resolves with exclusion of gluten from the diet. Establishing a celiac disease (CD) diagnosis can be difficult because it affects people differently. However, the discovery of new biomarkers could be help in the diagnosis and follow-up of the disease, especially in studies with novel therapeutic agents. We therefore used well defined patient cohorts to assess a broad range of biologically plausible putative serum markers of CeD activity.

Methods
The following patient sera were included in the discovery set: 1) 19 CeD in remission with a 14 day gluten challenge, characterized by 4 pre-and post duodenal histologies and 5 pre-and post challenge serum samples (Leffler D et al, Gut 2013); 2) 20 with untreated (active) CeD; 3) 20 with CeD in remission; 4) 10 healthy controls. We analyzed the serum levels of the following markers related to CeD pathophysiology and intestinal inflammation using validated assays: FAS Ligand, Galectin-1, TIMP-3, CCR-2, CD28, CCL25, CCL28, IL-2, IL-22, IL-2 Rα, IL-6 Rα, IL-15Rα, IL-22Rα, Reg 1α.

Results

Most markers showed high variations within groups and they did not yield levels that could be correlated to histological or clinical CeD activity.

CeD patients (untreated) showed significantly elevated IL-2Rα, IL-6Rα ($p<0.01$) and Gal-1 ($p<0.001$) levels as compared with healthy subject ($p<0.05$). CCL-25 was increased in untreated patients vs healthy controls (not significant). IL-2 Rα, Gal-1 and CCL25 did not show any significant change during gluten challenge. Likely explanations are a) the relatively small intestinal compartment affected; b) short serum half lives especially of cytokines.

Conclusion
1) We explored a broad spectrum of putative CeD activity markers in serum; 2) the tested chemokine/cytokine markers did not predict CeD activity; 3) further CeD activity markers are currently explored.

Conflicts of interests
No conflict of interest

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00271

Final poster ID: P1-49

Title: Global consensus on definition and histological classification of non-coeliac gluten sensitivity.

Presenting author: Kamran Rostami

Co-authors: Kamran ROSTAMI (1), Arzu ENSARI (2), Amitabh SRIVASTAVA (3), Vincenzo VILLANACCI (4), Michael MARSH (5), Antonio CARROCCIO (6), Umberto VOLTA (7), Alessio FASANO (8), Carolina CIACCI (9), Julio BAI (10), Gabrio BASSOTTI (11), Marjorie WALKER (12), Juha TAAVELA (13), Anna BOZZOLA (14), Carlo CATASSI (15), Giovanni CASELLA (16), Mihai DANCIU (17), Mohammad DERAKHSHAN (18), David SANDERS (19), Anna SAPONE (20), Luca ELLI (21), Stefano GUANDALINI (22), Laura DE MAGISTRIS (23), Hilary JERICHO (22), Sauid ISHAQ (24), Gabriel BECHEANU (25), Sherly MATHEWS (26), James GOING (27), Mohammad ROSTAMI-NEJAD (28), Chris MULDER (29), Hamid MOHAGHEGH (28), Matt W JOHNSON (30), Geoffrey HOLMES (31), Chiara RICCI (32), Ada MARIA FLORENA (33), Rachele DELSORDO (34), Roxana MAXIM (35), Prasenjit DAS (36), Govind MAKHARIA (36), Simon CROSS (37), Katri KAUKINEN (38), Adam LEVENE (39), Nicola FUSCO (18), Afshin MORADI (28), David HAYMAN (40), Catherine HAGEN (41), Melanie JOHNCILLA (42), Mehul LAMBA (43), Sarah LIPTROT (18), Christine RODGER (44) - (1)Department of Gastroenterology, Nouvelle-zélande, (2)Ankara University Medical School, Department of Pathology, Turquie, (3)Brigham & Women's Hospital, Department of Pathology, Boston, États-Unis, (4)Spedali Civili,, Institute of Pathology, Brescia, Italy, Italie, (5)University of Oxford, Wolfson College, Oxford & Luton Dunstable Univeristy Hospital, Gastroenterology, Royaume-Uni, (6)University of Palermo, Department 'PROMISE', Italie, (7)University of Bologna, Italie, (8)Massachusetts General Hospital, Center for Celiac Research and Treatment, États-Unis, (9)Dipartimento di Medicina, Chirurgia e Odontoiatria, Scuola Medica Salernitana,Università, di Salerno Gastroenterologia, Italie, (10)Universidad del Salvador, Research Institutes,, Argentine, (11)Sofar Osp. Clinicla Gastro Università, Italie, (12)University of Newcastle Faculty of Health and Medicine, School of Medicine & Public Health, Australie, (13)Central Finland Central Hospital,, Finlande, (14)Institute of Pathology Spedali Civili, Italie, (15)Universita Politecnica delle Marche, Deptartment. of Pediatrics,, Italie, (16)Medical Dept, Desio Hospital, Desio, Italie, (17)Grigore T. Popa, University of Medicine and Pharmacy, Pathology Department, Roumanie, (18)Queen Elizabeth University Hospital, Royaume-Uni, (19)Sheffield Teaching Hospitals, Gastroenterology, Royaume-Uni, (20)Massachusetts General Hospital,, Center for Celiac Research and Treatment, États-Unis, (21)Fondazione IRCCS Ca' granda Ospedale Maggiore Policlinico,, Center for Prevention and Diagnosis of Coeliac Disease and Pathology Unit, Italie, (22)University of Chicago, États-Unis, (23)University of Cam-pania Luigi Vanvitelli, Department of Internal and Experimental Medicine Magrassi-Lanzara, Italie, (24)Dudley Group NHS Foundation Trust, Royaume-Uni, (25)Carol Davila University of Medicine and Pharmacy, Department of Pathology, Roumanie, (26)Milton Keynes University Hospital, Royaume-Uni, (27)Univeristy of Glasgow, Royaume-Uni, (28)Gastroenterology and Liver Disease Research Institute, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (29)VU University Medical Center, Dept. of Gastroenterology, Pays-Bas, (30)The Luton & Dunstable University Hospital, Gastroenterology, Royaume-Uni, (31)Royal Derby Hospital, Royaume-Uni, (32)University of Brescia, Dept. of Exp and Clin Sciences, Italie, (33)University of Palermo, Italie, (34)University of Perugia, Italie, (35)University of Medicine and Pharmacy, Roumanie, (36)All India Institute of Medical Sciences, Inde, (37)Academic Unit of Pathology Department of Neuroscience, Faculty of Medicine, Dentistry & Health, The University of Sheffield, Royaume-Uni, (38)Tampere University Hospital - Department of Internal Medicine, Tampere University Hospital; Tampere/, Department of Internal Medicine, Finlande, (39)Luton Dunstable Univeristy Hospital, Royaume-Uni, (40)Massey University, Nouvelle-zélande, (41)MEDICAL COLLEGE OF WISCONSIN, États-Unis, (42)Weill Cornell Medicine, États-Unis, (43)Midcentral District Health Board, Nouvelle-zélande, (44)Brigham & Women's Hospital,, Department of Pathology, États-Unis

ABSTRACT CONTENT

Objectives

AIM: Morphological and inflammatory changes including IEL infiltration in intestinal villi’s and crypt architecture were measured in gluten induced enteropathies aiming to differentiate between NCGS, CD and controls.

Methods
METHOD: The study was designed at the International Meeting on Digestive Pathology, Bucharest 2017. Investigators from 22 centres, 9 countries of 4 continents, recruited CD patients with Marsh 0-II histology (n=261), NCGS (n=175), and 262 controls and used one agreed protocol to analyse the small bowel mucosa in well-oriented duodenal biopsies.

Results
Participant countries consisted of Australia (20), Finland (20), India (25), Iran (37), Italy (239), Romania (10), Turkey (30), UK (166) and USA (151). The villus height was significantly shorter in NCGG compared to control ($p<0.001$), the difference was significant even when the analysis limited to Marsh 0. Conversely, the villus height of NCGS was significantly longer than that in CD [600 (IQR: 400-705) vs 427 (IQR: 348-569), $p<0.001$], the result was unchanged when analysis was limited to Marsh I-II [500 (IQR:410-629) vs 423 (IQR:349-574, $p=0.009$).The median Crypt depth was significantly increased in NCGS group compared to controls [296 (IQR: 205 -300) vs 222 (IQR: 158-294), $p<0.001$) and it was similar to CD group [269 (IQR: 182-322), $p=0.822$]. Interestingly NCGS with Marsh 0, still had significantly increased crypts depth compared to controls ($p<0.001$). The crypt depth value was similar in Marsh I-II for both NGGC and CD groups [273 (IQR: 180-296) vs 269 (IQR: 180-324), $p=0.822$)].

Conclusion
Morphometric assessment of intestinal mucosa of NCGS patients showed a range of subtle abnormalities even when the histology is reported as Marsh 0 or normal. Comparing Marsh 0 of NCGS with controls, revealed the former have significantly higher IEL density, increased crypt depth, shorter villous height and decreased villous/crypt ratio. This global morphometric assessment brings novel insight into the Marsh 0 histology spectrum that can improve the NCGS diagnostic yield as an additional biomarker.

Conflicts of interests
none

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00279

Final poster ID: P1-50

Title: The use of biopsy and "no-biopsy" approach for diagnosing paediatric coeliac disease in the Central European region

Presenting author: Petra Riznik

Co-authors: Petra RIZNIK (1), Luigina DE LEO (2), Jasmina DOLINSEK (3), Judit GYIMESI (4), Martina KLEMENAK (1), Berthold KOLETZKO (5), Sibylle KOLETZKO (6), Ilma Rita KORPONAY-SZABÓ (4), Tomaz KRENCNIK (1), Tarcisio NOT (2), Goran PALCEVSKI (7), Daniele SBLATTERO (8), Matej VOGRINCIC (9), Katharina Julia WERKSTETTER (6), Jernej DOLINSEK (1) - (1)University Medical Centre Maribor, Department of Paediatrics, Gastroenterology, Hepatology and Nutrition Unit, Slovénie, (2)IRCCS Burlo Garofolo Trieste, Institute for Maternal and Child Health, Italie, (3)Municipality of Maribor, Project Office, Slovénie, (4)Heim Pál National Paediatric Institute, Coeliac Disease Centre, Hongrie, (5)Stiftung Kindergesundheit (Child Health Foundation) at Dr. von Hauner Children's Hospital, LMU Munich, Allemagne, (6)Dr. von Hauner Children's Hospital, Clinical Medical Centre, LMU, Allemagne, (7)University Hospital Rijeka, Department for Gastroenterology, Paediatric clinic, Croatie, (8)University of Trieste, Italie, (9)University Medical Centre Maribor, Department of Informatics, Slovénie

ABSTRACT CONTENT

Objectives
The current European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) guidelines introduced the option to diagnose coeliac disease (CD) in children and adolescents without upper endoscopy if defined criteria are met. The aim of our study was to evaluate how frequently paediatric gastroenterologists in Central Europe used the “no-biopsy” approach and how often the duodenal biopsy could have been omitted.

Methods
Medical records of patients aged <19 years diagnosed with CD in 2016 from five European countries were analysed, focusing on levels of transglutaminase antibodies (TGA) at the time of diagnosis and on whether the diagnosis was confirmed using duodenal biopsy or “no-biopsy” approach. Clinical presentation and delays until final diagnosis were analysed according to diagnostic approach.

Results
Data from 653 children (63.9% female, median age 7 years, range 7m-18.5y) from Croatia, Hungary, Germany, Italy and Slovenia were analysed. One fifth (n=134) of included children were asymptomatic at diagnosis. Of 519 symptomatic children 107 (20.6%) were diagnosed by the “no-biopsy” approach. Out of the remaining 412 children who underwent duodenal biopsies, 214 (51.9%) had TGA≥10 times upper level of normal (ULN) and would have been eligible for the “no-biopsy” approach. Classical clinical presentation was more frequent in children diagnosed without duodenal biopsies. There were no differences in diagnostic delays with respect to the diagnostic approach.

Conclusion
In this cohort, about 60% of symptomatic CD patients could have been diagnosed without duodenal biopsies. The aim of the “no-biopsy” approach was to make the diagnostic procedure less challenging without compromising its reliability. However, this option was applied only in 20%, in spite of fewer burdens to the family and reduced costs. The reasons for this discrepancy are unknown. Physicians should be made more aware about the reliability of CD diagnosis without biopsies when the ESPGHAN guidelines for CD diagnosis are followed.

Study was co-financed by Interreg CE programme (CE-111).

Conflicts of interests
None.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00283

Final poster ID: P1-51

Title: Appropriate Screening for Celiac Disease at a Children's Hospital Results in Increased Testing and Decreased Charges

Presenting author: Michael Bates

Co-authors: Michael BATES, Sean BINGHAM, Nikki COLLIER, Leslie WILLIS, Rebecca BAKER, Kelly SANDBERG - (1)Dayton Children's Hospital, États-Unis

ABSTRACT CONTENT

Objectives
Appropriate, cost-effective screening for celiac disease (CD) is often poorly understood by providers outside of gastroenterology, in part because of evolving national/international recommendations for serological screening. North American CD screening guidelines for children >2 years of age agree with the use of tissue transglutaminase (TTG) IgA as the standard for serologic evaluation in IgA-sufficient patients. Historically, screening for CD at our hospital used a commercially available panel to interrogate 5 serological parameters. We wished to encourage adherence to national guidelines and decrease costs of screening.

Methods
The Division of Gastroenterology and Nutrition and the hospital's Laboratory Stewardship Committee collaborated to communicate the clinical significance and financial impact of appropriate screening to providers by publications, lectures, and outreach liaisons, and an alert message was added to CD screening electronic orders to prompt appropriate lab selection.

Results
These interventions led to an increase in appropriate testing and decrease in screening lab panels. The percentage of patients tested using TTG IgA alone increased from 20% (2015) to 81% (2019 to date). During this time the total volume of testing increased by 54%, suggesting increasing awareness of the possibility of CD. As a secondary cost saving intervention and to decrease testing turnaround time, the measurement of 4 CD serological parameters was established at our hospital, saving the hospital US$325 per screening panel (when needed for patients <2 years of age). By using appropriate testing, there was a savings of US$409 for patients >2 years. The combined savings of these interventions averaged US$292,838 in reference laboratory charges per year, and patients benefited from an annual US$337,780 reduction in total charges.

Conclusion
The total costs of testing for CD at our hospital and patient charges have decreased significantly even with an increased amount of testing due to increased awareness.

Conflicts of interests
None.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00288

Final poster ID: P1-52

Title: Time trends of the clinical presentation and diagnosis of coeliac disease

Presenting author: Thora Marie Høegh-Andersen

Co-authors: Thora Marie HØEGH-ANDERSEN, Stine Dydensborg SANDER, Cæcilie Crawley LARSEN, Steffen HUSBY - (1)Hans Christian Andersen Children's Hospital, Odense University Hospital, Danemark

ABSTRACT CONTENT

Objectives
To describe changes over time in the incidence of coeliac disease (CD) in Danish children from 2007 to 2017 as well as in the clinical presentation and diagnostic approach of pediatric CD after introduction of the 2012 ESPGHAN diagnostic guidelines.

Methods
In this retrospective study based on medical records we collected data from all children (<15 years old) diagnosed with CD from a defined population of the island of Funen from 2007-2017 (n=207). Yearly incidence rates were calculated, and the clinical presentation and diagnostic approach, including changes over time, were described, using a uniform questionnaire reported in REDCap.

Results
The incidence rate of diagnosed CD increased from 10.4 (95 % CI 4.8-19.7) in 2009 to 36.3 (95 % CI 24.3-49.5) per 100 000 children in 2015. 17 % of the children were aged 0-4 years, 43 % were 5-9 years and 40 % were 10-14 years old at time of diagnosis. The age at diagnosis did not change over time. The most frequent symptoms were abdominal pain (70 %), diarrhea (34 %), fatigue (27 %), and constipation (24 %), and the clinical presentation did not change over time. Malabsorption symptoms were most frequent among the 0-4-year-olds. From 2013 56 % of children with CD were diagnosed according to the no-biopsy approach.

Conclusion
The incidence of diagnosed pediatric CD in Denmark is still increasing, but the clinical presentation seems to be unchanged over time. The introduction of the new ESPGHAN guidelines has resulted in omission of duodenal biopsies for half the patients.

Conflicts of interests
There were no conflicts of interest.

POSTERS

THEME :
DIAGNOSIS

Abstract #: ICDS00290

Final poster ID: P1-53

Title: Positive Predictive Value of the new generation celiac rapid test, for screening in healthy school children.

Presenting author: Manoubia Bensmina

Co-authors: Manoubia BENSMINA, Karima BERKOUK, Abdeldjalil MAOUDJ, Asmahane LADJOUZE, Nadjet BOUHAFS, Rawda ABOURA, Souhila MELZI, Abdennour LARABA - (1)CHU Bab El Oued, Algérie

ABSTRACT CONTENT

Objectives
The objective of our work was to evaluate the positive predictive value (PPV) of the new generation rapid test (Biocaed celiac test), as a screening test in healthy school children.

Methods
We used a new generation rapid test detecting IgA-tissue antitransglutaminase antibodies (IgA-tTG) and IgA deficiency in a finger-tip blood drop.

Subjects who tested positive for IgA-tTG and those suspected having IgA deficiency were referred to the pediatric department of our University Hospital to undergo further investigations.

Including celiac conventional serology, this is IgA-tTG assay by ELISA kit using recombinant human transglutaminase and also the IgA assay by nephelometry.

The Rapid tests were performed by one pediatric Gastroenterologist and 2 pediatric trainees with a pediatric Gastroenterologist as supervisor. Test reading was done according to the manufacturer's instructions.

Results
We tested 4868 school-age children (6 -15 years) in the Algiers area. 2273 boys and 2595 girls

(2369 primary's school children and 2499 collegians).

36 children tested positive for IgA-tTG only 32 parents accepted the sample for IgA-tTG assay by ELISA, which confirmed 24, 8 tests were negatives.

The PPV of the Rapid test for the IgA-tTG were 75 %.

Regarding the IgA deficiency, from 22 children with a negative IgA in Rapid test, 15 parents accepted the conventional assay and 13 were confirmed, which corresponds to a VPP of 86%.

Conclusion
Our results are similar with other studies that had used the rapid finger test as screening test and suggests that this test had a good performance considering its VPP for IgA-tTG and also for IgA deficiency.
It could be used as a first-line examination for celiac disease, especially in areas with poor health coverage.However this study has a limit, which was that, we were in the impossibility to evaluating the children who tested negative with the rapid finger test by the reference technique, because of the cost too expensive.

Conflicts of interests
No conflict of interest for all the authors.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00025

Final poster ID: P2-01

Title: Long-term consequences of undiagnosed celiac disease

Presenting author: Line Lund Kårhus

Co-authors: Line Lund KÅRHUS (1), Tea SKAABY (1), Janne PETERSEN (2), Anja Lykke MADSEN (1), Betina Heinsbæk THUESEN (1), Peter SCHWARZ (3), Jüri J. RUMESSEN (4), Allan LINNEBERG (5) - (1)Center for Clinical Research and Prevention, Bispebjerg and Frederiksberg Hospital, Danemark, (2)Center for Clinical Research and Prevention, Bispebjerg and Frederiksberg Hospital and Section of Biostatistics, Department of Public Health, University of Copenhagen, Danemark, (3)Department of Endocrinology & Diabetes and Bone-metabolic Research Unit, Rigshospitalet, Copenhagen, Denmark and 5 Department of Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen, Danemark, (4)Q&D--Research Unit and Department of Gastroenterology, Herlev and Gentofte Hospital, University of Copenhagen, Danemark, (5)Center for Clinical Research and Prevention, Bispebjerg and Frederiksberg Hospital and Department of Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen, Danemark

ABSTRACT CONTENT

Objectives
Evaluate long-term consequences of undiagnosed celiac disease (CD), determine CD prevalence and estimate possible changes over time in CD antibody positivity.

Methods
We screened serum samples from our biobank comprising 16,779 participants examined between 1976 and 2012 for Immunoglobulin (Ig) A and IgG tissue transglutaminase (TTG) and IgG deamidated gliadin peptide (DGP). Undiagnosed CD was defined as antibody positivity (IgA/IgG-TTG≥7 U/ml and/or IgG-DGP≥10 U/ml) in individuals without a known diagnosis of CD recorded in the national patient register. The studies were (examination years in brackets): 1936-cohort (1976–77), Monica-1 (1982–84), -2 (1986–87), -3 (1991–92), 1914-cohort (1984–85), Allergy90 (1990–91), Inter99 (1999–01) and Health2006, 5-year follow-up (2011–12). Data were analyzed by Cox regression.

Results
The prevalence of CD antibody positivity was 1% (range 0.8–1.2% in the 8 studies). We found no statistically significant increase in prevalence of CD antibody positivity over time from 1976–2012. Undiagnosed CD was not associated with increased mortality (Hazard ratio (HR) 1.2, 95% confidence interval (CI): 0.9–1.6) or risk of cardiovascular disease (HR 1.2 95% CI: 0.9–1.7). However, undiagnosed CD was associated with increased risk of all cancers (HR 1.6, 95% CI: 1.2–2.1), colon cancer (HR 2.8, 95% CI :1.5–5.5), cancer of the uterus (HR 3.9, 95% CI :1.5–10.7), and head and neck cancers (HR 3.1, 95% CI :1.2–8.4).

Conclusion
The prevalence of CD antibody positivity was 1%, with no statistically significant increase over time. Undiagnosed CD was associated with a significantly increased risk of cancer in general.

Conflicts of interests
The study was supported by the Tryg Foundation, The Danish Celiac Disease Patient Organization, The Novo Nordisk foundation, the Independent Research Fund Denmark and Thermo Fisher Scientific, Allerød, Denmark. Thermo Fisher Scientific performed the measu

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00035

Final poster ID: P2-02

Title: No Association Between HLA-DQA1*05 and -DQB1*02 Gene Dosage and Clinical Phenotype of Coeliac Disease

Presenting author: Hugo A Penny

Co-authors: Hugo A PENNY, Michael REES, John GOODWIN, Tim KEY, David S SANDERS - (1)Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Royaume-Uni

ABSTRACT CONTENT

Objectives
Coeliac disease susceptibility is strongly associated with specific Human Leukocyte Antigen (HLA)-DQA1 and -DQB1 loci. Individuals with the HLA-DQA1*05:HLA-DQB1*02 heterodimer (referred to as HLA-DQ2.5) have the highest risk of developing coeliac disease, particularly if two copies of HLA-DQB1*02 are present. Understanding whether differences in the frequency of DQA1*05 and DQB1*02 accounts for differences in the clinical phenotype of coeliac disease is important for the development of personalised medicine for patients and was addressed in the following study.

Methods
Demographic, clinical and laboratory data was retrospectively collected from adult patients attending the specialist coeliac disease clinic, Royal Hallamshire Hospital from 2008 and 2016 and correlated with the number of DQA1*05:DQB1*02 combinations forming the DQ2.5 heterodimer (DQ2.5 gene dose), as well as the frequency of DQB1*02.

Results
Four hundred and ninety patients had biopsy-proven coeliac disease and HLA genotype information. There were no linear associations between the DQ2.5 gene dosage and clinical or laboratory parameters assessed. The prevalence of folate deficiency was higher and mean haemoglobin levels lower, in individuals carrying two copies of DQB1*02 than those with a single copy of DQB1*02 ($p<0.001$ and $p=0.002$, respectively), but neither were different in DQB1*02 negative individuals ($p>0.05$). The carriage of two copies of DQB1*02 did not correlate with any other parameters.

Conclusion
Our results suggest that there is no association between homozygosity / heterozygosity for DQA1*05 and DQB1*02 and the clinical phenotype of active disease. This is the largest study of its kind. These results provide an important insight into the interpretation of HLA-DQ data in the setting of coeliac disease.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00037

Final poster ID: P2-03

Title: Should we be Diagnosing Coeliac Disease in the Elderly?

Presenting author: Hugo A Penny

Co-authors: Hugo A PENNY (1), Lauren Js MARKS (1), Anupam REJ (1), Matthew KURIEN (1), Michael REES (1), Simon S CROSS (2), Marios HADJIVASSILIOU (3), David S SANDERS (1) - (1)Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Royaume-Uni, (2)Department of Histopathology, Royal Hallamshire Hospital, Royaume-Uni, (3)Academic Departments of Neuroscience, Royal Hallamshire Hospital, Royaume-Uni

ABSTRACT CONTENT

Objectives
Coeliac disease is common, but is underdiagnosed in the elderly due to lack of physician awareness and heterogeneity of presentation. We aimed to establish whether there has been a change in the diagnosis of coeliac disease in the elderly (over 65 years old) from 1990 until present day, as well as the clinical and histopathological features of coeliac disease in old versus young adults.

Methods
Newly diagnosed adult patients with coeliac disease were prospectively recruited from the Coeliac Specialist Clinic at the Royal Hallamshire Hospital, Sheffield, between 2008 and 2017. Additionally, patients diagnosed with coeliac disease between 1990 to 2008 were retrospectively identified and demographic and clincal data collected.

Results
1605 adult patients with coeliac disease were recruited (n=644 prospectively, n=961 retrospectively). Of these, 208 patients (13.0%) were over the age of 65 years. The percentage of patients over 65 diagnosed with coeliac disease increased from 0% (n=0/11) in 1990-1991, to 18.7% (n=41/232) in 2016-2017 ($p<0.001$). The male to female ratio decreased with increasing diagnostic age from 1.71:1 in the 18-34 age group to 1.02:1 in the over 65 age group ($p<0.001$). Younger coeliac patients more commonly presented with fatigue ($p<0.001$) and gastrointestinal symptoms including diarrhoea ($p=0.005$), abdominal pain ($p=0.019$), and IBS-type symptoms ($p=0.008$). Older patients more frequently presented with B12 deficiency ($p=0.037$) and had milder degrees of villous atrophy than younger patients ($p=0.005$).

Conclusion
Coeliac disease is common in elderly patients, but gastrointestinal symptoms occur less frequently than in younger individuals. In addition, elderly patients present with a milder degree of villous atrophy. These results question the utility of active case finding in this age group, as a gluten-free diet may not be the most appropriate management in this patient cohort.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00061

Final poster ID: P2-04

Title: High Rates of Testing for Celiac Disease Serology, and Low Rates of Endoscopy in a Large Real-World Database

Presenting author: Raanan Shamir

Co-authors: Raanan SHAMIR (1, 2), Becca FELDMAN (3), Adi GHILAI (4), Moshe HOSHEN (4), Herman Avner COHEN (2), Vered SHKALIM ZEMER (2), Amit ASSA (5), Noam ZEVIT (5), Anat GUZ-MARK (5) - (1)Institute for Gastroenterology, Nutrition and Liver Disease, Schneider Children's Medical Center, Clalit Health Services, Israël, (2)Sackler Faculty of Medicine, Tel-Aviv University, Tel-Aviv, Israel, Israël, (3)Clalit Research Institute, Chief Physician's Office, Clalit Health Services, Tel Aviv, Israel, Israël, (4)Clalit Research Institute, Chief Physician's Office, Clalit Health Services, Tel Aviv, Israel - Tel Aviv (Israel), Israël, (5)Institute of Gastroenterology, Nutrition and Liver Diseases, Schneider Children's Medical Center of Israel, Petach Tikva, Israel, Israël

ABSTRACT CONTENT

Objectives
Although celiac disease (CD) is common worldwide, little is known regarding screening patterns in unselected populations, and on real-life adherence to professional guidelines for CD diagnosis and management. We aimed to explore current practices in the diagnosis and management of CD in children and adults, using data from a large Health Maintenance Organization.

Methods
A population-based electronic database of over 4 million individuals was reviewed, during the period of 1.1.2008-31.12.2015. Rates and results of CD serology testing and endoscopy procedures were examined. Subgroup analysis was performed by age, gender, ethnicity and socioeconomic-status.

Results
The CD serology testing rate was 17.1% and 8.9% in the pediatric and adult population, respectively. The cumulative incidence of positive CD serology was 0.45% in children, and 0.17% in adults. Positive serology was associated with age, gender, ethnicity and socioeconomic status sub-groups (p-value<0.01). Gastrointestinal endoscopies were not subsequently performed in 44.1% of children and 47.1% of adults with positive CD serology. Within the study period, 36% of children and 56% of adults never achieved CD serology normalization.

Conclusion
Screening for CD is common in a general population, with incidence varying by age and demographic characteristics. In this large cohort, intestinal biopsies were not conducted to confirm diagnosis when indicated, and CD serology remained positive over time in a large percentage of both children and adults.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00065

Final poster ID: P2-05

Title: Overall and Cause-Specific Mortality in Adult Celiac Disease: Population-Based Study in Contemporary Era

Presenting author: Inka Koskinen

Co-authors: Inka KOSKINEN (1, 2), Lauri VIRTA (3), Heini HUHTALA (4), Tuire ILUS (1, 5), Katri KAUKINEN (1, 6), Pekka COLLIN (1, 5) - (1)Celiac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University, Finlande, (2)Department of Internal Medicine, Jyväskylä Central Hospital, Finlande, (3)Research Department, Social Insurance Institution of Finland, Finlande, (4)Faculty of Social Sciences, Tampere University, Finlande, (5)Department of Gastroenterology and Alimentary Tract Surgery, Tampere University Hospital, Finlande, (6)Department of Internal Medicine, Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
Celiac disease has been associated with an increased mortality, but data on patients diagnosed in the twenty-first century is inadequate. The aim of the study was to estimate whether celiac disease patients diagnosed in the contemporary era still have excess mortality, as the diagnostic and treatment facilities have improved.

Methods
All celiac disease and dermatitis herpetiformis patients aged 20-79 years diagnosed by small bowel or skin biopsy, respectively, during 2005-2014 (n=12,803) were identified from a large national population-based register. All-cause mortality and causes of death were compared to age-, sex- and area of residence -matched controls (n= 38,384) collected from the Population register. Competing risks were assessed.

Results
All-cause mortality was not increased among celiac disease patients (Hazard Ratio (HR) 1.01, 95% Confidence intervals (CI) 0.94-1.09). Similarly, no increased mortality from malignant diseases (1.11, 0.96-1.27) or separately from malignancies of the gastrointestinal organs (gastrointestinal tract cancers 1.28, 0.92-1.79, hepatic cancer 1.19, 0.61-2.33, pancreatic cancer 1.21, 0.77-1.91) was observed. Concerning lymphoproliferative diseases and non-malignant gastrointestinal diseases, the mortality for the entire follow-up was increased (2.36, 1.65-3.39 and 2.19, 1.40-3.43, respectively) but declined after exclusion of the first two years of follow-up (1.71, 1.10-2.66 and 1.75, 1.01-3.05, respectively).

Conclusion
The relative mortality risk among celiac disease patients diagnosed after the turn of the millennium is close to that in the population. Risk associated to lymphoproliferative diseases was considerably lower than reported earlier.

Conflicts of interests
The authors declare that there are no conflicts of interest.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00087

Final poster ID: P2-06

Title: Patient burden and treatment experience in celiac disease

Presenting author: Daniel A. Leffler

Co-authors: Daniel A. LEFFLER (1), Benjamin LEBWOHL (2), David S. SANDERS (3), Heidi URWIN (4), Marilyn G. GELLER (5), Song WANG (1), Sarah CLIFFORD (6), Hannah LEWIS (7), Margaret CHO (6), Diandra LATIBEAUDIERE (7), Vivien ONG (6) - (1)Takeda Pharmaceuticals International Co., États-Unis, (2)Celiac Disease Center, Columbia University Medical Center, États-Unis, (3)Royal Hallamshire Hospital and University of Sheffield, Royaume-Uni, (4)Coeliac UK, Royaume-Uni, (5)Celiac Disease Foundation, États-Unis, (6)ICON plc., États-Unis, (7)ICON plc., Royaume-Uni

ABSTRACT CONTENT

Objectives
To assess the burden of celiac disease (CeD) and treatment experience through an international patient survey.

Methods
A cross-sectional survey was conducted, in collaboration with patient advocates, clinicians, outcomes researchers and patients with CeD. Survey questions included socio-demographic and clinical characteristics, symptoms, and patient-reported outcomes, including the Celiac Symptom Index (CSI), Celiac Dietary Adherence Test (CDAT), and Work Productivity and Activity Impairment Questionnaire (WPAI). CeD severity was self-reported as mild, moderate, severe, or very severe. Adult participants were eligible if they had self-reported biopsy-confirmed CeD (or serology with family history of CeD) and on a gluten-free diet (GFD) for ≥6 months. Participants are being recruited through patient advocacy groups and patient panels in the US, UK, Spain, and Germany.

Results
To date, 100 US patients have completed the survey (mean age 37.2 years, 60% female). 80% were diagnosed by biopsy (20% serology alone) and mean (SD) time since diagnosis was 8.6 (9.2) years. Patients self-reported mild (27%), moderate (30%), severe (31%) and very severe (12%) current CeD. 75% of patients reported CeD symptoms >once per month, and 57% reported at least one episode of symptomatic gluten exposure within the last month. Mean (SD) CSI and CDAT scores were 41.7 (11.8) and 15.6 (4.7), respectively. Only 31 patients (31%) had excellent/very good adherence (CDAT<13). Mean (SD) WPAI scores for impairment while working, work productivity loss and overall activity impairment indicate relatively high impairment reported in patients' prior week: 39.9% (27.8), 47.4% (30.9) and 44% (26.4), respectively.

Conclusion
In this preliminary analysis of an ongoing patient survey, US patients with CeD have significant burden of disease including frequent symptoms, challenges with GFD adherence, and diminished work productivity

Conflicts of interests
BL: Takeda and Innovate Biopharmaceuticals consultancy. DS, HU, MG: Takeda consultancy. SW, DL: Takeda employee. SC, HL, MC, DL, VO: ICON employee receiving research funds from Takeda.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00110

Final poster ID: P2-09

Title: Immunogenetic polymorphisims in celiac disease in patients from Morocco

Presenting author: Soukaina Zertiti

Co-authors: Soukaina ZERTITI (1), Imane BENELBARHDADI (2), Khadija OUMHANI (3), Fatima-Zahra AJANA (2) - (1)Medicine C Departement, Avicenne hospital, Maroc, (2)Medicine C Departement, Avicenne hospital - Rabat (Morocco), Maroc, (3)National Institute of Hygiene, Maroc

ABSTRACT CONTENT

Objectives
The aim of this work is to study the genetical profile of celiac disease (CeD) in Moroccan patients.

Methods
Out of 241 patients, the genetic study was performed as a starting point on 158 patients. This significant number was defined through statistics calculation. The results obtained were compared with the Moroccan controlled healthy subjects (192).

Results
Around 97.5% of our patients carry DQ2 and/or DQ8 heterodimers compared to only 72% of the controlled healthy subjects. If we further dig into the most common HLA-class II association within our patients, then we find that 80.2% carry HLA-DQ2, 12.4% carry HLA-DQ8 and 3.7% carry HLA-DQ2+DQ8. The remaining 3.7% carry α5 chain (one patient) and DQ2/DQ8/β2/α5 negative(2 patients).

We have also observed in the Moroccan patients a high frequency of certain HLA-DQ and DR: the most frequent is the HLA-DQ2/DR3 with 41.4% occurrence (compared to 9.03% for the healthy controlled subjects) then the HLA-DQ2/DR5 with an occurrence of 34.5% (compared to 7.41% for the healthy controlled subjects) and finally the HLA-DQ2/DR7 found in 17.24% of the Moroccan patients (compared to 3.24% for the healthy controlled subjects). Our study confirms hence the association of the HLA-DQ2/DQ8 with CeD and with a higher risk for the HLA-DR3/DR5 and DR7.

Other results of this study show a high frequency of DQ2 homozygous at 41% and that there is no significant association with HLA-G14bp ins/del (exon 8) polymorphism. In fact, we observed a tendency to increased HLA-G+14bp allele in DQ2+ compared to DQ2- patients (50% vs. 38 %) and to controlled healthy subjects (44.8 %) however it seems necessary to increase the number of patients to confirm this result.

Conclusion
The genetic predisposition linked to HLA class II in CeD has been confirmed in our study which showed the presence of HLA-DQ2 in 80.2% of our patients and HLA-DQ8 in 12.4% of the cases with a strong association of the disease with HLA-DQ2/DQ8 in 97.5% of the Moroccan patients compared to 72% of the healthy controlled subjects.

Conflicts of interests

No conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00114

Final poster ID: P2-10

Title: Understanding celiac disease outcomes and monitoring patterns after diagnosis: a multinational study

Presenting author: Daniel A. Leffler

Co-authors: Daniel A. LEFFLER (1), Knut E. A. LUNDIN (2), Ciaran P. KELLY (3), David SANDERS (4), Song WANG (1), Sheena KAYANIYIL (5), Sisi WANG (5), Rob SAMBROOK (5) - (1)Takeda Pharmaceuticals International Co., États-Unis, (2)University of Oslo, Norvège, (3)Beth Israel Deaconess Medical Center, États-Unis, (4)Royal Hallamshire Hospital and University of Sheffield, Royaume-Uni, (5)ICON Commercialisation & Outcomes, Canada

ABSTRACT CONTENT

Objectives
To describe celiac disease (CeD) outcomes and monitoring patterns in the United Kingdom, USA, and Norway.

Methods
A retrospective chart review study was performed at three gastroenterology centres. Data from medical charts of patients with biopsy-confirmed CeD, diagnosed between 2008 and 2012 and with ≥ 1 follow-up before December 31, 2017, were collected. Patients were grouped into 4 classes at diagnosis and follow up: 1: no symptoms & normal duodenal histology; 2: no symptoms & abnormal duodenal histology; 3: symptoms & normal duodenal histology; and 4: symptoms & abnormal duodenal histology.

Results
To date, 150 eligible patients, 70% female, were included (100 in Norway, 50 in the USA). Median age at diagnosis was 32 years, with median follow-up 24 months. At diagnosis, 12% and 88% were in class 2 and 4 respectively. All patients began gluten-free diet (GFD), with 3 patients discontinuing the GFD during follow-up. 62 (41.3%) patients reported symptoms following acute gluten exposure.

Ninety-seven (64.7%) patients underwent at least one follow-up duodenal biopsy and 65.5% had persistent CeD-related symptoms. The Norway centre had a higher number of follow-up biopsies per patient although fewer follow-up visits and shorter follow-up duration compared to the US site. Of the patients with a follow-up biopsy ≤ 24 months (median 12) after diagnosis, 26 (35%) had persistent villous atrophy regardless of symptoms. Patients with persistent atrophy were significantly older at diagnosis (46 vs. 36 years old, p=0.018).

Conclusion
Follow-up biopsy is not universally conducted even at referral centres. Initial findings suggest a large proportion of patients continue to have abnormal duodenal histology and or ongoing symptoms after diagnosis despite GFD. Additional therapies may be necessary to improve outcomes in CeD.

Conflicts of interests
KL and DS: Takeda consultancy. CK: Cour Pharma, Glutenostics, Innovate, Immunogenx and Takeda consultancy. Song W and DL: Takeda employee. SK, Sisi W, and RS: ICON employee receiving research funds from Takeda.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00115

Final poster ID: P2-11

Title: Assessing severity and healthcare resource utilization in celiac disease: a U.S. claims data analysis

Presenting author: Daniel A. Leffler

Co-authors: Daniel A. LEFFLER (1), Aliki TAYLOR (1), Barbara H. JOHNSON (2), Katherine CAPPELL (2), Steve GELWICKS (2), Song WANG (1), Michele GERBER (1) - (1)Takeda Pharmaceuticals, États-Unis, (2)IBM Watson Health, États-Unis

ABSTRACT CONTENT

Objectives
The study assessed the severity of Celiac disease (CeD) at a population level.

Methods
Patients who had an endoscopic biopsy and ≥2 medical encounters with a CeD diagnosis (ICD-9-CM 579.0, ICD-10-CM K90.0) were identified in the MarketScan® Databases (2010-2015). Index date was the earliest claim with a CeD diagnosis on or after an endoscopic biopsy. CeD patients were required to have 36 months of continuous enrollment with medical and pharmacy benefits comprising the 12 months before (baseline) and year 1 and 2 following index. Severe disease was defined a priori as the presence during Year 2 of either ≥1 inpatient admission with CeD as primary diagnosis OR ≥5 gastroenterology (GI) office visits OR malnutrition OR enteropathy-associated T-cell lymphoma, esophageal cancer, non-Hodgkin lymphoma, small intestinal cancers, ataxia, partial bowel resection present in Year 1 or 2. Moderate disease was defined as any of the following in Year 2; 2-4 GI office visits, anemia, peripheral neuropathy, endoscopic biopsy, GI imaging, OR in Year 1 or 2; osteoporosis/osteopenia/fracture in patients aged ≤50 . Mild disease was defined as having ≤1 GI office visit in Year 2.

Results
11,008 CeD patients (mean age 40.6 years, 71.3% female) were identified; 59.2% mild, 36.3% moderate, 4.6% severe. At baseline, proportion of prodromal CeD symptoms was associated with severity (mild to moderate to severe) including anemia (8.9% to 19.9% to 22.2%), malnutrition (0.5% to 1.0% to 5.7%), osteopenia/fracture (9.0% to 15.9% to 21.4%), and peripheral neuropathy (2.9% to 7.6% to 9.4%). All-cause inpatient admissions and mean inpatient costs in the baseline increased significantly by level of severity.

Conclusion
Claims-based algorithms can be used to describe populations of CeD patients based on severity.

Conflicts of interests
KC and SG: IBM Watson Health employee, receiving research funds from Takeda. SW, MG, and DL: Takeda employee. AT: former Takeda employee. BJ: former IBM Watson Health employee

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00116

Final poster ID: P2-12

Title: Undiagnosed celiac disease in women with recurrent reproductive failure

Presenting author: Concepción Núñez

Co-authors: Concepción NÚÑEZ (1), Mercedes CASTAÑO (1), Natalia LÓPEZ-PALACIOS (1), Diana ALECSANDRU (2), Pilar APARICIO (2), Antonio GARCÍA-VELASCO (2) - (1)IdISSC, Espagne, (2)Instituto Valenciano de Infertilidad Madrid IVIRMA, Espagne

ABSTRACT CONTENT

Objectives
Infertility can be present as a complication of non-diagnosed celiac disease (CD), but its relevance is still under debate. We aimed to evaluate the impact of CD screening in women with reproductive failure in a real life scenario.

Methods
We consecutively recruited 690 Spanish women who attended a specialist infertility clinic due to unexplained history of recurrent miscarriage or recurrent implantation failure. IgA anti-transglutaminase 2 (TG2) antibody data were collected from all participants, accompanied of IgG anti-TG2 and IgA/IgG anti-deamidated gluten peptides (DGP) data in most cases, and occasionally of IgG anti-gliadin (AGA) antibodies. In selected cases, HLA-DQ genotyping was requested. Biopsy was suggested to all women with positive serological results or belonging to CD risk groups.

Results
IgA anti-TG2 antibodies were found in 1% of the studied women, all with HLA-DQ2.5 but one with non-risk HLA genetics. This percentage increased to 4% when considering also positive results for IgG anti-TG2 or IgA/G anti-DGP, and 5.5% when also considering AGA. CD was discarded in 18% of seropositive women (7 patients) after HLA study and in 21% (8 women) after duodenal biopsy, and it must be considered that biopsy was performed only in 39% of the seropositive women. In addition, 5 seronegative women showed CD-compatible intestinal changes. A gluten free diet (GFD) was initiated by many patients prior to firm diagnosis.

Conclusion
A wide serological study helps to identify patients with CD and reproductive problems, but HLA should be evaluated after a positive result to reduce unnecessary biopsies. Diagnosis always must be completed with duodenal biopsy.

Conflicts of interests
Authors declare no conflict of interests.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00117

Final poster ID: P2-13

Title: Economic burden of celiac disease in the U.S.

Presenting author: Song Wang

Co-authors: Song WANG (1), Aliki TAYLOR (1), Barbara H. JOHNSON (2), Katherine CAPPELL (2), Steve GELWICKS (2), Michele GERBER (1), Daniel A. LEFFLER (1) - (1)Takeda Pharmaceuticals, États-Unis, (2)IBM Watson Health

ABSTRACT CONTENT

Objectives
The study aims to assess the economic burden of Celiac disease (CeD) in the U.S.

Methods
CeD patients with an endoscopic biopsy and ≥2 medical encounters with a CeD diagnosis (ICD-9-CM 579.0, ICD-10-CM K90.0) were identified in the MarketScan® Databases from 2010 to 2015. The index date was the earliest claim with a CeD diagnosis on or after the date of an endoscopic biopsy. CeD patients were matched 1:1 to patients without CeD on demographic characteristics and Deyo-Charlson Comorbidity Index score. Patients were required to have 36 months of continuous enrollment with medical and pharmacy benefits: 12 months prior to and 24 months following index.

Results
11,008 CeD cases (mean age 40.6 years, 71.3% female) were matched to controls. At baseline, a significantly higher proportion of cases had CeD symptoms such as anemia (13.5% vs 4.5%), osteoporosis/osteopenia/fracture (6.7% vs. 3.5%), dermatitis herpetaformis (1.2% vs. 0.0%), malnutrition (0.9% vs. 0.3%) and vitamin deficiency (8.5% vs. 4.3%), (all p<.0001). In the 24-month observation period, a significantly higher proportion of CeD cases had all-cause and GI-related inpatient admissions (16.8% vs. 13.4% and 5.7% vs. 2.5%), all-cause and GI-related emergency room visits (42.0% vs. 35.6% and 8.4% vs. 1.4%) and all-cause and GI-related radiology utilization (84.3% vs. 74.8% and 36.1% vs. 14.2%), (all p<.0001). Mean total and GI-related healthcare costs were significantly higher in CeD cases compared to controls.

Conclusion
There was evidence of a significant increase in all-cause and GI-related HRU and costs in patients with CeD compared to matched controls, suggesting a significant economic burden associated with CeD. In addition, prodromal signs and symptoms were common, suggesting the opportunity for earlier diagnosis.

Conflicts of interests
KC and SG: IBM Watson Health employee, receiving research funds from Takeda. SW, MG, and DL: Takeda employee. AT: former Takeda employee. BJ: former IBM Watson Health employee

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00119

Final poster ID: P2-14

Title: Adherence to the gluten-free diet and patient outcomes: Real world evidences from an international patient registry, iCureCeliac

Presenting author: Kristina Chen

Co-authors: Kristina CHEN (1), Jennifer DRAHOS (1), Kaili REN (1), Marilyn G. GELLER (2), Song WANG (1), Daniel A. LEFFLER (1) - (1)Takeda Pharmaceuticals, États-Unis, (2)Celiac Disease Foundation, États-Unis

ABSTRACT CONTENT

Objectives
The study evaluates gluten-free diet (GFD) adherence and its association with celiac disease (CeD) patient outcomes.

Methods
iCureCeliac® registry is an online research network hosted by the Celiac Disease Foundation. Patient demographics, disease characteristics, diagnostic journey, and outcomes were collected by online surveys. Adherence to the GFD was measured by the Celiac Dietary Adherence Test (CDAT). CeD symptom burden and quality of life were assessed by the Celiac Symptom Index (CSI) and Celiac Disease Quality of Life (CD-QOL), respectively.

Results
522 patients (mean age at diagnosis 35.9 years; 81.6% female) with self-reported biopsy-confirmed CeD (07/2017 – 07/2018) completed the CSI and CDAT. Half of the respondents (50.2%) had sufficient GFD adherence (CDAT≤12). Among those sufficiently following a GFD, symptomatic control (CSI≤30) was achieved in 41.2% of patients and high symptom burden (CSI≥45) persisted in 9.2% of patients. A majority (51.2%) of those with poor GFD adherence (CDAT >12) experienced high symptom burden and 6.9% had well-controlled symptoms. CD-QOL was significantly higher in those with well-controlled disease (mean 72) compared with high disease symptom burden (mean 54) ($p<0.001$). Inadvertent gluten exposure in the last 30 days was reported in 62.1% with sufficient GFD adherence. The mean annual work or school absenteeism due to gluten exposure among those with sufficient GFD adherence (n=117) ranged from 5.6 days among those with well-controlled disease to 21.3 days among those with high symptom burden.

Conclusion
Despite adherence to GFD, many patients have persistent, high symptom burden, reduced quality of life, and missed work/school days. This evidence suggests that the GFD is not universally effective and there exist significant unmet needs for better treatment options.

Conflicts of interests
KR, SW, and DL: Takeda employee. MG: Takeda consultancy. JD: former Takeda employee.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00123

Final poster ID: P2-15

Title: The knowledge of medical professions on celiac disease in opinion of Polish patients with celiac disease

Presenting author: Emilia Majsiak

Co-authors: Emilia MAJSIAK (1), Magdalena CHOINA (1), Bozena CUKROWSKA (2) - (1)The Polish-Ukrainian Foundation of Medicine Development, Pologne, (2)Department of Pathology, Children's Memorial Health Institute, Pologne

ABSTRACT CONTENT

Objectives
Although celiac disease (CD) is one of the most common autoimmune diseases, the awareness of its nature seems to be insufficient in the society. People who particularly should understand the disease are general practitioners, nurses, dieticians and other medical specialists.

Methods
The questionnaire “The Impact of Celiac Disease on Your Life” University of Oxford & Celiac Disease UK (2015) was translated into Polish and used with consent of the authors. These questionnaires (2 500) were sent to members of the Polish Association of People with Celiac Disease and on Gluten-Free Diet (GFD) and 38.44% (961) of them were filled. The study was based on 789 (82.1%) responses received from patients with confirmed CD. The rest of the surveyees (n=172, 17.9%) were excluded from the study.

Results
Among Polish CD patients, 547 (69%) had contact with General Practitioner (GP) and out of this number, 90 (16%) rated the GPs’ knowledge on CD as good. More respondents (733, 92%) had contact with gastroenterologist and the apprehension of gastroenterologists was assessed as good by 403 (55%) CD patients. 86 (11%) Polish CD patients needed nurses’ aid and 15 (17.4%) patients in this group classified nurses’ awareness as good. One hundred ninety (24%) patients were referred to a dietician. In this group, 22 never had contact with dietician and 13 systematically contacted with dietician. Out of 294 CD patients who needed aid of dietician (104 without referral), 172 (59%) thought that dietician’s knowledge on CD was good. Among the respondents, 618 (78%) patients had contact with various support groups or associations for CD patients. 89% (552) of these surveyees classified their comprehension as good.

Conclusion
The data imply that it is necessary to take action in order to improve comprehension of CD among doctors, nurses and dieticians. Polish CD patients assessed that the knowledge of majority of medical professions on CD is not appropriate. The respondents rated the awareness of support groups and associations for CD patients best.

Conflicts of interests
no conflict

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00125

Final poster ID: P2-16

Title: The frequency of testing and diagnosing with CD family members of Polish patients with confirmed CD

Presenting author: Emilia Majsiak

Co-authors: Emilia MAJSIAK (1), Magdalena CHOINA (1), Bozena CUKROWSKA (2) - (1)The Polish-Ukrainian Foundation of Medicine Development, Pologne, (2)Department of Pathology, Children's Memorial Health Institute, Pologne

ABSTRACT CONTENT

Objectives
Celiac disease (CD) is a multifactorial disease as its pathogenesis involves both genetic and environmental factors. The patients, in whose family appear autoimmune diseases, such as CD, are at increased risk of developing CD. The aim of the study was to reveal if testing for CD and establishing the diagnosis is common in families of Polish patients with confirmed CD.

Methods
With consent of the authors, the questionnaire “The Impact of Celiac Disease on Your Life” University of Oxford (Health Economics Research Center) & Celiac Disease UK (September 2015) was translated into Polish and used. Two thousand five hundred questionnaires were distributed to members of the Polish Association of People with Celiac Disease and on Gluten-Free Diet and 38.44% (961) of them were completed. In 172 (17.9%) cases the respondents introduced GFD without proper CD diagnosis. Therefore, only patients with confirmed CD diagnosis (n=789, 82.1%) were included to the study.

Results
The tests for CD were conducted in the families of 434 (44%) surveyees. The average number of family members of Polish CD patients tested for CD was 1.1. There was statistically significant correlation between the duration of CD and the number of family members tested for CD ($p < 0,001$).

The statistical analysis revealed that the more family members were tested for CD, the more of them were diagnosed with CD ($p < 0,001$). CD diagnosis was made for family members of 160 (20%) respondents. In 123 (76.8%) families one person was diagnosed with CD, whereas in 37 families CD diagnosis was established for two or more family members.

Conclusion
The results suggest that more family members of patients with confirmed CD should be tested for the disease so as to introduce GFD as early as possible and prevent the development of the disease.

Conflicts of interests
no confilct of interest

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00126

Final poster ID: P2-17

Title: The changes in manner of diagnosing CD among Polish children

Presenting author: Emilia Majsiak

Co-authors: Emilia MAJSIAK (1), Magdalena CHOINA (1), Bozena CUKROWSKA (2) - (1)The Polish-Ukrainian Foundation of Medicine Development, Pologne, (2)Department of Pathology, Children's Memorial Health Institute, Pologne

ABSTRACT CONTENT

Objectives
Celiac disease (CD) is one of the most common autoimmune diseases and may occur both in children and in adults. According to ESPGHAN 2012 Guidelines for CD Diagnosis, CD can be detected in children without biopsy. The aim of the study was to determine the changes in method of diagnosing CD among Polish children.

Methods
The questionnaire “The Impact of Celiac Disease on Your Life” University of Oxford (Health Economics Research Center) & Celiac Disease UK (September 2015) was translated and used with consent of the authors. Two thousand five hundred members of the Polish Association of People with Celiac Disease and on Gluten-Free Diet (GFD) were sent the questionnaire. Out of them, 961 (38.44%) completed the questionnaire. As long as 172 (17.9%) respondents introduced GFD without having confirmed CD, they were excluded from the study. Therefore, the results were based on responses of 789 (82.1%) surveyees with proper CD diagnosis.

Results
In the study group, 224 (28.3%) patients were children. The diagnosis was made after the year 2012 for 161 (71.8%) underage patients. Blood tests were performed on 214 (95.5%) on them and 154 (71.9%) children were tested in this way after the year 2012. Out of all children, 59 (26.3%) were diagnosed without biopsy: 7 patients before and 52 patients after the year 2012. One hundred one children (45%) underwent HLA-typing. In this group, 46 patients were diagnosed without biopsy: 25 children before and 21 children after the year 2012.

Conclusion
The analysis revealed that almost one third of Polish children diagnosed with CD after the year 2012 did not undergo the biopsy, as it was suggested in ESPGHAN Guidelines.

Conflicts of interests
no conflict of interest

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00138

Final poster ID: P2-18

Title: The bottom of the Celiac Disease (CD) iceberg:a disease still underestimated in Rome .

Presenting author: Italo De Vitis

Co-authors: Italo DE VITIS (1), Gianmarco GIORGETTI (2), Alberto CHIRIATTI (3), Rosanna CANTARINI (4), Giulio NATI (5), Alfonso FIORILLO (6), Sara ENNAS (7), Alessia SCARABOTTI (8), Carminia BATTIMELI (8) - (1)A.Gemelli Foundation IRCCS, Italie, (2)Nutritional Unit S.Eugenio H, Italie, (3)Italian Federation of general practitionner, Italie, (4)Italian Society of general practice, Italie, (5)Italian Societyof general Medicine and primary care, Italie, (6)Italian society of General medicine and Primary care, Italie, (7)A Gemelli Foundation IRCCC, Italie, (8)Italian society of General practice, Italie

ABSTRACT CONTENT

Objectives
CD is a genetic,immune-mediated,small bowel enteropathy that causes malabsorption and damage to many tissues.This illness diagnosed by antibodies and duodenal biopsies,may be asymptomatic for many years and have a “wide range” of manifestations.According to the Italian Society of General Medicine (ISGM)’s Health Search database, the prevalence of CD in Italy is 0.43%(expected 1%).People diagnosed with CD are assigned the code RI0060 or 059 by the Italian Ministry of Health (IMH) and verified by IMH-authorised medical centres which release a CD certification.On the other hand, general practitioners (GPs) use another code (ICD9) to record all CD cases (real or doubt).The aim of this study was to assess the real prevalence of CD in the population in Rome.

Methods
We randomly selected 20,064 people across 16 GPs based in Rome and queried the MilleUtilità database (provided by ISGM) by filtering records with the code ICD9, in order to identify people who were diagnosed CD by GPs; and then how many of them were registered at the IMH with the code RI0060/059.People identified by GPs with ICD9 code,but without RI0060/059 codand certificate from the IMH-authorised medical centers,were contacted for a phone interview consisting of nine open questions with multiple choice regarding CD symptoms and diagnostic pathway.

Results
Of the 20,064 people,91(0.45%)were identified by the ICD9 code but only 60 (0.30%) also identified by the RI0060/059 code.Of the remaining 31(34% of ICD9 cases),only 29 participated in the interview:13 ICD9 registered believed to be celiac but the majority of them (69%) had never been screened for CD; the other 16 denied to be celiac but started a “light” gluten free diet for self-diagnosed CD or gluten sensitivity!

Conclusion
This study indicates that 34% of CD cases registered by GPs are misdiagnosis.This condition can cause a delay in identification of real CD cases and may provoque complications and development of associated disease.We emphasize the role of GPs as the first doctor to screen a new suspected CD patient and stressed the link whit the specialized center.

Conflicts of interests
Nothing to declare.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00142

Final poster ID: P2-19

Title: Distribution of HLA-DQ2 and HLA-DQ8 alleles in native South Indian population

Presenting author: Anil Verma

Co-authors: Anil VERMA (1), Chiara MONACHESI (1), John MECHENRO (2), Giriprasad VENUGOPAL (2), Balakrishnan S. RAMAKRISHNA (2), Carlo CATASSI (3) - (1)Celiac Disease Research Laboratory, Department of Pediatrics, Università Politecnica delle Marche, Italie, (2)SRM Institute of Gastroenterology, Hepatobiliary Sciences & Transplantation, SIMS Hospital, Inde, (3)Department of Pediatrics, Università Politecnica delle Marche, Inde

ABSTRACT CONTENT

Objectives
Human Leukocyte Antigen (HLA) associated alleles (HLA-DQ2/HLA-DQ8) are a necessary factor for the development of coeliac disease (CD). About 90%-95% CD affected individuals in Europe carry HLA-DQ2 and 5%-10% carry HLA-DQ8 alleles. The HLA-DQ alleles also occur in 35-40% of the general European population with a higher frequency of HLA-DQ2 (28%) and a lower frequency of HLA-DQ8 (9%). However, in non-European populations, HLA-DQ distribution is not fully known. A higher proportion of HLA-DQ8 and a lower proportion of HLA-DQ2 has been reported from USA, Asian, Cuban and Chilean populations. In this study, we verified the HLA-DQ2 and HLA-DQ8 alleles distribution in non-celiac native South Indian populations.

Methods
Overall 211 healthy native south Indian subjects (pediatric and adult) were selected. A drop of finger blood was collected on protein saver cards and shipped to our laboratory in Ancona, Italy. HLA-typing was performed using Celiac gene screen real-time and DQ-CD Typing plus kit developed by BioDiagene SRL (Palermo, Italy). All 211 samples were typed with Celiac gene screen real-time kit to identify the HLA-DQ2 and/or HLA-DQ8 status, all samples with positive HLA-DQ2/DQ-8 alleles were re-typed for celiac associated allele analysis and their homozygous/heterozygous status using DQ-CD Typing plus kit.

Results
out of 211 typed samples, 88 were positive for HLA-DQ2 and/or -DQ8. Of those 88 positive samples, 40 were positive for HLA-DQ2 haplotype (19%) and 48 samples typed positive for HLA-DQ8 haplotype (23%) in the native south Indian general population.

Conclusion
This study found 42% prevalence of HLA-DQ2/HLA-DQ8 in native south Indian population. This study also concluded that unlike European countries, HLA-DQ8 frequency is higher than HLA-DQ2 frequency in native non-celiac south Indian population. However, this study requires native north Indian blood sample to compare the HLA-DQ distribution between native North and south Indian populations.

Conflicts of interests
Carlo Catassi is a scientific consultants to Dr Schär's, all other authors declare no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00145

Final poster ID: P2-20

Title: Adult celiac disease patients diagnosed in early childhood have less comorbidities but poorer self-perceived health than those diagnosed later

Presenting author: Sara Koskimaa

Co-authors: Sara KOSKIMAA (1, 2), Laura KIVELÄ (3), Taina ARVOLA (4), Heini HUHTALA (5), Katri KAUKINEN (6), Katri LINDFORS (7), Kalle KURPPA (1) - (1)Tampere Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, Finlande, (2)Faculty of Medicine and Health Technology Sciences, Tampere University, Finlande, (3)Tampere Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, and New Children's Hospital, Helsinki University Hospital, Helsinki, Finlande, (4)Tampere Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, and Department of Pediatrics, Hospital District of Kanta-Häme, Hämeenlinna, Finlande, (5)Faculty of Social Sciences, Tampere University, Finlande, (6)Celiac Disease Research Center, Tampere University and Tampere University Hospital, and Department of Internal Medicine, Tampere University Hospital, Finlande, (7)Celiac Disease Research Center, Tampere University and Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
In theory, early screening for celiac disease could be used to prevent most disease-associated complications. However, diagnostic features and long-term health outcomes of those diagnosed in early childhood are poorly known. We investigated these issues in children diagnosed with celiac disease including a follow-up of currently adult patients.

Methods
Medical data were collected of 978 pediatric patients. Furthermore, 559 currently adult patients received a specific study questionnaire and validated GSRS and PGWB questionnaires evaluating gastrointestinal symptoms and quality of life. All results were analyzed between patients diagnosed in early (≤3.0 years) and later (3.1-17.8 years) childhood.

Results
Altogether 131 (13%) patients were diagnosed ≤3 years of age. They had more often total villous atrophy (37% vs 25%, p=0.001), gastrointestinal presentation (61% vs 47%, p<0.001), poor growth (70% vs 32%, p=0.001) and severe symptoms (30% vs 9%, p<0.001), but were less often screen-detected (10% vs 27%, p<0.001) at diagnosis than those diagnosed later in childhood (n=847). They were also diagnosed during earlier years (median 2005 vs 1999, p<0.001), which was adjusted in the analyses. Of 239 adults responding the questionnaires, early diagnosed patients (n=36) had less comorbidities (25% vs 46%, p=0.010), but considered their general health lower (good/excellent 69% vs 84%, p=0.029). The groups were comparable in gender distribution (69% women), current age (median 27 years), employment status, family history for celiac disease, regularity of exercise, BMI, health concerns, follow-up and GSRS and PGWB scores.

Conclusion
Patients diagnosed in early childhood suffered more severe diagnostic presentation and reported lower general health in adulthood, but had less comorbidities compared to those diagnosed later. Results support early screening for celiac disease but underline also possible challenges associated with diagnosis set at very young age.

Conflicts of interests
None.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00147

Final poster ID: P2-21

Title: Gluten free diet and survival in adult patients with celiac disease : Cohort Study

Presenting author: Ferdaouss Lamarti

Co-authors: Ferdaouss LAMARTI (1), Imane BENELBARHDADI (1), Laila LAHLOU (2), Fatima-Zahra AJANA (1) - (1)Medicine C Department, Avicenne hospital, Mohammed V University, Maroc, (2)Laboratory of epidemiology and clinical research, Faculty of medicine and pharmacy, Mohammed V University, Maroc

ABSTRACT CONTENT

Objectives
To describe the causes of death in celiac disease (CeD), to assess their compliance with the gluten free diet (GFD), identify the associated risk factors, and calculate the average overall survival in celiac patients.

Methods
It is a prospective cohort over a 23-year period, including celiac patients in our department. Calculation of the average overall survival in months was done by kaplan Meier method, the comparison by a Log Rank test and the factors associated with the death in the patients were made Cox model. SPSS 13.0 was used.

Results
Of a total of 284 patients, 7.39% deaths occurred. The sex ratio F / H was 1.62.
Mean age at the time of diagnosis was 35.14 years.Diarrhea was found in 18 patients (85.71%) with a significant difference between survival in patients who had diarrhea compared to patients who had not(p = 0.008).Median survival was 180 months [148 - 253]. Survival at 12 months was 85% ,79% at 24 months.There is no difference between survival for males and females (p = 0.7).Death occurred at the diagnosis in 14.28%.One-third of the patients (n = 7) died of invasive T-cell lymphoma.28.57% of patients died from severe malnutrition.9.52% died from hail adenocarcinoma.One patient (4.76%) died from cancer head of pancreas.The remaining deaths were related to gastric adenocarcinoma (n=2), hepatocellular carcinoma on cryptogenic cirrhosis (n = 1), cerebral thrombophlebitis (n= 1) and massive pulmonary embolism (n = 1). Poor adherence to the GFD was noted in 47.61% and good compliance in 38.09% with a significant difference between survival in patients with good compared to those with poor compliance (p = 0.037).

Conclusion
The causes of death were varied dominated by hail lymphoma and malnutrition. They seem to be favored by the delayed diagnosis and poor compliance of the GFD.
A serious complication of CeD can be the circumstance of discovery and cause death.

Conflicts of interests
No conflicts of interest.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00194

Final poster ID: P2-23

Title: Clinical Spectrum of Celiac Disease in Adults at a Tertiary Care Hospital in Karachi, Pakistan.

Presenting author: Verda Arshad

Co-authors: Verda ARSHAD, Faisal Waseem ISMAIL - (1)Aga Khan University Hospital, Pakistan

ABSTRACT CONTENT

Objectives
To study celiac disease in patients from initial presentation to diagnosis and to ascertain the effect of a low resource setting on improvement in disease process.

Methods
This is a retrospective cross-sectional study conducted at a tertiary care center in Karachi, Pakistan. Medical records of patients with a diagnosis of celiac disease were reviewed for the last 10 years (2008-2018). Diagnosis of celiac disease had been established on the basis of endoscopy and tissue biopsy. Data on demographics, presenting complaints, investigations, endoscopy results and follow up visits was collected.

Results
A total of 126 patients were included, 49 males and 77 females with a mean age of 35.5 ± 12.3 years. 19.0% subjects had ≥1 autoimmune disease. The most common intestinal symptoms reported were abdominal pain (56.3%), diarrhea (55.6%), weight loss (49.2%); extra-intestinal symptoms were anemia (69.0%), fatigue (24.6%), psychiatric disturbance (12.7%). After microcytic anemia (36.5%), increased ALT (17.5%) was the most common LP derangement. On endoscopy, the most common changes were visible fissuring (43.7%) and atrophic mucosa (29.4%). Biopsy findings showed increased intraepithelial lymphocytes (IELs)(92.9%) and villous atrophy(77.8%). 64.3% had positive anti-tissue transglutaminase antibodies. 61 subjects (48.4%) were lost to follow-up. In those reporting improvement (40.4%, n=51), 81.8% showed symptomatic improvement, 72.9% showed improvement in laboratory parameters and 66.7% showed improvement in endoscopic findings.

Conclusion
The most commonly seen features of celiac disease were symptomatically abdominal pain, diarrhea, anemia, fatigue; visible fissuring on endoscopy and IELs on biopsy. A concerning majority (48.4%) of subjects was lost to follow up for a variety of reasons including inability to afford advised gluten-free diet and a poor understanding of the disease process.

Conflicts of interests
There is no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00196

Final poster ID: P2-24

Title: Phenotypic and genotypic differences between familial and sporadic celiac disease

Presenting author: Laura Airaksinen

Co-authors: Laura AIRAKSINEN (1), Lauri MYLLYMÄKI (1), Katri KAUKINEN (1, 2), Heini HUHTALA (3), Katri LINDFORS (1), Kalle KURPPA (4) - (1)Celiac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University, Finlande, (2)Department of Internal Medicine, Tampere University Hospital, Finlande, (3)Faculty of Social Sciences, Tampere University, Finlande, (4)Tampere Centre for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
There is a strong familial risk for celiac disease (CeD). It is obscure if the clinical presentation and long-term outcomes between familial and sporadic CeD are comparable. We investigated this issue as regards to predisposing HLA-DQ-type, clinical features and treatment outcomes.

Methods
This follow-up study included 1064 CeD patients. They were divided into familial and sporadic cases based on the presence of relatives with CeD. The distribution of HLA-DQ2.5, -DQ8 and -DQ2.2 were compared between the groups. Clinical data was collected from medical records and supplemented by patient interviews.

Results
There was a significant difference in the distribution of HLA-DQ-types (p=0.001); particularly in HLA-DQ2.5 homozygosity (familial 21% vs. sporadic 12%). Familial patients were more often screen-detected (26% vs. 2%) and EmA positive (89% vs. 82%, p=0.04) at diagnosis. They had less often dermatitis herpetiformis (14% vs. 21%, p=0.002) and gastrointestinal presentation (49% vs. 69%) and severe symptoms (47% vs. 65%) at diagnosis. The groups did not differ in the prevalence of childhood diagnoses, malabsorption and associated co-morbidities or severity of histological damage. Adherence and capability to manage gluten-free diet was also equally good, as was histological recovery after one year on diet. At the time of the study, familial cases reported less gastrointestinal symptoms (21% vs. 30%, p=0.004) and had lower prevalence of all (78% vs. 86%, p=0.007), neurological (10% vs. 15%, p=0.013) and dermatological (9% vs. 17%, p=0.001) co-morbidities.

Conclusion
Familial cases were more often HLA-DQ2.5 homozygotes and had milder diagnostic presentation and more favorable long-term outcomes than sporadic subjects despite comparable dietary adherence. The results indicate that screening of family members with high HLA risk affects to the diagnostic features and outcomes of CeD.

Conflicts of interests
Authors claim no conflicts of interest.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00204

Final poster ID: P2-25

Title: HLA-DQ2 dose effect on clinical picture of celiac disease

Presenting author: Laura Airaksinen

Co-authors: Laura AIRAKSINEN (1), Pilvi LAURIKKA (1), Henna PEKKI (1), Heini HUHTALA (2), Kalle KURPPA (3), Teea SALMI (1, 4), Päivi SAAVALAINEN (5), Katri KAUKINEN (6), Katri LINDFORS (1) - (1)Celiac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University, Finlande, (2)Faculty of Social Sciences, Tampere University, Finlande, (3)Tampere Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, Finlande, (4)Department of Dermatology, Tampere University Hospital, Finlande, (5)Research Programs Unit, Immunobiology, and Department of Medical and Clinical Genetics, University of Helsinki, Finlande, (6)Celiac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University and Department of Internal Medicine, Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
The phenotype of celiac disease (CeD) varies considerably among patients. Previous studies report contradictory findings on the association between clinical features and the dosage of HLA-DQ2 alleles. We investigated whether HLA-DQB1*02 allele dosage is associated with distinct clinical parameters at the time of CeD diagnosis and response to gluten-free diet.

Methods
The study included 666 HLA-DQ-genotyped non-related Finnish CeD patients grouped as having 0, 1 or 2 HLA-DQB1*02 alleles. Clinical data was collected systematically from the medical records. Further, all participants were interviewed by a physician or a study nurse. The collected data included the severity of symptoms, existence of CeD-specific antibodies, small-bowel mucosal histology and age at the time of diagnosis. In addition, results of histology and existence of persistent symptoms during follow-up were included.

Results
At diagnosis, the percentage of patients positive for CeD-specific antibodies differed significantly (p=0,03) between the different HLA-DQB1*02 dosage groups antibody positivity being the most frequent among HLA-DQB1*02 homozygotes. Small-bowel mucosal histology, severity of symptoms and age at diagnosis were comparable between the dosage groups. During follow-up, patients lacking HLA-DQB1*02 alleles reported more often persistent symptoms (46% vs. 32% in homozygotes and 23% in heterozygotes, respectively) whereas there were no differences in histological recovery between the groups.

Conclusion
Our results suggest a significant HLA-DQB1*02 gene dose effect in terms of CeD-specific antibody positivity but not regarding other measured parameters at diagnosis. Recovery of histology seems not to be related with the amount of HLA-DQB1*02 alleles. Surprisingly, however, persistent symptoms during follow-up were more common in HLA-DQB1*02 negative patients which deserves further investigation.

Conflicts of interests
Authors claim no conflicts of interest.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00211

Final poster ID: P2-26

Title: Characterizing the Phenotype of Very Early Onset Celiac Disease

Presenting author: Arunjot Singh

Co-authors: Arunjot SINGH, Jordan HEIMAN, Lydia RAMHARACK, Patricia BIERLY, Lisa FAHEY, Ann FARRARA, Kara FEIGENBAUM, Karen HLYWIAK, Janel STEINHOFF - (1)Children's Hospital of Philadelphia, États-Unis

ABSTRACT CONTENT

Objectives
Very early onset celiac disease (VEO-CD) represent a unique cohort that may unlock our understanding of how genes, environment and immune dysregulation result in intestinal damage. The aim of this study is to determine the proportion of celiac disease diagnosed in the first 3 years of life at a large, urban tertiary academic center and link clinical presentation with duodenal histology and HLA genotyping.

Methods
This is a retrospective study reviewing electronic medical records from 2008-2017 of children less than 3 years of age with biopsy proven celiac disease (CD) at the Children's Hospital of Philadelphia. Demographics, immunogenetics, celiac serologies, clinical symptoms, and pathology reports were all reviewed if applicable.

Results
267 VEO-CD cases were identified from the celiac registry, with 95 qualifying with biopsy proven disease (Marsh 2 or greater). The average age of diagnosis was 24.6 months, with the youngest subject diagnosed at 12 months. The most common primary symptom was diarrhea (23%) and co-existing deficiencies include vitamin D (21%), zinc (29.4%) and anemia (30%). respectively.Celiac HLA genotyping was performed in 21 of these patients of which positive gene tests were HLA DQ2 homozygous. 4 of 21 patients were actually identified through HLA typing to be negative for both HLA DQ2/8 alleles. Of these four "gene-negative" cases, one was serology-negative and the other three were serology positive for deamidated gliadin and tissue transglutaminase IgA. All four had negative endomysial antibody levels.

Conclusion
The severity of disease and classic symptoms in VEO-CD appear consistent with previously described phenotype in past celiac research. Given the HLA-negative cases found in our cohort, the value of conducting more comprehensive gene sequencing may elucidate new disease susceptibility genes that could be valuable in clinical practice as has been successfully applied in inflammatory bowel disease and other conditions.

Conflicts of interests
There were no conflicts of interest.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00219

Final poster ID: P2-27

Title: A sex-based comparison of initial presentation and disease severity in celiac disease

Presenting author: Stephanie Moleski

Co-authors: Stephanie MOLESKI (1), Christopher CAO (1), Peter BLOCK (1), Madeline RUSSELL (2), Devayu PARIKH (2), Justin ROBBINS (2), Anthony DIMARINO (1) - (1)Thomas Jefferson University Hospital, États-Unis, (2)Sidney Kimmel Medical College, États-Unis

ABSTRACT CONTENT

Objectives
Celiac disease (CD) has historically been thought of as a female-predominant disease. A recent study implied these differences may not be as significant as once believed. The objective of this study is to assess for sex differences in CD at the Jefferson Celiac Center.

Methods
This is a single center retrospective chart review at an urbanhospital. Inclusion criteria were any adult patient diagnosed with CD at Thomas Jefferson University Hospital. Patients without clear documentation of initial presentation were excluded. Outcomes included age at diagnosis, demographic and socioeconomic data, presenting symptoms and relevant clinical values, mode of diagnosis, and adherence to diet. Mean household income per capita was determined by zip code.

Results
We included 101 patients (77% females, n=78). Ethnicity was similar between sexes. Female patients had a lower mean age (37.4 yr in females; 45.0 yr in males; p=0.048) and lower hemoglobin at presentation (13.2 in females; 14.3 in males; p=0.003). Mean household income per capita were comparable among sexes ($40,444/yr in females; $42,701/yr in males). Female patients also had a lower BMI and higher total cholesterol, though not statistically significant. Presenting symptoms were similar in both sexes. Evidence of villous blunting on biopsy was less prevalent in females (76.9% in females; 85.7% in males). Females were also self-reportedly more adherent to a gluten free diet.

Conclusion
This study found similar presentation of Cd in male and female patients. The differences noted were females presented at a younger age, had lower hemoglobin on presentation, and were more adherent to a gluten free diet. There was a trend towards males having more villous blunting on initial biopsy, suggesting a relative delay in diagnosis and increased illness severity at presentation. Notably, similar household incomes between groups suggest that sex discrepancies in time-to-diagnosis, initial disease severity, and dietary adherence may be due to factors other than financial barriers. Clinicians must have a high index of suspicion for CD in male and female populations.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00239

Final poster ID: P2-28

Title: Exploring the profile of celiac disase between adult and pediatric celiac patients

Presenting author: Efrat Broide

Co-authors: Efrat BROIDE, Dana ZELNIK YOVEL, Lena BEREZOVSKY - (1)Assaf Harofeh Medical Center, Israël

ABSTRACT CONTENT

Objectives
Past studies reported differences in disease expression, epidemiology, coexisting diseases, complications, and association with obesity, between pediatric and adult patients with celiac disease (CD). The purpose of this study was to compare demographic, clinical and social data as well as adherence status between pediatric and adults celiac disease

Methods
An anonymous online questionnaire has been sent via the Israeli Celiac association and through social networks. Socio-demographic and clinical data were reported. Adherence to GFD was assessed by Biagi questionnaire.

Results
445 patients were included in the study, mean age 25.7±17.5 years, 71.9% female. Patients were divided into 6 different age groups- under 6 years old (134 patients) , 6-12 (79 patients), 12-18 (41 patients), 18-30 (81 patients), 30-45 (79 patients) and 45 + years old (23 patients). Abdominal pain, diarrhea, distended abdomen, anemia, TSH abnormalities and short stature had different prevalence among the different age groups.

We found significant differences in – Gender (more females in the adult group- 78% vs 63%, P<0.001) as well as in ethnicity (more Ashkenazy Jew in the adult group, 62% vs 45%, P<0.001). The pediatric group had more frequent gastroenterology and dietitian follow up (p<0.001 in both). Pediatric patients reported to be more frequent a part of a supporting group compared to adults (p=0.002). Finally, pediatric patients were found to be more compliant to GFD compared to adults (p<0.001)

Conclusion
there are differences in the clinical profile of celiac disease between children and adults. Pediatric celiac patients are more adherent to GFD. Different management approach should be considered in the different age groups.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00257

Final poster ID: P2-29

Title: Infantile Onset Coeliac Disease is Different from Coeliac Disease presenting in older children

Presenting author: Sadhna Bhasin Lal

Co-authors: Sadhna BHASIN LAL (1), Aradhana ANEJA (2), Vybhav VENKATESH (2), Raghav LAL (3), Kaushal Kishore PRASAD (3) - (1)Prof & Head, Division Of Paediatric Gastroenterology, PGIMER, Inde, (2)Division Of Paediatric Gastroenterology, PGIMER, Inde, (3)Department Of Pathology, PGIMER, Inde

ABSTRACT CONTENT

Objectives
The data on infantile celiac disease is scarce. This study aims at providing data on clinical profile , etiological factors , diagnostic markers in patients of infantile coeliac (age of onset ≤2 years) & comparing it with children with onset after 2 years

Methods
A prospective analysis of medical records of 683 children with CD, was performed over the last 1 year. Demographic profile, symptoms, family history, breast feeding details, age of cereal introduction, serology and biopsy findings, compliance to gluten free diet and follow up clinical data were recorded & compared between 2 groups- Infantile celiac (age of onset ≤2 years) and those with onset more than 2 years.

Results
Of 683 children (53% boys),mean age 6 years, 34 % had infantile onset. Typical coeliac disease was significantly more common in infantile group (78% vs 52%). Any breast feeding & duration of exclusive breast feeding was significantly less in the infantile group (87% vs 95%; 4.6 vs 6.8). 13% of children with infantile onset CD never had any breast feeding compared to 5 % in older onset CD (<0.001). Mean age of cereal introduction was 7 months vs 9.4 months in older children (p<0.001) . Presentation with celiac crisis was higher in the infantile group (6.2% vs 1%, p=0.001). Biopsy was performed in 87% of which Marsh 3 changes were seen in 85%. Infants had a significantly faster catch up growth and haemoglobin recovery.

Conclusion
*One third of CD occurs in the infant age group in the Coeliac belt of India.

*Infants are significantly more likely to have Typical CD, no exclusive breast feeding, as well as lesser duration of exclusive or any breast feeding.

*Presentation with celiac crisis was higher in the infantile group.

*Faster recovery in terms of height and weight catch up and faster haemoglobin recovery was seen in the infantile group.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00258

Final poster ID: P2-30

Title: Spectrum Of Presentation in children with Coeliac Disease in the Coeliac Belt Of India

Presenting author: Sadhna Bhasin Lal

Co-authors: Sadhna BHASIN LAL (1), Aradhana ANEJA (2), Vybhav VENKATESH (2), Raghav LAL (2), Kaushal Kishore PRASAD (2) - (1)Prof & Head, Division Of Paediatric Gastroenterology, PGIMER, Inde, (2)Division Of Paediatric Gastroenterology, PGIMER, Inde

ABSTRACT CONTENT

Objectives
We aimed to relook at the clinical features of children diagnosed with CD attending a Coeliac Disease Clinic (CDC) in the CD belt of North India over the last 1 year.

Methods
A prospective analysis of medical records of 683 children with confirmed CD, who attended the CDC over the last 1 year was performed. Demographic profile, symptoms, family history, breast feeding details, age of cereal introduction, serology and biopsy findings, compliance to gluten free diet were analysed.

Results
Of the 683 children 53% were boys & mean age was 6 years. Most common presentations were pallor/anemia (82%), growth faltering (70%), abdominal pain (62 %), diarrhoea (58%), abdominal distension (58%), vomiting (23 %) and constipation (20%) . Family history of coeliac disease was found in 11 % and family history of autoimmunity in 6%. Associated autoimmune disorders were seen in 7.2 %. Typical CD was seen in 61% of children. Any breast feeding was seen in 89% and 14% had never had any exclusive breast feeding. Mean age of cereal introduction was 8.7 months. Presentation with coeliac crisis was 3%, Vitamin D deficiency in 27% & water soluble deficiency in 17%. TTGA was positive in 85% (>10 ULN- 63%). Biopsy was performed in 87% of which Marsh grade 3 changes were seen in 85 %. Patients with poor compliance to GFD had increased incidence of type 1 DM(5%) and hypothyroidism(14%), p <0.001, but poor compliance did not affect recovery of growth & anemia.

Conclusion
*61% children had typical CD.

*Villous atrophy was seen in 85% of biopsied patients.

*Family history of CD was present in 11% & autoimmune disease in 7%.

*Poor compliance to gluten free diet was associated with development of hypothyroidism and type 1 diabetes mellitus but normal catch up of growth & recovery of anemia.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00281

Final poster ID: P2-32

Title: Correlation Between Total IgA and Tissue Transglutaminase IgA antibodies

Presenting author: Stine Dydensborg Sander

Co-authors: Stine DYDENSBORG SANDER (1), Steffen HUSBY (2), Torben BARINGTON (1), Søren Thue LILLEVANG (1) - (1)Department of Clinical Immunology, Odense University Hospital, Danemark, (2)Hans Christian Andersen Children's Hospital, Odense University Hospital, Danemark

ABSTRACT CONTENT

Objectives
To describe the correlation between serum levels of total immunoglobulin A (IgA) and tissue transglutaminase IgA antibodies (tTG-IgA).

Methods
All serum samples routinely analyzed for total IgA and tTG-IgA at the Department of Clinical Immunology at Odense University Hospital from 2011-2018 were included. Furthermore, we included serum samples analyzed for tTG-IgA from 2007-2010, where total IgA was not routinely analyzed. The serum samples included both screening of patients suspected of celiac disease and control of patients diagnosed with celiac disease.

Total IgA was analyzed by Optilite® (The Binding Site); measuring range: 0.021-7.2 g/l). tTG-IgA was analyzed by Quanta Lite® R h-tTG (Inova Diagnostics Inc); measuring range: <20 arbitrary units (AU) (negative) to >150 AU.

Results
From 2011 to 2018, tTG-IgA was analyzed in 71,269 serum samples (53,802 unique individuals) and total IgA was available for 71,125 of these samples (53,721 individuals). A total of 4,750 serum samples were positive for tTG-IgA (≥20 AU), hereof 662 with tTG-IgA ≥150 AU. Total IgA was < 0.021 g/l in 392 samples; 5 of these had positive tTG-IgA.

In serum samples negative for tTG, the median total IgA was 1.75 g/l (IQR 1.19;2.44). In serum samples with positive tTG (≥20 AU), the median total IgA was 1.96 g/l (IQR 1.32;2.96).

A total of 52,414 individuals had at least one serum sample with a negative tTG-IgA. For 976 of these individuals, one or more samples were positive for tTG-IgA from 2007 to 2018; 206 with tTG-IgA ≥150 AU.

The median total IgA was 1.77 g/l (IQR 1.20;2.46) in individuals with only negative tTG-IgA; 2.19 g/l (IQR 1.46;3.02) in individuals with the highest registered tTG-IgA ≥20-50 AU; 1.89 g/l (IQR 1.24;2.64) in individuals with tTG-IgA ≥50-100 AU; 1.60 g/l (IQR 1.22;2.30) in individuals with tTG-IgA ≥100-150 AU; and 1.57 g/l (IQR 0.98;2.10) in individuals with tTG-IgA ≥150 AU. (Kruskall-Wallis; p<0.0001).

Conclusion
Our findings suggest that individuals with a history of low levels of positive tTG-IgA have higher total IgA compared to individuals with a history of only negative tTG-IgA or high levels of tTG-IgA.

Conflicts of interests
No.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00282

Final poster ID: P2-33

Title: Prevalence of celiac disease among school-aged children in Algiers

Presenting author: Manoubia Bensmina

Co-authors: Manoubia BENSMINA, Karima BERKOUK, Abdeldjalil MAOUDJ, Asmahane LADJOUZE, Nadjet BOUHAFS, Rawda ABOURA, Souhila MELZI, Abdennour LARABA - (1)CHU Bab El Oued, Algérie

ABSTRACT CONTENT

Objectives

The main objective of our work was to evaluate the prevalence of CD among school-age children (6 years-15 years) in the Algiers area, and secondarily describe the clinical forms of children diagnosed in our study.

Methods

During the 2014-2015 school year, we tested with a rapid test finger (Biocard coelic testew generation) 4868 children, 2273 boys and 2595 girls (respectively 2369 in the primary school and 2499 collegian) .The children with positive IgA AtTG negative IgA had assay, IgA or IgG AtTG by ELISA, HLA typing and intestinal biopsy. We used the diagnostic criteria of the ESPGHAN 2012.

Results

4 children were already known as having a CD and we screened 25 children with IgA or IgG AtTG positive, positive HLA DQ2 and ± histological evidence the prevalence is 0.59% (95% CI 0.40-0.86) either 1: 169. The seroprevalence of CD is 0.53% (95% CI 0.35-0.72) either 1: 188.There is no difference in the prevalence whatever the age group.

The sex ratio is 0.52 but no significant difference between the two genders.The z-scores of height for children diagnosed are significantly lower than those of the sample (p = 0.0026). While the z-scores of weight and BMI are lower but not significantly.

17 children had a classic form of CD, including 13 with digestive manifestations, it were mainly pain and abdominal bloating. The extra digestive manifestations were represented by anemia, asthenia and anorexia.8 children had silent CD and an 10 years old boy presented a potential CD.

Conclusion
The prevalence of CD in the pediatric population in Algiers is similar to that found in the neighboring country and even to that found in the Western countries.The forms are multiples but even children with digestive symptoms are not diagnosed, for this reason it's interesting to give better information about this disease for general doctors, school physicians to allow an early diagnosis.

Conflicts of interests
No potential conflict of interest for all the authors.

POSTERS

THEME :
EPIDEMIOLOGY/DIAGNOSTIC

Abstract #: ICDS00292

Final poster ID: P2-34

Title: Co-occurrence of Celiac Disease and Type 1 Diabetes in diverse ethnic groups at the University of Chicago

Presenting author: Valentina Discepolo

Co-authors: Valentina DISCEPOLO, Cristy MILES, Mariko PUSINELLI, Louis PHILIPSON, Bana JABRI, Ritu VERMA - (1)University of Chicago Medicine - Chicago (United States), États-Unis

ABSTRACT CONTENT

Objectives
The overlap between celiac disease (CeD) and type-1 diabetes (T1D) has been well documented in the Caucasian population, however their co-occurence in other ethnic groups has been understudied. CeD is considered rare in individuals of African descent (Ciclitira et al. 2001), however in a blood donor screening, 1/250 African-Americans were found to have positive endomysial antibodies (Not et al. 1998). Whether the lower incidence of CeD in this ethnic group is due to a lower frequency of HLA-DQ2/DQ8 or to non-genetic factors is unclear. Brar et al, reported that 1% of patients with CeD and T1D at Columbia University were African-Americans (2006). No reports explored this overlap in other ethnic groups. Here we looked retrospectively at the overlap of T1D and CeD in the diverse population of the University of Chicago.

Methods
EPIC SlicerDicer tool was used to identify all patients who received diagnosis of CeD and T1D in the past 5 years and pooled out their demographic data.

Results
We identified 121 patients with a combined diagnosis of T1D and CeD, 63% were females. In relation to ethnicity: 4 (3.3%) patients self-identified as being of Hispanic/Latino ethnicity, 4 of unknown race/ethnicity. Among the 113 (93.4%) self-referred as not Hispanic/Latino, 107 (94.7%) identified as white, 1 (0.9%) unknown, 1 (0.9%) native American and 4 (3.5%) as Black/African-American. Even though less frequent than in Caucasian individuals, the co-occurrence of T1D and CeD among people of African descent is not negligible and similar to those of Hispanic descent.

Conclusion
This report is one of the few describing the co-occurrence of T1D and CeD in individuals of African and Hispanic descent. The evidence that CeD prevalence is not negligible in these ethnic groups, suggests that screening should not be omitted, if clinical suspect is present. A wider population study will be designed to assess the frequency of HLA-DQ2/8 alleles and CeD serology prevalence in these ethnic groups.

Conflicts of interests
The authors have no conflict of interest to disclose

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00019

Final poster ID: P3-01

Title: Symptoms, Gluten Free Diet (GFD) Adherence, and Laboratory Data Do Not Predict Duodenal Mucosal Healing in Celiac Disease (CeD)

Presenting author: Marie Robert

Co-authors: Marie ROBERT (1), Natalie PATEL (1), Amporn ATSAWARUNGRUANGKIT (2), John HART (3), Rish PAI (4), Michael VIETH (5), Balint MELCHER (5), Abdulbaqi AL-TOMA (6), Chris MULDER (6), Mary BRONNER (7), Mariana MORENO PRATTS (7), Bita NIANI (8), Luca ELLI (9), Alessandro DEL GOBBO (9), Sanjay KAKAR (10), Won-Tak CHOI (10), Purva GOPAL (11), Maria WESTERHOFF (12), Jerome CHENG (12), Daniel LEFFLER (2) - (1)Yale University School of Medicine, États-Unis, (2)Beth Israel Deaconess Medical Center, Harvard, États-Unis, (3)University of Chicago, États-Unis, (4)Mayo Clinic, États-Unis, (5)Institute of Pathology Klinikum Bayreuth, Allemagne, (6)St Antonius Hospital, Pays-Bas, (7)University of Utah, États-Unis, (8)University of California, Los Angeles, États-Unis, (9)Center for the Prevention and Diagnosis of Celiac Disease, Italie, (10)University of California, San Francisco, États-Unis, (11)University of Texas, Southwestern Medical Center, États-Unis, (12)University of Michigan, États-Unis

ABSTRACT CONTENT

Objectives
Persistently active CeD despite adherence to a GFD is common. Ongoing villous blunting may cause complications, yet predicting persistent mucosal injury is challenging. We aimed to define factors associated with healing or persistent villous blunting in a multi-national cohort of patients with initial and follow up duodenal biopsies, in order to stratify populations who may benefit from adjunctive therapies, and to assess the role of re-biopsy.

Methods
Samples from patients with initial and follow up biopsies were evaluated blindly by two pathologists to assess Marsh score/intraepithelial lymphocytes (IELs). Biopsy location, symptoms, tTG serology, hemoglobin, diet adherence and medications were recorded. Initial and follow-up biopsies were compared by chi square/Wilcoxon sign rank test.

Results
214 paired biopsies were obtained from 107 patients, mean re-biopsy interval 2.4 years. Of 97 patients with initial Marsh 3 scores in distal duodenal biopsies 69 showed improvement and 28 showed persistent Marsh 3 scores at follow up. Improved histology was associated with strict adherence to a GFD (p=0.022), diarrhea resolution (0.025) and weight normalization (p=0.028). In patients with persistent blunting, 43% observed a strict GFD, 29% had normal tTG titers, and 25% had no CeD symptoms. In patients with improved histology, 55% had persistently positive tTG, 37% had diarrhea, 60% had abdominal pain and 35% had persistent weight loss. Overall, no statistical difference in symptoms was found between patients with or without persistent enteropathy. In 96 patients with IEL counts at both timepoints, normalization (33 patients) or persistence of increased IELs (63 patients) was not associated with any clinical parameter (p=NS).

Conclusion
Common laboratory tests, and signs and symptoms of celiac disease do not reliably predict duodenal mucosal healing at re-biopsy. Ongoing Marsh 3 villous blunting and increased intraepithelial lymphocytes may be present despite clinical improvement. These findings support the need for assessment of mucosal healing in celiac disease.

Conflicts of interests
No

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00043

Final poster ID: P3-02

Title: Anxiety in treated adult celiac patients and the effect of duration of gluten-free diet on its improvment

Presenting author: Mohammad Rostami-Nejad

Co-authors: Mohammad ROSTAMI-NEJAD (1), Taraghikhah NAZANIN (2), Ciacci CAROLINA (3), Pourhoseingholi MOHAMAD AMIN (4), Barzegar FARNOUSH (1), Rezaei-Tavirani MOSTAFA (5), Zali MOHAMMAD REZA (1) - (1)Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (2)Student Research Committee, Gastroenterology and Liver Diseases Research Center, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (3)Coeliac Center at Department of Medicine and Surgery, Scuola Medica Salernitana, University of Salerno, Italie, (4)Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (5)Proteomics Research Center, Faculty of Paramedical Sciences, Student Research Committee, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d'

ABSTRACT CONTENT

Objectives
Psychiatric disorders especially anxiety is one of the considerable extra-intestinal manifestations of celiac disease. The aim of this study is to evaluate the level of anxiety in treated patients with celiac disease (CD) in Iran

Methods
A total of 283 CD patients (190 female, 91 male) were enrolled in a study during 2016-2018. Zung Self-Rating Anxiety Scale (SAS) questionnaire including demographic data such as age, gender, education-level, family history and duration of gluten-free diet (GFD) as well as 20 anxiety assessment questions were completed. Data were analyzed by SPSS version 20

Results
The anxiety level in CD patients was remarkably high (53.61%). Females were significantly associated with a probable anxiety disorder (55.27% versus 48.75%, p=0.009). There was no significantly difference between other personal items [married versus; P=:0.299), (CD family history; P=:0.139), (age groups; P=:0.135), (education level; P=0.304)]. The duration of gluten free diet had no noticeable effect on prevalence of anxiety (51.96% had GFD for<6 month and 48.4% had GFD for > 6 month; P=0.562).

Conclusion
Anxiety may increase the risk of a reduced health-related quality of life and irritable bowel-like symptoms in CDs. As anxiety in female on a GFD is higher than in male, screening for anxiety in female celiacs on a GFD is recommended

Conflicts of interests
The authors declare that they have no conflict of interest

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00051

Final poster ID: P3-03

Title: Screening for celiac disease in Tunisian patients with chronic hepatitis C.

Presenting author: Syrine Saffar

Co-authors: Syrine SAFFAR (1), Sarra MELAYAH (1), Ouafa KALLELA (2), Imene FODHA (2), Ibtissem GHEDIRA (1) - (1)Laboratory of Immunology, Farhat Hached University Hospital, Tunisie, (2)Laboratory of Virology, Sahloul University Hospital, Tunisie

ABSTRACT CONTENT

Objectives
The association between celiac disease (CD) and chronic hepatitis C (CHC) has been suggested in several epidemiological studies with controversial results. The aim of this study was to determine the frequency of CD in Tunisian patients with CHC.

Methods
Ninety six sera of patients with CHC were screened for CD with IgA endomysial antibodies (EmA) by indirect immunofluorescence using human umbilical cord cryosections as substrate. Positive sera in EmA were also tested with IgA anti-transglutaminase 2 (Anti-TG2) and IgA and IgG anti-deamidated gliadin peptides antibodies (Anti-DGP) using an Enzyme Linked Immunosorbent Assay. The control group consisted of 2500 healthy blood donors.

Results
Among 96 sera of CHC patients, one was positive in EmA (1.04%). The patient with IgA EmA had also IgA anti-TG2 and IgA and IgG anti-DGP. The frequency of EmA was higher than that of the control group but the difference was not statistically significant (1.04% vs. 0.28%). CHC patients were divided in two groups: 53 untreated and 43 under treatement. The patient who had EmA was an untreated patient. The frequency of EmA in untreated patients was therefore 2.32% (1/43). This frequency was higher than in healthy blood donors but the difference was not statistically significant (2.32% vs 0.28%). The patient with EmA is a 38-year-old woman. The frequency of EmA in female untreated patients was higher than in female healthy blood donors but the difference was not statistically significant (4% vs 0.4%).

Conclusion
The frequency of CD in CHC Tunisian patients seems to be slightly higher than in healthy subjects. Studies with a larger sample should be undertaken to support this association.

Conflicts of interests
None of the authors have conflicts of interest to declare.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00056

Final poster ID: P3-04

Title: Development of a Sequence Searchable Celiac Database of Peptides and Proteins for Risk Assessment of Novel Food Proteins

Presenting author: Richard E Goodman

Co-authors: Richard E GOODMAN (1), Mohamed ABDELMOTELEB (1), John WISE (1), Barbara BOHLE (2), Fatima FERREIRA (3), Afua O TETTEH (4), Steve L TAYLOR (5), Plaimein AMNUAYCHEEWA (6) - (1)Food Allergy Research and Resource Program, University of Nebraska, États-Unis, (2)Institute of Pathophysiology and Allergy Research, Medical University of Vienna, Autriche, (3)Department of Biosciences, University of Salzburg, Autriche, (4)Private Consultant, États-Unis, (5)Professor, États-Unis, (6)Assoc. Professor, Thaïlande

ABSTRACT CONTENT

Objectives
To develop, test and provide a public database (www.allergenonline.org/celiachome.shtml) to compare novel peptides and proteins to those that elicit celiac disease (CeD). The European Food Safety Authority now requires comparison of sequences of new proteins in genetically engineered crops with CeD eliciting proteins.

Methods
In-depth literature reviews were conducted (2009-2012 and 2016-2018) to identify peptides and proteins with demonstrated risks for eliciting CeD based on studies of gluten-specific CD4+ T cell activation, intestinal pathology or cytokine production in CeD subjects. Identified peptides and proteins were collected for positive matches for new proteins using an exact peptide matching program and FASTA comparisons. Protein sequences from Pooideae (wheat, barley, rye and oats) and gluten-like sequences of other monocots (rice, maize, sorghum or millet) and dicots within the NCBI protein database were tested to establish prediction criteria.

Results
The 2012 database was revised in 2018 and includes 1,013 peptides and 72 gluten proteins from published studies. Tissue transglutaminase in intestinal lamina propria changes specific glutamine amino acids to glutamate increasing binding potency. Therefore both native and deamidated peptide forms are included. Exact peptide matches are definitive while FASTA comparisons can be used to ensure glutens with previously unidentified CeD peptides are identified. FASTA testing of gluten homologues within and outside of Pooideae show excellent predictions for risk or safety based CeD history of the sources.

Conclusion
Criteria differentiating CeD safe proteins from eliciting proteins are the absence of exact peptide matches and of FASTA alignment identity scores < 45% over 100 amino acid segments with E scores > 1e-14.

Conflicts of interests
The authors declare no conflict of interest for this presentation.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00091

Final poster ID: P3-05

Title: Mice colonized with duodenal microbiota of DR3-DQ2 positive individuals without celiac disease exhibit effective gluten metabolic capacity

Presenting author: Alberto Caminero

Co-authors: Alberto CAMINERO, Heather G GALIPEAU, Carolyn M SOUTHWARD, Michael G SURETTE, Bercik PREMYSL, Elena F VERDU - (1)McMaster University, Canada

ABSTRACT CONTENT

Objectives
The role of the small intestinal microbiota in gluten metabolism has emerged in recent years. However, differences in bacterial gluten metabolism based on CeD diagnosis or HLA risk have not been studied. Here, we investigate the gluten metabolic capacity of duodenal microbiota obtained from patients with active CeD and healthy controls with or without CeD risk alleles.

Methods
Duodenal aspirates from CeD patients (n=3; +ve tissue transglutaminase 2, Marsh III, heterozygous for DR3-DQ2) and healthy controls (-ve tTG2, normal biopsy) with (n= 4; heterozygous for DR3-DQ2) or without (n=2) genetic susceptibility were selected. Germ-free C57BL/6 mice fed a gluten-containing diet were colonized with duodenal aspirates from human donors (3 mice per donor). Two weeks post-colonization, mice were placed on a gluten-free diet for one week. Two hours before sacrifice, all mice were gavaged with 7 mg gliadin. The small intestinal content was collected and gluten quantified using G12 antibody. Small intestinal washes were incubated with different gliadin substrates and microbiota was analyzed by 16S sequencing Illumina.

Results
Mice were successfully colonized with duodenal aspirates, and the microbiota profiles in mice clustered by human donor. Colonization reduced the amount of immunogenic peptides in feces of all the recipient mice (~90%) but the hydrolytic profile toward gluten substrates by small intestinal washes was characteristic of each community. Bacterial diversity and the presence of Clostridium were inversely correlated with the amount of gluten recovered in the small intestine. Mice colonized with microbiota from active CeD had higher amount of 33-mer derived peptides in the small intestine whereas mice colonized with microbiota from healthy controls harbouring DR3-DQ2 had greater capacity to degrade gluten and this correlated with reduced amounts of the 33-mer peptide.

Conclusion
The small intestinal microbiota of DR3-DQ2 positive individuals without CeD may be protective by having effective gluten metabolic capacity.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00100

Final poster ID: P3-06

Title: First-degree relatives of celiac disease patients have increased seroreactivity to serum microbial markers

Presenting author: Liisa Viitasalo

Co-authors: Liisa VIITASALO (1, 2), Sari ILTANEN (1, 3), Päivi SAAVALAINEN (4), Heini HUHTALA (5), Markku MÄKI (1), Katri KAUKINEN (6, 7), Kalle KURPPA (1) - (1)Tampere Centre for Child Health Research, Tampere University and Tampere University Hospital, Finlande, (2)Department of Clinical Genetics and Laboratory of Genetics, HUSLAB, University of Helsinki and Helsinki University Hospital, Finlande, (3)Lapland Central Hospital, Finlande, (4)Research Program Unit, Immunobiology, and Department of Medical and Clinical Genetics, University of Helsinki, Finlande, (5)Faculty of Social Sciences, Tampere University, Finlande, (6)Celiac Disease Research Centre, Faculty of Medicine and Life Sciences, Tampere University, Finlande, (7)Department of Internal Medicine, Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
Relatives of celiac disease (CD) patients are susceptible to the disease because of genetic predisposition and possibly also due to environmental factors. We have previously reported increased seropositivity to Saccharomyces cerevisiae (ASCA), Pseudomonas fluorescence (I2) and Bacteroides Caccae (OmpW) in CD. We hypothesized that these markers could be overrepresented also in relatives of CD patients.

Methods
Frequency of seropositivity and ASCA, I2 and OmpW concentrations were compared between 463 first-degree relatives of CD patients and 58 untreated CD patients, 55 patients on a gluten-free diet and 80 non-celiac controls. Furthermore, CD-associated HLA and tissue transglutaminase (tTGab) and endomysium (EmA) antibodies were measured.

Results
One or more microbial marker was positive in 75% of relatives, 97% of untreated CD and 87% of treated CD patients and 44% of controls. The relatives also had higher median ASCA IgA (9.1 vs 4.5 U/ml, $p<0.001$) and ASCA IgG (8.9 vs 5.8 U/ml, $p<0.001$) and I2 (absorbance 0.74 vs 0.32, $p<0.001$) concentrations compared with controls even after excluding subjects with positive tTGab and EmA (n=49). There was a weak positive correlation between tTGab and ASCA IgA ($r=0.31$, $p<0.001$). Seropositivity of relatives was not significantly associated with HLA genotypes (DQ2.5, DQ8, DQ2.2, DQ2+DQ8 or DQ2 and DQ8 negative).

Conclusion
Relatives of CD patients demonstrated higher frequency of seropositivity for microbial markers and increased concentrations of ASCA and I2 compared with non-celiac controls. These findings were not associated with HLA DQ2 or DQ8, suggesting the role of environmental factors and other genetic variants.

Conflicts of interests
None declared.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00122

Final poster ID: P3-07

Title: Prospective Longitudinal Gut Metagenomic Analysis Suggests An Altered Microbiome Composition and Function in Infants Prior to Celiac Disease Onset

Presenting author: Maureen M Leonard

Co-authors: Maureen M LEONARD (1), Francesco VALITUTTI (2), Poorani SUBRAMANIAN (3), Gloria SERENA (1), Victoria KENYON (1), Stephanie CAMHI (1), Paola ROGGERO (4), Chiara Maria TROVATO (2), Celeste Lidia RAGUSEO (5), Pasquina PIEMONTESE (4), Tiziana PASSARO (6), Monica MONTUORI (2), Basilio MALAMISURA (6), Ruggiero FRANCAVILLA (5), Luca ELLI (7), Salvatore CUCCHIARA (2), Hiren KARATHIA (3), Rita COLWELL (3), Nur HASAN (3), Alessio FASANO (1) - (1)Harvard Medical School, Pediatric GI, MGH, États-Unis, (2)Sapienza University of Rome, Pediatric Gastroenterology, Italie, (3)CosmosID, États-Unis, (4)NICU, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Italie, (5)University of Bari, Pediatric Gastroenterology, Italie, (6)University Hospital of Salerno, Pediatric Unit, Maternal and Child Department, Italie, (7)Celiac Disease Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Italie

ABSTRACT CONTENT

Objectives
Most individuals with compatible genetics and gluten exposure do not develop celiac disease (CD), suggesting possible involvement of yet unknown factor(s) in the loss of tolerance to gluten. We utilized an ongoing prospective longitudinal birth cohort of infants at-risk of CD to investigate whether infants that develop CD will have an altered gut microbiome composition and function prior to development of CD.

Methods
As part of a large ongoing prospective study of infants at-risk of CD from birth, 10 children who developed CD during the study and 10 control participants matched with age, gender, and HLA genetics were investigated. Serum was tested for celiac autoantibodies every 6 months and HLA genetics were performed at 1 year of age. Feces were collected from birth through the development of CD or corresponding time point in control participants. A total of 167 samples underwent shotgun metagenomic sequencing, followed by multi-kingdom taxonomic, and functional analyses using CosmosID metagenomics platform. Resultant communities and pathways underwent comparative intra-subject and case control analysis.

Results
Our analysis uncovered no significant differences in microbiome diversity between cases and controls from birth through CD onset but demonstrated compositional and functional shifts in the microbiome. Differential abundance of microbial species and/or functional genes and pathways between cases and controls were detected as early as 2 years before disease onset. Decreasing abundances of butyrate producing organisms (Clostridium clostridioforme ($p<0.01$)) were observed in cases prior to CD onset. Over- and under- abundance of genes associated with synthesis and degradation of ketone bodies as well as styrene and fluorobenzoate degradation prior to CD development, respectively, were also observed.

Conclusion
Significant differences in microbial function and species abundance before CD onset are evident suggesting potential role of microbiome alterations in the development of CD.

Conflicts of interests
AF ubiome,AbbVie,Innovate,Alba,Mead Johnson.AF+MMLTakeda.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00136

Final poster ID: P3-08

Title: Link between patients with likely celiac disease and positive serology for Lyme disease

Presenting author: F. Ramzi Asfour

Co-authors: F. Ramzi ASFOUR (1, 2), Nick WARING (1), Laura MONTGOMERY (1) - (1)California Center for Functional Medicine, États-Unis, (2)Assistant Clinical Professor of Medicine, University of California, San Francisco, États-Unis

ABSTRACT CONTENT

Objectives
This retrospective chart review was performed to determine if there is a link between high celiac disease genetic risk in patients with suspected celiac disease and positive tests for Lyme disease.

Methods
A retrospective chart review was conducted on a series of patients presenting for care at clinic in San Rafael, CA, between November 2015 and January 2019. Patients who had a suspected diagnosis of celiac disease based on symptoms of “irritable bowel,” cognitive dysfunction, or fatigue associated with gluten intake and a high genetic risk for celiac disease defined as either DQ2+DQ8, DQ2+DQ2 or DQ2 homozygous DQB1*02, DQ8+DQ8, DQ8+DQB1*02, or DQ2 alone who had positive testing for Lyme disease defined as a positive or equivocal Western blot with at least 3 specific bands on IgM testing, or IgG Western blot testing.

Results
A total of 10 patients met inclusion criteria. Four patients had a response to a strict gluten-free diet including elimination of likely cross contamination without treatment for Lyme disease. A total of six patients responded to a combination of a strict gluten-free diet and antimicrobial treatment for Lyme disease. In the patients treated for Lyme disease, it was not clear which factor was more important in their recovery, adherence to a strict gluten-free diet or treatment for Lyme disease.

Conclusion
In patients with suspected celiac disease based on a high genetic risk and consistent symptoms who are being exposed to gluten or gluten cross contamination, Lyme serology may be positive. Further research needs to be done to determine whether the Lyme serology is falsely elevated in these cases and whether eliminating gluten and gluten cross contamination is sufficient to improve the symptoms in these patients.

Conflicts of interests
No conflicts of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00139

Final poster ID: P3-09

Title: Influence of tobacco on celiac disease evolution

Presenting author: Irambona Aime-Parfait

Co-authors: Irambona AIME-PARFAIT, Nakhcha IBTISSAM, Benelbarhdadi IMANE, Ajana FATIMA.ZAHRA - (1)CHU Ibn sina, Maroc

ABSTRACT CONTENT

Objectives
The influence of tobacco consumption on celiac disease (CD) is unknown, the objectives of this study are to examine the effects of smoking on the severity of celiac disease at diagnosis, age at diagnosis, and on the occurrence of complicated forms of this disease.

Methods
A retrospective study was carried out between 1995 and 2017, at the hospital Ibn sina of rabat, on 241 patients with celiac disease, including patients diagnosed in adulthood and in whom data on smoking are available. The severity criteria were collected at the time of diagnosis: presence of typical digestive symptoms, anemia, hypoalbuminia,bone demineralization and total villous atrophy. These criteria were compared between smokers, non-smokers and former smokers. At the same time, a comparison was made of the age of diagnosis of CD among these three categories. The relationship between the appearance of complicated forms of celiac disease such as refractory sprue or intestinal lymphoma and smoking has been studied.

Results
241 patients were included, 41(17%) were smokers , 185(76,7%) were non-smokers, and 15(6,2%) weaned at the time of diagnosis of celiac disease.

The proportion of onset of typical digestive symptoms, anemia, hypoalbuminemia, bone demineralization and villous atrophy are similar, not dependent on smoking.

The average age of diagnosis of CD is 32 years for smokers, 38 years for non-smokers and 46 years for former smokers.

2,5% of smokers suffer from the complicated form of this disease, compared to only 0,5% for non-smokers.

Conclusion
This study showed no difference in the diagnosis or occurrence of CD between smokers and non-smokers. Tobacco has an impact only on the age of onset of CD, in fact, smokers tend to suffer from this disease in an early age.

Conflicts of interests
No conflict of interest

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00141

Final poster ID: P3-10

Title: Comparison of R5 and G12 antibody-based ELISA methods for the determination of gluten concentration in routine gluten-free food products

Presenting author: Anil Verma

Co-authors: Anil VERMA (1), Elena LIONETTI (2), Chiara MONACHESI (1), Susanna LATINI (1), Valentina PERTICAROLI (2), Elisa FRANCESCHINI (2), Tiziana GALEAZZI (1), Simona GATTI (2), Carlo CATASSI (2) - (1)Celiac Disease Research Laboratory, Department of Pediatrics, Università Politecnica delle Marche, Italie, (2)Department of Pediatrics, Università Politecnica delle Marche, Italie

ABSTRACT CONTENT

Objectives
The only available treatment for celiac disease (CD) is to follow a life-long gluten-free diet. In foods labeled as “gluten-free,” the gluten level must not exceed 20 mg/kg of gluten. Effective test methods are needed to determine the gluten concentration in food. In the present study, we aimed to compare the performance of R5 with G12 antibody-based ELISA methods to detect gluten contamination in gluten-free products collected from CD affected patients on a GFD.

Methods
All CD patients on a GFD for ≥2 years were proposed to provide their one-day gluten-free food samples prepared at home. All food samples including breakfast, lunch, snacks, and dinner were considered for the analysis. Water, milk, fruits, vegetables, and other naturally gluten-free items were excluded. All food samples were tested with R5 antibody-based ELISA (R-Biopharm, Darmstadt, Germany) and G12 antibody-based ELISA (Biomedal diagnostics, Spain). Food products containing gluten level < 20 ppm were considered as gluten-free.

Results
So far, 199 food samples have been provided by 31 CD patients already on GFD. Of 199 collected food samples 171 samples were tested by R5 and G12 ab ELISA. From all tested samples, 169 food samples found negative (<LOD) for either R5 antibody method or G12 antibody-based method. Three samples quantified more than 20 ppm of gluten by both ELISA methods (R5 and G12).

Conclusion
This is an ongoing study, preliminary results of the study show that so far there is no difference in the performance of the two available ELISA method for the detection of gluten contamination (R5 and G12). In the coming days, more number of samples will be tested and a final result conclusion will be drawn.

Conflicts of interests
Carlo Catassi is a scientific consultants to Dr Schär’s, all other authors declare no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00149

Final poster ID: P3-11

Title: Season of birth and early life events on the risk of celiac disease in genetically at-risk children: TEDDY study

Presenting author: Anna Laitinen

Co-authors: Anna LAITINEN (1), Hye-Seung LEE (2), Beena AKOLKAR (3), Sibylle KOLETZKO (4), Edwin LIU (5), William HAGOPIAN (6), Jeffrey P KRISCHER (2), Marian REWERS (7), Jin-Xiong SHE (8), Jorma TOPPARI (9), Anette-G ZIEGLER (10), Daniel AGARDH (11), Kalle KURPPA (12) - (1)Tampere Centre for Child Health Research, Tampere University, Finlande, (2)Health Informatics Institute, Morsani College of Medicine, University of South Florida, États-Unis, (3)National Institute of Diabetes & Digestive & Kidney Diseases, États-Unis, (4)Division of Paediatric Gastroenterology and Hepatology, Dr von Hauner Children's Hospital, Ludwig Maximilian University, Allemagne, (5)Digestive Health Institute, Children's Hospital Colorado, Anschutz Medical Campus, University of Colorado Denver, États-Unis, (6)Pacific Northwest Diabetes Research Institute, États-Unis, (7)Barbara Davis Center for Childhood Diabetes, University of Colorado Denver, États-Unis, (8)Center for Biotechnology and Genomic Medicine, Medical College of Georgia, Augusta University, États-Unis, (9)Institute of Biomedicine, Centre for Integrative Physiology and Pharmacology, University of Turku, Finlande, (10)Institute of Diabetes Research, Helmholtz Zentrum München, München, Klinikum Rechts der Isar, Technische Universität München, München, Forschergruppe Diabetes e.V., Neuherberg, Allemagne, (11)The Diabetes and Celiac Disease Unit, Department of Clinical Sciences, Lund University, Suède, (12)Tampere Centre for Child Health Research, Tampere University and Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
The aim was to investigate if there is an association between season of birth (SOB) and celiac disease autoimmunity (CDA) and celiac disease (CD), in relation to other pre- and perinatal factors.

Methods
Included were 6,804 newborns carrying HLA-DQ2 and/or DQ8 followed for a median 10 years (range 2-14). Annual screening for CD with tissue transglutaminase antibodies (tTGA) occurred from the age of 2 years, and earlier samples from tTGA positive children were tested retrospectively to determine age of seroconversion. CDA was defined as positive tTGA confirmed in consecutive samples and CD as Marsh ≥2 or a mean tTGA level >100 Units. Cox regression was used to assess the association of SOB on risk for CDA and CD, after adjusting for HLA, country, gender and a family history of CD. Pre- and perinatal exposures included pregnancy complications, maternal infections, anti-inflammatory or antimicrobial medication and vaccinations during pregnancy.

Results
At time of analysis, 1,279 (18.8%) children had developed CDA and 476 (7.0%) CD. Compared to winter, children born in spring were at an increased risk of CDA (HR=1.2, 95%CI=1.0-1.4) and CD (HR=1.5, 95%CI=1.1-1.9). None of the studied pre- and perinatal factors showed a significant interaction with SOB. Maternal genital herpes increased the risk of CDA (HR=1.4, 95%CI= 1.1-1.9), whereas premature labor decreased the risk of CDA (HR=0.7 95%CI=0.6-0.9).

Conclusion
Spring birth increased the risk of developing CDA and CD. None of the pre- and perinatal factors tested modified the effect of SOB on the risk of CDA or CD.

Conflicts of interests
The authors report no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00173

Final poster ID: P3-12

Title: Probiotics: If it does not help it does not do any harm in celiac disease. Really?

Presenting author: Aaron Lerner

Co-authors: Aaron LERNER (1), Yehuda SHOENFELD (2), Torsten MATTHIAS (1) - (1)AESKU.KIPP Institute, Allemagne, (2)The Zabludowicz Center for Autoimmune Diseases, Israël

ABSTRACT CONTENT

Objectives
Probiotics per definition should have beneficial effects on human health, and their consumption is tremendously increased in the last decades. Gluten dependent populations are encouraged to consume probiotics, for multiple, non-scientifically proven reasons. In parallel, the amount of published material and claims for their beneficial efficacy increased continuously. Recently, multiple systemic reviews, meta-analyses and expert opinions expressed criticism on their claimed effects and safety.

Methods
Search strategies were performed using PubMed, Medline, EMBASE, Scopus, and the Cochrane Database of Systematic Reviews, to identify the most relevant publications.

Results
The dark side of the probiotics are reviewed, in terms of problematic research design, incomplete reporting, and lack of transparency and under reported safety. Highlighted are their potential virulent factors and their mode of action in the intestinal lumen, risking the physiological microbiome equilibrium. Finally, regulatory topics are discussed in order to lighten the heterogeneous guidelines applied world-wide.

Conclusion
The shift in the scientific world towards better understanding of the human microbiome, before consumption of the probiotic cargo, is highly blessed. Celiac disease health care teams should be aware of the side effects of probiotics, before recommending them to patients. It is hope that the better knowledge will extend the probiotic repertoire, re-confirm efficacy or safety, establish its efficacy and substantiate its beneficial effects.

Conflicts of interests
No conflict of interests.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00175

Final poster ID: P3-13

Title: Microbial Transglutaminase is Beneficial to Food Industries but a Caveat to Public Health

Presenting author: Aaron Lerner

Co-authors: Aaron LERNER, Torsten MATTHIAS - (1)AESKU.KIPP Institute, Allemagne

ABSTRACT CONTENT

Objectives
Microbial transglutaminase (mTG) is a survival factor for bacteria that is heavily used as a protein glue in the processed food industries. Despite the manufacturers' claims for it safe usage, scientific observations are accumulating for its unwanted effects on human health.

Methods
Search strategies were performed using PubMed, Medline, EMBASE, Scopus, and the Cochrane Database of Systematic Reviews, to identify the most relevant publications.

Results
The enzyme can cross link proteins, imitating its family member, tissue transglutaminase, the autoantigen of celiac disease. Its gliadin cross-linked complexes are immunogenic in celiac disease. In the intestinal lumen, mTG exerts anti protease activity and forms resistant isopeptide bonds, it is anti-phagocytic, thus suppressing luminal protective pathways. It increases intestinal permeability, is trans-epithelial transported and faces the enteric mucosal immune cells. Finally, mTG-containing products can react as emulsifiers and mucolytic agents thus compromising barriers' integrities.

Conclusion
The present review summarizes and updates on the potential detrimental effects of mTG, aiming to protect the public from the enzyme's unwanted effects.

Conflicts of interests
No conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00176

Final poster ID: P3-14

Title: Gluten content estimation in unlabeled and labeled gluten-free food products and commonly used food items consumed by celiac disease patients

Presenting author: Wajiha Mehtab

Co-authors: Wajiha MEHTAB (1), Vikas SACHDEV (2), Anita MALHOTRA (3), Alka SINGH (4), Namrata SINGH (4), Vineet AHUJA (4), Govind K. MAKHARIA (4) - (1)Department of Home Science, University of Delhi, Inde, (2)Department of Gastroenterology and Human Nutrition Unit, All India Institute of Medical Sciences, Inde, (3)Department of Food Technology, Lakshmibai College, University of Delhi, Inde, (4)Department of Gastroenterology and Human Nutrition, All India Institute of Medical Sciences, Inde

ABSTRACT CONTENT

Objectives
Gluten free diet (GFD) is the cornerstone treatment for patients with Celiac disease (CeD). However, there is a paucity of data on the type of GF food consumed by Indian CeD patients and more importantly the extent of gluten contamination therein. We evaluated the gluten content in labeled and unlabeled GF food products currently available in Indian market.

Methods
A total of 393 processed and commercially available GF products (including both naturally [n=198] and certified labeled GF products [n=195]) were randomly collected from supermarkets of a metropolitan city (Delhi). Those, not available in stores, were purchased from e-commerce sites. Gluten level in food was determined by Ridascreen Gliadin sandwich R5-enzyme-linked immunosorbent assay (R-Biopharm AG, Germany). As per Codex Alimentarius, European Commission Regulation and Food Safety and Standard Authority of India, “gluten-free” labeled products must not contain >20 mg/kg of gluten.

Results
Of 198 samples of labeled GF products, 28 samples (14.1%) had gluten content >20 mg/kg (range: 25.6-713.7 mg/kg) and 170 items had gluten content within permissible limits (range: 1.41-19.5 mg/kg). Among non-labeled natural GF foods, twenty samples (10.2%) had gluten content >20 mg/kg (range: 23.2-168.8 mg/kg), while 175 items had gluten content <20 mg/kg (range: 1.27-11.36 mg/kg). Products contaminated with gluten belonged most commonly to cereals and its products like pasta/macaroni, cereal based snack foods and pulse products. Contamination levels were negligible in in products manufactured by companies producing only GF foods.

Conclusion
A substantial number (14.1%) of labeled GF products available in India have high gluten content. Patients with CeD should be aware about this fact and ingestion of contaminated GF food products may be the reason for non/partial response in them.

Conflicts of interests
All authors declare no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00183

Final poster ID: P3-15

Title: Comparison of early life exposure to enterovirus between children who later developed coeliac disease and healthy controls

Presenting author: Kärt Simre

Co-authors: Kärt SIMRE (1), Oivi UIBO (2), Aleksandr PEET (2), Vallo TILLMANN (2), Heikki HYÖTY (3), Mikael KNIP (4), Raivo UIBO (5) - (1)Department of Immunology, Institute of Biomedicine and Translational Medicine, University of Tartu, Tartu, Estonia; Children's Clinic of Tartu University Hospital, Tartu, Estonia, Estonie, (2)Children's Clinic of Tartu University Hospital, Tartu, Estonia, Department of Pediatrics, University of Tartu, Tartu, Estonia, Estonie, (3)Faculty of Medicine and Life Science, University of Tampere, Tampere, Finland, Finlande, (4)Children's Hospital, University of Helsinki and Helsinki University Hospital, Helsinki, Finland, Finlande, (5)Department of Immunology, Institute of Biomedicine and Translational Medicine, University of Tartu, Tartu, Estonia, Estonie

ABSTRACT CONTENT

Objectives
Introduction: The pathogenesis of coeliac disease is not fully understood. Higher frequency of enterovirus infections during early childhood has been found to be associated with later coeliac disease (Kahrs CR et al. 2019).

Objective: Our aim was to investigate whether early life exposure to enterovirus differs between children who later will develop coeliac disease and healthy controls.

Methods
During the international prospective DIABIMMUNE Study 9 children (5 boys) followed up from birth to the age of 3 years developed coeliac disease. Mean age when coeliac disease related antibodies became positive was 2.7 years (range 1.5-3 years). One control for every coeliac disease case was matched for the coeliac disease specific HLA DR/DQ genotype, country of birth, time of birth and sex. Using RT-PCR, enterovirus RNA was analysed from the stool samples collected monthly from 1 to 12 months. Using ELISA, IgA and IgG antibodies against enterovirus were measured from the serum sample of the children with coeliac disease at the time point of seroconversion to positivity for autoantibodies associated with coeliac disease. The corresponding serum samples from the control children were collected at the same age.

Results
There were 4/72 (5.6%) positive stool samples in the coeliac disease group and 1/75 (1.3%) in the control group ($P>0.05$). At the time of seroconversion there were 4/9 (44.4%) positive samples of enterovirus IgA and 3/9 (33.3%) positive samples of IgG antibodies in the both groups. There was no significant difference in the level of antibodies between the groups (35.2 vs 29.8 EIU for IgA, $P>0.05$; 18.3 vs 21.3 EIU for IgG, $P>0.05$).

Conclusion
Although there were no differences in the level of enterovirus antibodies at the time of seroconversion, patients who later developed coeliac disease tended to have more enterovirus positive stool samples during the first year of life.

Conflicts of interests
The authors declare no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00188

Final poster ID: P3-16

Title: Comparison of cost and nutritional composition of gluten-free food with their gluten containing counterparts

Presenting author: Wajiha Mehtab

Co-authors: Wajiha MEHTAB (1), Vikas SACHDEV (2), Anita MALHOTRA (3), Namrata SINGH (2), Govind K. MAKHARIA (2) - (1)Department of Home Science, University of Delhi, Inde, (2)Department of Gastroenterology and Human Nutrition, All India Institute of Medical Sciences, Inde, (3)Department of Food Technology, Lakshmibai College, University of Delhi, Inde

ABSTRACT CONTENT

Objectives
Gluten free (GF) diet is the only definitive treatment for patients with Celiac disease (CeD). While concerns have been raised on the nutritional quality of GF food in the western world, there is paucity data on the nutritional content and cost of gluten free (GF) food-items in comparison to their gluten containing counterparts.

Methods
Nutrient composition and cost of commonly consumed labeled GF (n=200) and non-labeled naturally GF/gluten containing (n=220) food items, systematically obtained from supermarkets of metropolitan city of India (Delhi), were compared. The nutritional content per 100 g of product and per gram cost was taken for comparison under different categories.

Results
GF pasta/macaroni products had lower protein (7.8g vs 12.5g) and higher carbohydrates (79.3g vs 73.7g) compared to their gluten containing counterparts. Similarly, GF cereals and cereal flour mixes had lower protein (9.56g vs 12.8g) and substantially lower fiber (2.8g vs 13.3g) than gluten containing flours. In case of GF biscuits, the carbohydrates were lower (55.7g vs 69.3g) and fats were higher (26.7g vs 19.3g) including saturated fat (12.8g vs 9.2g) and trans fat (0.9g vs 0.03g). The trans-fat content was >1.5g in most of the GF biscuits and cookies. GF cereal-based snack foods contained higher sodium (1293mg vs 658.5mg) than their gluten containing counterparts. Overall, GF foods were more expensive, ranging from 1.6 (biscuits and cookies) to 3.8 times (snack foods) than similar gluten containing counterparts.

Conclusion
Compared to their gluten containing counterparts, gluten-free foods are substantially costlier and less nutritious with respect to their protein, fiber and fat content, particularly the saturated and trans-fat. Strategies need to be developed to lower the cost and improve the nutritional quality of gluten-free food items.

Conflicts of interests
All authors declare no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00190

Final poster ID: P3-17

Title: Do Canadian adults following a gluten-free diet need supplements to meet their nutritional requirements?

Presenting author: Richa Chibbar

Co-authors: Richa CHIBBAR (1), Jocelyn SILVESTER (1), Don DUERKSEN (2) - (1)BIDMC, États-Unis, (2)SBGH, Canada

ABSTRACT CONTENT

Objectives
There are concerns regarding nutritional deficiencies and risk of metabolic syndrome inn patients with Celiac disease (CD) on a gluten-free diet (GFD). This study assessed if patients with CD trying to follow a GFD meet Recommended Dietary Allowance (RDA) targets for macro- and micronutrients and the effect of supplement use in reaching RDA targets.

Methods
Adults (>16 years) with biopsy confirmed CD (Marsh 3) were recruited within 6 weeks of starting a GFD. Participants prospectively completed a 3-day food record, including dietary supplement use, at 6, 12, and 24 months after study entry. Macro- and micronutrient consumption was determined using the Nutrition Coordinating Center Food & Nutrient Database (NCCDB), USDA National Nutrient Database for Standard Reference (USDA SR28), and CRON-0-Meter Community Database (CCDB). RDA targets were analyzed using a paired t-test, adjusted for age and sex.

Results
Forty-nine participants (69% female; mean 49.9 years) completed food records at all time points. Most (59%) used supplements at one time point. Folate met RDA targets in 57% of patients at 6 months with supplement use, but only 31% met target without supplementation. At 12 and 24 months, 47% and 37% met target with supplementation, respectively. 74% met target for iron without supplement use at all time points, increasing to 90% and 84% at 12 and 24 months with supplementation, respectively. Without supplementation, Vitamin D did not meet target (2%, 2%, 4% at 6, 12, 24 months). With supplement use, it increased to 87%, 84%, and 90%, at 6, 12, and 24 months, respectively.

Conclusion
CD patients on a GFD require supplement use to meet RDA targets for both macro- and micronutrients at all time points, specifically for folate and Vitamin D. There is a need for ongoing monitoring and dietician support for GFD treatment in CD.

Conflicts of interests
Abbott Nutrition (DRD), Biomedal (DRD), Glutenostics (JAS), Cour (JAS), Takeda (DRD, JAS).

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00192

Final poster ID: P3-18

Title: Celiac disease and inflammatory bowel disease in patients with IgA nephropathy over time

Presenting author: Marleena Repo

Co-authors: Marleena REPO (1), Rakel NURMI (2), Jussi POHJONEN (3), Martti METSO (1), Ilkka PÖRSTI (4), Onni NIEMELÄ (5), Heini HUHTALA (6), Jukka MUSTONEN (4), Katri KAUKINEN (3), Satu MÄKELÄ (1) - (1)Tampere University Hospital, Department of Internal Medicine, Finlande, (2)Celiac Disease Research Center, Faculty of Medicine and Life Sciences, Tampere University and Tampere University Hospital, Finlande, (3)Celiac Disease Research Center, Faculty of Medicine and Life Sciences, Tampere University and Tampere University Hospital and Tampere University Hospital, Department of Internal Medicine, Finlande, (4)Tampere University Hospital, Department of Internal Medicine and Faculty of Medicine and Life Sciences, Tampere University, Finlande, (5)Faculty of Medicine and Life Sciences, Tampere University and Medical Research Unit, Seinäjoki Central Hospital, Finlande, (6)Faculty of Social Sciences, Tampere University, Finlande

ABSTRACT CONTENT

Objectives
The prevalence of bowel diseases has increased over time in Western countries and the current prevalence of celiac disease and inflammatory bowel disease (IBD) in Finland is 0.7% and 0.6%, respectively. Various studies suggest increased intestinal permeability and subclinical intestinal mucosal inflammation in IgA nephropathy (IgAN), which is the most common chronic glomerulonephritis worldwide. Some studies have suggested that IgAN could be connected with celiac disease and IBD – nevertheless there is still a great deal of controversy in this field. The aim of the study was to examine the prevalence of celiac disease and IBD in patients with IgAN over time.

Methods
The study cohort consisted of altogether 616 patients with a new diagnosis of histologically confirmed IgAN during the years 1976-2012. Data on diagnosis of celiac disease and IBD were retrospectively collected from the medical records. Further, IgA-class tissue transglutaminase antibodies (tTGA) were measured from the serum samples taken at the time of kidney biopsy during years 1980-2012. tTGA values higher than 7.0 U were regarded as positive and indicative of celiac disease.

Results
Based on medical records, the prevalence of celiac disease decreased during every decade of observation from 3.1% to 0.6%. In parallel, the number of tTGA positive cases decreased during the three decades (1980-2012) (2.8%-0%-0.7%). In contrast, the prevalence of IBD increased over time from 0% to 4.4%.

Conclusion
Surprisingly, the prevalence of clinical and seropositive celiac disease decreased over time in patients with IgAN. However, the prevalence of IBD increased in this patient group. These findings indicate a need for further studies.

Conflicts of interests
None.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00206

Final poster ID: P3-20

Title: The Intestinal Microbiome in Pediatric Celiac Disease Patients: before diagnosis and one year later in relationship to symptoms and anti-tissue transglutaminase (aTTG) serology

Presenting author: Dory Sample

Co-authors: Dory SAMPLE, Janelle FOUHSE, Seema KING, Justine TURNER, Ben WILLING - (1)University of Alberta, Canada

ABSTRACT CONTENT

Objectives
Pediatric celiac disease (CD) has been associated with alterations in gut microbiota, compared to healthy. Few studies have examined the microbiota at diagnosis and after a gluten-free diet (GFD). We hypothesized that the gut microbiota may be associated with symptom presentation and serological response to the gluten free diet (GFD).

Methods
Stool samples were obtained from patients enrolled in a previously published study (PMID: 27446854), before and one year after the GFD. Patients were classified according to presence of gastrointestinal (GI) symptoms (diarrhea, abdominal pain, weight loss) or absence of GI symptoms and more atypical presentations (headache, fatigue, foggy mind, weight gain, asymptomatic). At follow up patients were classified according to aTTG normalization. Microbial composition was measured using 16S rRNA gene amplicon sequencing of the V3-V4 region. Microbial structure was analyzed using Bray Curtis Dissimilarity (ANOSIM) and alpha diversity analyzed using Shannon index.

Results
Included were 22 patients, aged 4-14, 15 were female. At presentation 13 had typical GI symptoms and 9 had atypical or no symptoms. At follow-up all patients had improvement in symptoms and aTTG (9 had normalized aTTG; no data on 3 patients). Baseline fecal microbial structure ($P = 0.158$) and alpha diversity ($P=0.948$) were not different between patients with typical GI versus atypical symptoms. After 1-year on the GFD fecal microbial structure did not alter ($P = 0.940$), with no differences in diversity ($P=0.243$). Fecal microbial structure was not related to post-GFD aTTG normalization ($P = 0.163$), with no differences in alpha diversity stratified by TTG ($P=0.364$).

Conclusion
Overall, the GFD, patient symptoms, and aTTG normalization were not associated with fecal microbial composition. This was unexpected and suggests that CD may be associated with microbial dysbiosis that either does not improve on a GFD or takes much longer to improve than expected.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00220

Final poster ID: P3-21

Title: Determination of gluten traces in the daily gluten-free diet of children with celiac disease: a quantitative analysis.

Presenting author: Elena Lionetti

Co-authors: Elena LIONETTI, Chiara MONACHESI, Anil K VERMA, Valentina PERTICAROLI, Elisa FRANCESCHINI, Simona GATTI, Tiziana GALEAZZI, Carlo CATASSI - (1)Università Politecnica delle Marche, Italie

ABSTRACT CONTENT

Objectives
Celiac disease (CD) patients adhering to a gluten-free diet (GFD) may be frequently exposed to low levels of gluten that may contribute to symptoms and persistent intestinal histologic damage. We aimed to determine analytically the amount of gluten accidentally consumed while on a GFD by the quantification of gluten traces in food samples collected during a 24 hours period.

Methods
All children with a diagnosis of CD on a GFD for ≥2 years were invited to provide the food samples consumed during a 24 hours period, and a 24-hours food frequency questionnaire. We included samples from breakfast, lunch, snacks, and dinner. Water, milk, fruits, and raw vegetables were excluded. All food samples were tested with R5 antibody based ELISA (R-Biopharm, Darmstadt, Germany). Food products containing gluten level < 20 ppm were considered as gluten-free. We estimated the exposure level to gluten through the contaminated products, by using the food frequency questionnaire.

Results
Overall, 34 CD patients (median age 8 years, range: 2-14 years; female 61%) agreed to participate, providing 222 food samples. No gluten contamination was found in all food samples provided by 32 patients (94%). Two patients (6%) presented gluten contamination in their food samples. The individual gluten exposure was 1.9, and 2.8 mg/die, respectively.

Conclusion
The unintended exposure to gluten in children on a GFD is very low. The presence of gluten traces does not allow exceeding the tolerable threshold of 10 mg/die of daily gluten intake.

Conflicts of interests
Carlo Catassi served as consultant to Dr Schär; all other authors declare no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00225

Final poster ID: P3-22

Title: Gluten free Vs Gluten-containing bread lipid profile and sodium content: results from a comparative market study

Presenting author: Anna Gibert

Co-authors: Anna GIBERT (1), Alba TRES (2), Elisa VARONA (3), Beatriz QUINTANILLA-CASAS (3), Stefania VICHI (3), Elisenda VILCHEZ (1), Francesc GUARDIOLA (2) - (1)Associació de Celíacs de Catalunya, Espagne, (2)Nutrition, Food Science and Gastronomy Department-INSA-XaRTA, Universitat de Barcelona, Espagne, (3)Nutrition, Food Science and Gastronomy Department-INSA-XaRTA, Universitat de Barcelona - Barcelona (Spain), Espagne

ABSTRACT CONTENT

Objectives
The objective of our study is to verify whether gluten-free bread differs from its gluten-containing counterpart in its sodium content and lipid profile.

Methods
Samples were analysed for sodium content (ICP-OES), fat content (gravimetric analysis after acid hydrolysis and liquid-liquid extraction), fatty acid composition (GC-FID), and cholesterol content (GC-FID).

Results
Results showed that sodium, fat and cholesterol contents were significantly higher in gluten-free bread, and also its fatty acid composition differed. While gluten-containing bread declared sunflower oil as fat ingredient and presented higher PUFA (%), gluten-free bread declared a great variety of fats and oils as ingredients (coconut, palm, olive, sunflower) which was reflected in its fatty acid profile with higher content in MUFA. Samples containing coconut or palm oils presented higher content of SFA. Cholesterol was also higher in gluten-free bread because various samples (5) declared the use of whole egg in their ingredients list, while gluten-containing samples did not include egg or its derivative.

Conclusion
In conclusion, nutritional quality of gluten-free bread shows greater variability than gluten-containing samples, depending on the ingredients used in its elaboration. These differences could be reduced or eliminated through changes in the formulation.

Conflicts of interests
Non conflicts of interests

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00229

Final poster ID: P3-23

Title: Prospective study of smoking in pregnancy and risk of celiac disease in offspring

Presenting author: Karl Mårild

Co-authors: Karl MÅRILD (1), German TAPIA (2), Øivind MIDTTUN (3), Per UELAND (4), Maria C MAGNUS (2), Marian REWERS (5), Lars C STENE (2), Ketil STØRDAL (2) - (1)Department of Pediatrics, The Sahlgrenska Academy at University of Gothenburg and Queen Silvia Children's Hospital, Sweden, Suède, (2)Division for Mental and Physical Health, Norwegian Institute of Public Health, Norvège, (3)Bevital AS, Norvège, (4)Department of Clinical Science, University of Bergen, and Laboratory of Clinical Biochemistry, Haukeland University Hospital, Norvège, (5)Barbara Davis Center, University of Colorado Anschutz Medical Campus, États-Unis

ABSTRACT CONTENT

Objectives
Ecological data suggest an inverse relationship between smoking in pregnancy and celiac disease (CD) in offspring. While individual-level analyses have been inconsistent, they have mostly lacked statistical power or refined assessments of exposure. We aimed to examine if maternal smoking in pregnancy (measured by self-report and cord blood cotinine) was associated with CD in her child. Secondary analyses considered paternal smoking and maternal smoking before or after pregnancy, which helps to evaluate potential confounding effects from family characteristics.

Methods
We analyzed the following datasets: (1) The Norwegian Mother and Child Cohort (MoBa) of 94,019 children, followed from birth (2000-2009) through 2016, with 1035 developing CD; (2) a subsample from MoBa (381 with CD and 529 controls) with biomarkers; and (3) a register-based cohort of 536,861 Norwegian children, followed from birth (2004-2012) through 2014, with 1919 developing CD. Smoking behaviors were obtained from pregnancy questionnaires and antenatal visits, or, in the MoBa-subsample, defined by measurement of cord blood cotinine. CD and potential confounders were identified through nationwide registers and comprehensive parental questionnaires.

Results
Sustained smoking during pregnancy, both self-reported and cotinine-determined, was inversely associated with CD in MoBa (multivariable-adjusted [a] OR=0.61 [95%CI, 0.46-0.82] and aOR=0.55 [95%CI, 0.31-0.98], respectively); an inverse association was also found with the intensity of smoking. These findings differed from those of our register-based cohort, which revealed no association with sustained smoking during pregnancy (aOR=0.97 [95%CI, 0.80-1.18]). In MoBa, neither maternal smoking before or after pregnancy, nor maternal or paternal smoking in only early pregnancy predicted CD.

Conclusion
In a carefully followed pregnancy cohort, a more-detailed smoking assessment than oft-used register-based data, revealed that sustained smoking during pregnancy, rather than any smoking exposure, predicts decreased likelihood of childhood-diagnosed CD.

Conflicts of interests
The authors report no conflict of interests

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00231

Final poster ID: P3-24

Title: Has gluten recently changed in composition or processing?

Presenting author: Katharina Scherf

Co-authors: Katharina SCHERF - (1)Leibniz-Institute for Food Systems Biology at the TUM, Allemagne

ABSTRACT CONTENT

Objectives
Wheat is one of the most important sources of nutrients for mankind. To ensure food security, the main goals of wheat breeding were to increase yield and resistance to abiotic and biotic stress factors. These selection criteria may have inadvertently contributed to changes in gluten composition and increased the immunoreactive potential of wheat. Although the nutritional quality of wheat products is gaining attention, there is little evidence to support or refute the hypothesis that the protein composition in modern wheats is different to heritage wheats.

Methods
The five most widely grown German wheat cultivars per decade from 1890 until 2010 were cultivated in Gatersleben in the years 2015, 2016 and 2017. Agronomic characteristics were analyzed as well as crude protein contents. To study changes in gluten protein composition, the contents of albumins/globulins, gliadins and glutenins were quantitated by reversed-phase high-performance liquid chromatography. Selected celiac disease-active peptides and ATIs were quantitated by liquid chromatography mass spectrometry using specific marker peptides and stable isotope labelled standards.

Results
Wheat protein contents and compositions were highly variable over all 60 cultivars and also within the five cultivars per decade irrespective of the harvest year. The harvest year had a greater influence on protein contents and compositions than the cultivar with significant interaction between both factors. The median of five cultivars per decade showed a slight decreasing trend for contents of gliadins and crude protein, a slight increasing trend for glutenins and no clear change for albumins/globulins and gluten over the 100 years.

Conclusion
Wheat breeding did contribute to changes in gluten protein composition, but whether this may have an effect on the immunoreactivity of wheat remains unclear due to the significant environmental effect on wheat protein expression. Further work will focus on the effect of processing on the immunoreactivity of wheat products.

Conflicts of interests
None.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00232

Final poster ID: P3-25

Title: Parechovirus infections and increased risk of coeliac disease: nested case-control study within the MIDIA longitudinal birth cohort

Presenting author: Ketil Størdal

Co-authors: Ketil STØRDAL (1), German TAPIA (2), Katerina CHUDÁ (3), Christian R. KAHRS (4), Lars Christian STENE (5), Lenka KRAMNA (3), Karl MÅRILD (6), Trond RASMUSSEN (5), Kjersti S. RØNNINGEN (7), Ondrej CINEK (3) - (1)Norwegian Institute of Public Health and Østfold Hospital Trust, Norvège, (2)Norwegian Institute of Public Health, Norvège, (3)Charles University in Prague and University Hospital Motol, Tchèque, république, (4)Østfold Hospital Trust, Norvège, (5)Norwegian Insitute of Public Health, Norvège, (6)The Sahlgrenska Academy at University of Gothenburg and Queen Silvia Children's Hospital, Suède, (7)Oslo University Hospital, Norvège

ABSTRACT CONTENT

Objectives
Recent work by our group has shown an association between Enterovirus A-B infections and later development of coeliac disease (CD). We aimed to test whether a related virus, Human parechovirus (HPeV), was associated with later CD in a longitudinal birth cohort.

Methods
During 2014-16, 220 children with HLA-DQ2/DQ8 from the longitudinal birth cohort MIDIA consented to CD screening. 25 children were diagnosed with CD and included in a nested case-control study. For each study case, two random controls were matched for duration of follow-up, date of birth and county of residence. We retrospectively analysed stored (collected at ages 3, 6, 9, 12 months, and annually thereafter) plasma samples for CD antibodies and identified the seroconversion interval. We investigated presence of HPeV by quantitative real-time RT-PCR in 2005 stool samples collected monthly from ages 3-36 months.

We analyzed the data using a mixed effects logistic regression model with faecal sample virus positivity before CD seroconversion as the dependent variables and CD status as an independent variable. We adjusted for sex, age, age squared, calendar month of sampling, number of siblings, and family history of CD.

Results
HPeV was detected in 222 of 2005 samples (11.1%), and was more frequent in stool samples prior to CD seroconversion in cases (adjusted odds ratio [aOR] 1.69,95%CI 1.16-2.46,p=0.01). This estimate was increased if diarrhea was reported (aOR 3.72, 95%CI 1.03-13.42, p=0.045). Estimates were essentially unchanged when restricted to infections after gluten exposure (not shown). Samples concurrently positive for HPeV and enterovirus prior to CD were more frequent in cases (aOR 4.58,95%CI 1.25-16.69,p=0.02).

Conclusion
Our findings suggest that human parechovirus, and enterovirus, in early life are associated with later CD. These enteric infections may contribute to the development of CD.

Conflicts of interests
The authors report no conflict of interests. G. Tapia and K. Chudá have shared first authorship.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00233

Final poster ID: P3-26

Title: Cord blood metabolites and risk of coeliac disease in childhood

Presenting author: Ketil Størdal

Co-authors: Ketil STØRDAL (1), German TAPIA (2), Tommi SUVITAIVAL (3), Linda AHONEN (3), Karl MÅRILD (4), Nicolai A. LUND-BLIX (5), Cristina LEGIDO QUIGLEY (3), Lars Christian STENE (5) - (1)Norwegian Insitute of Public Health and Østfold Hospital Trust, Norvège, (2)Norwegian Institute of Public Health, Norvège, (3)Steno Diabetes Center, Danemark, (4)The Sahlgrenska Academy at University of Gothenburg and Queen Silvia Children's Hospital, Suède, (5)Norwegian Insitute of Public Health, Norvège

ABSTRACT CONTENT

Objectives
The study of small molecules in biological samples (metabolomics) before disease onset may give clues to understand disease etiology. In this first study, we aimed to determine whether metabolite concentrations measured in cord blood taken at birth could predict later coeliac disease.

Methods
We measured 18 metabolites; asymmetric dimethylarginine, alanine, L-3 hydroxybutyric acid (ß), L-citrulline, glycocholic acid, glycochenodeoxycholic & glycodeoxycholic acid, glutamine, glutamic acid, glycine, L-kynurenine, leucine & isoleucine, phenylalanine, taurine, taurocholic acid, taurochenodeoxycholic & taurodeoxycholic acid, tryptophan, tyrosine and ursodeoxycholic acid. Metabolites were measured using a targeted metabolomics LC-QQQ-MS platform, in 203 children who later developed coeliac disease, and in 174 random control children who did not develop coeliac disease. We present preliminary results analysed by logistic regression. We investigated the odds ratio (OR) per z-score increase, and analysed the metabolites divided into tertiles to test for linearity. Results were adjusted for batch, date of preparation, caesarean section, sex, pregnancy week, and maternal age, BMI, smoking and parity. As a sub-analysis we grouped the metabolites into four clusters to examine if any of these clusters were associated with later coeliac disease.

Results
None of the metabolites measured were associated with later CD, neither were any of the four clusters.

Conclusion
In this preliminary analysis, we found no support for the hypothesis that these metabolites measured in cord blood were associated with later coeliac disease.

Conflicts of interests
The authors report no conflict of interests

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00241

Final poster ID: P3-27

Title: Serum antibodies to Type 1 Lang reovirus, but not enterovirus or rotavirus, are increased in children with coeliac disease

Presenting author: Michael Fitzpatrick

Co-authors: Michael FITZPATRICK (1), Nicholas PROVINE (1), Arzoo PATEL (1), Johannes WOLF (2), Paul KLENERMAN (1), Holm UHLIG (1) - (1)Translational Gastroenterology Unit, Nuffield Department of Medicine, University of Oxford, Royaume-Uni, (2)Centre for Clinical Chemistry, Microbiology and Transfusion Medicine, Hospital Sankt Georg, Allemagne

ABSTRACT CONTENT

Objectives
Viral infection has been proposed as a trigger for the development of coeliac disease (CD). Reovirus strain Type 1 Lang (T1L), an asymptomatic enterotropic virus, has recently been implicated in loss of oral tolerance in mice, with data suggesting a link between T1L reovirus infection and CD in humans (Bouziat et al., 2017). We sought to investigate the link between CD and T1L reovirus, as well as with enterovirus, and rotavirus, which have previously been associated with CD.

Methods
102 paediatric patients (mean age 9.5 years, range 1-17) treated at Oxford University Hospitals NHS Trust, previously included in the AbCD study (Wolf et al., 2017), were identified, 51 (50%) with confirmed CD. Stored serum was analysed using commercial ELISA for IgG antibodies against enterovirus (EUROIMMUN) and rotavirus (MyBioSource). Serum T1L reovirus antibody titres were quantified using an optimised in-house endpoint dilution ELISA. Anti-CMV IgG antibodies were analysed as a control (EUROIMMUN), as CMV has not been associated with CD.

Results
Serum T1L reovirus-specific antibody titres were significantly higher in the CD cohort (median 128, IQR 64-256) than in controls (median 64, IQR 16-256; Mann-Whitney test, $P=0.028$). T1L reovirus titre correlated with serum TTG-IgA (Spearman, $P<0.01$), and Marsh histology score (Spearman, $P=0.032$). No difference was seen in the proportion of samples positive for rotavirus serology in CD and control cohorts (27% vs 18% respectively; $\chi 2$ test, $P=0.24$), or enterovirus serology (67% vs 66% respectively; $\chi 2$ test, $P=0.94$). As expected, no difference was seen in the proportion of samples positive for CMV serology (18% vs 18%; $\chi 2$ test, $P>0.99$).

Conclusion
This study confirms an association between elevated T1L reovirus-specific antibodies and CD in a well-phenotyped paediatric cohort. No association was found between CD and enterovirus or rotavirus serology, in contrast to recent studies. These data support the hypothesis that childhood enteric viral infections are associated with coeliac disease, and suggest a specific link with reovirus infection.

Conflicts of interests
None

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00242

Final poster ID: P3-28

Title: Characterization of Amylase trypsin inhibitors from different wheat species.

Presenting author: Elena Lionetti

Co-authors: Elena LIONETTI (1), Massimiliano CUCCIOLONI (2), Luca CAIAZZO (2), Elena BITOCCHI (1), Roberto PAPA (1), Carlo CATASSI (1), Mauro ANGELETTI (2) - (1)Università Politecnica delle Marche, Italie, (2)Università di Camerino, Italie

ABSTRACT CONTENT

Objectives
Amylase/trypsin-inhibitors (ATIs) are putative triggers of nonceliac gluten sensitivity, but contents and biological activities of ATIs in different wheat species and cultivars are not available. Fifthteen cultivars of wheats belonging to three genotypes (triticum turgidum ssp. durum, triticum turgidum ssp. dicoccoides, triticum turgidum ssp. dicoccum) constitutes the dataset for the present study.

Methods
Each dataset has been replicated collecting the samples in three distinct production areas (Potenza - PZ, Ancona - AN, Julich – JU Germania). Triticum monococcum (Einkorn) has been also included as control in the study. The proteic fraction have been extracted and pre-purified. Each protein sample has been quantified using the standard Bradford method. Separation of the proteic fraction containing the ATIs has been carried out using an analytical method, on a FPLC AKTA Basic with a Superdex 75 HR 10/300 GL column (GE Healthcare Lifesciences).

Results
The deconvolution analysis of the chromatograms reveals the presence of 10 chromatographic distinguishable fractions with molecular weights in the range 1-350 kDa. All the samples present the same chromatographic pattern, while different genotypes present statistically significant differences between the concentrations of each fraction. Each fraction has been further characterized by shotgun protein identification.

Conclusion
There are different concentrations of ATIs in different wheat genotypes. Further studies to test their biological activity are in progress.

Conflicts of interests
Carlo Catassi served as consultant for Dr Shaer.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00245

Final poster ID: P3-29

Title: Celiac Disease Adherence Test does not detect short term dietary adherence to gluten-free diet

Presenting author: Wajiha Mehtab

Co-authors: Wajiha MEHTAB (1), Vikas SACHDEV (2), Namrata SINGH (2), Alka SINGH (2), Anita MALHOTRA (3), Vineet AHUJA (2), Govind K. MAKHARIA (2) - (1)Department of Home Science, University of Delhi, Inde, (2)Department of Gastroenterology and Human Nutrition, All India Institute of Medical Sciences, Inde, (3)Department of Food Technology, Lakshmibai College, University of Delhi, Inde

ABSTRACT CONTENT

Objectives
Gluten-free diet (GFD) is the only available treatment for celiac disease (CeD). Available methods to assess GFD compliance are insufficiently sensitive to detect occasional intentional/unintentional dietary gluten transgressions that may cause gut mucosal damage. Gluten immunogenic peptides (GIP) are gluten fragment, resistant to gastrointestinal digestion and are excreted from the body through urine and stool. We aimed to assess the level of compliance, celiac symptom index score and GIP in patients with CeD.

Methods
Patients with CeD following GFD for more than one year, and following regularly in Celiac Disease Clinic at our institution were recruited. They were assessed for clinical response to GFD using celiac symptom index score (CSI score) and adherence to GFD using celiac disease adherence test (CDAT). They also underwent GIP testing in the urine using morning's first urine sample using GIP kit (Biomedal, Spain). The technique involved in GIP urine is immune-chromatographic test, which can detect as low as 25 mg of gluten in the urine. A single green line indicates that no gluten was detected in the sample (negative), but if two lines appear – one green and one red - there is detection of gluten (positive), indicating a gluten intake within the last 24-48 hours.

Results
Overall 85 patients (47 females and 38 males; mean age - 29.78 ± 10.23 years) with mean follow-up of 6.78 ± 2.3 years were included. Out of them, 59 (69.4%) had good compliance and 44 (51.7%) had good clinical response to GFD, as assessed by CDAT and CSI respectively. However, GIP was detected in 35 (41.1%), suggesting poor short term adherence to GFD. Of these 35 patients, 20 (57.2%) had good compliance to GFD as per CDAT. There was good correlation between lower CDAT score and lower CSI score ($p<0.01$). Those who had GIP detected in urine, CSI score was higher in them ($p<0.01$).

Conclusion
Seventy percent of Indian patients with CeD have good adherence to GFD. Despite being adherent to GFD, approximately 40% of them are exposed to gluten inadvertently.

Conflicts of interests
The authors declare no conflict of interest.

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00259

Final poster ID: P3-30

Title: Wheat amylase trypsin inhibitors (ATI) negatively affect intestinal microbiota and aggravate experimental colitis

Presenting author: Johannes Matzner

Co-authors: Johannes MATZNER (1), Geethanjali PICKERT (1), Rosario HECK (1), Dorothe THIES (1), Stefan WIRTZ (2), Detlef SCHUPPAN (1) - (1)Institute of Translational Immunology and Research Center for Immunotherapy (FZI), Univ. Medical Center, Johannes Gutenberg University Mainz, Allemagne, (2)Department of Medicine 1, Friedrich-Alexander University Erlangen-Nuremberg, Allemagne

ABSTRACT CONTENT

Objectives
Chronic inflammation in the gastrointestinal tract, as seen in inflammatory bowel disease (IBD) and celiac disease (CeD) arises from a failure to maintain tolerance to harmless bacterial and/or food antigens. We have recently identified alpha-amylase/trypsin inhibitors (ATIs), non-gluten components of wheat, as potent activators of innate immunity by engaging the toll like receptor 4 in innate immune cells. ATI that are present in gluten preparations are implicated as promoters of CeD and other autoimmune/inflammatory diseases. We studied the effect of nutritional ATI on the intestinal microbiome and to intestinal inflammation.

Methods
C57BL/6 mice were fed a defined diet with 1% of protein as ATI or a gluten/ATI-free diet for 4 weeks, and challenged with 1,5% dextran sodium sulfate for 10-14 days.

Results
ATI-feeding significantly worsened the outcome of DSS colitis, including loss of body weight, inflammatory cytokine/chemokine expression, epithelial/mucosal damage, and disease activity as assessed by endoscopy. Similar results were obtained in IL10-/- spontaneously colitic mice. Antibiotic treatment largely protected mice from tissue destruction and the pro-inflammatory effect of ATIs. Fecal transplantion from ATI-challenged vs ATI-free control mice to recipient mice (after depletion of the native microbiota with oral antibiotics for 2-3 weeks prior to transplantation) and subsequent induction of colitis confirmed the pathogenicity of pro-inflammatory microbiota in ATI-challenged mice.

Conclusion
1) A wheat ATI-free diet has a protective effect on intestinal inflammation in mice, while dietary ATI enhance intestinal inflammation.

2) Pro-inflammatory effects of wheat ATI are accompanied by induction of severe intestinal dysbiosis.

3) Severe colitis in mice fed ATI is abolished following gut sterilization.

4) ATI fuel intestinal inflammation both by TLR4-activation and a direct pro-inflammatory shift of the microbiota.

Conflicts of interests
No

POSTERS

THEME :
EPIDEMIOLOGY/ENVIRONMENTAL TRIGGERS

Abstract #: ICDS00262

Final poster ID: P3-31

Title: Impact of germination on gluten, amylase inhibition and immune stimulatory potential of amylase trypsin inhibitors (ATIs) in different wheats

Presenting author: Manjusha Neerukonda

Co-authors: Manjusha NEERUKONDA (1), Valentina CURELLA (1), Friedrich LONGIN (2), Detlef SCHUPPAN (1) - (1)Üniversitatsmedizin JGU Mainz, Allemagne, (2)University of Hohenheim, Allemagne

ABSTRACT CONTENT

Objectives
Background and aims:

Wheat amylase trypsin inhibitors (ATIs) are resistant to intestinal protease and activate toll-like receptor 4 (TLR4) which promotes intestinal and extra-intestinal inflammation. Due to their strong immunogenic potential even after baking, the impact of different wheat processing methods like germination and fermentation on wheat grain composition has to be investigated. Therefore, we aimed to evaluate ATI and gluten wheat seed composition and TLR4 activation potential during germination.

Methods
Methods:

Quantitative ATI extracts from flour obtained during different germination time points, i.e., at 0 hr, 15, 24 and 48 hrs (5 hexaploid wheats cultivated at two different sites, 10 variants for each time point) were assessed for its stimulatory potential on Hela dual TLR4 reporter cell lines. Moreover, the impact of germination on gliadin content was assessed using commercial ELISAs that quantify the G12 (33-mer alpha-2-gliadin fragment) and the R5 (omega-gliadin) epitopes. The Enzchek™ ultra amylase assay kit was used to determine amylase inhibitory units (AIU).

Results
Results:

Surprisingly, flour from germinated and non-germinated samples equally stimulated TLR4 in the Hela dual reporter cell line. The overall gliadin (G12 and R5 epitopes) content as well as amylase inhibitory activity (AIU) equally remained largely unchanged during all time points.

Conclusion
Conclusions:

We demonstrate that germination up to 48 hrs (when first sprouts appear) has no effect on the flour composition of biologically active wheat components, since TLR4 stimulating activity of ATIs, major gluten immunogenic epitopes and amylase inhibitory potential remained unchanged, as normalized to one g of extracted flour. This suggests that strategies other than germination need to be developed to de-enrich pro-inflammatory ATI from wheat.

Conflicts of interests
There are no conflicts of interest.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00009

Final poster ID: P4-01

Title: Use of micro-CT imaging of intestinal biopsies to improve the diagnostics of celiac disease

Presenting author: Johannes Virta

Co-authors: Johannes VIRTA (1), Katri LINDFORS (2), Ilmari TAMMINEN (3), Katri KAUKINEN (2), Alina POPP (4), Pauliina HILTUNEN (1), Markus HANNULA (3), Juha TAAVELA (1), Jari HYTTINEN (3), Kalle KURPPA (1) - (1)Tampere Centre for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, Finlande, (2)Celiac Disease Research Center, Faculty of Medicine and Health Technology, Tampere University, Finlande, (3)BioMediTech Institute and Faculty of Biomedical Sciences and Engineering, Tampere University of Technology, Finlande, (4)Carol Davila University of Medicine and Pharmacy, and Alessandrescu-Rusescu National Institute for Mother and Child Health, Roumanie

ABSTRACT CONTENT

Objectives
Traditional histology is too inaccurate for early stage mucosal injury and short-term challenge studies in celiac disease and often poorly orientated biopsies are prone to misinterpretation. X-ray microtomography (micro-CT) is a tissue imaging technique which could provide freely orientable 3D images for exact histomorphometry and measurement of surface areas. We investigated the use of micro-CT with duodenal biopsies.

Methods
Fourteen celiac patients and non-celiac controls representing different stages of duodenal injury were selected, laying emphasis on diagnostically problematic cases. Paraffin-embedded biopsies were used for routine histomorphometry. The procedure was tested with variable staining solutions, source voltages and filters to optimize the resolution of micro-CT. The data were reconstructed into 3D images and digitally cut for measurement of villi and crypts. Computer-assisted point cloud analysis was used to calculate surface areas.

Results
Optimized staining and imaging protocol in terms of practicability and quality was accomplished with specific I2E-solution, 100 kV acceleration voltage and 10W source power. The procedure was applicable to paraffin biopsies and allowed routine histopathology afterwards. The formed 3D images provided optimal angles for digital morphometry and enabled to detect several duodenal lesion interpreted as normal in conventional histology. It was also possible to demonstrate significant differences in the mucosal surface areas between samples indistinguishable in traditional histopathology and minor changes during gluten-free diet.

Conclusion
We established a unique micro-CT technique for digital morphometric analysis of duodenal biopsies. The improved accuracy and possibility to measure biologically meaningful surface areas provide a powerful tool for clinical and pharmaceutical studies.

Conflicts of interests
None.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00017

Final poster ID: P4-02

Title: Celiac Dietary Adherence Test simplifies determining adherence to gluten-free diet

Presenting author: Katarina Johansson

Co-authors: Katarina JOHANSSON (1), Fredrik NORSTRÖM (2), Katrina NORDYKE (2), Anna MYLEUS (1) - (1)Department of Public Health and Clinical Medicine, Family Medicine, Umeå University, Suède, (2)Department of Public Health and Clinical Medicine, Epidemiology and Global Health, Umeå University, Suède

ABSTRACT CONTENT

Objectives
The aims of the study were to ascertain whether the Celiac Dietary Adherence Test (CDAT) could contribute in determining adherence to the gluten-free diet in celiac disease patients and to evaluate the diet adherence and well-being of a study population five years after a celiac disease screening known as “Exploring the Iceberg of Celiacs in Sweden”.

Methods
Through the screening, 90 adolescents (born 1997) were diagnosed with biopsy-proven celiac disease at twelve-years of age. Of them, 70 (78%) came to a five-year follow-up. This follow-up included physician questions, tissue-transglutaminase antibody (tTG) testing, and completion of the first Swedish CDAT. Non-parametrical tests were utilized to determine associations between the different adherence measures used.

Results
Among the adolescents, 86% were adherent to a gluten-free diet five-years after screening. About 38% reported their general well-being as excellent, 50% very well, and 12% well. Statistically significant associations were seen between tTG and the CDAT score ($p=0.033$), the self-reported adherence question and tTG ($p=0.001$), and the self-reported adherence question and the CDAT score ($p<0.001$). About 57% gave comments on the CDAT.

Conclusion
The screening-detected adolescents reported a high level of well-being and adherence to a gluten-free diet five years after screening. We conclude that the CDAT can be used in clinical practice as an estimation of adherence to a gluten-free diet. It would be preferable to use in conjunction with currently used adherence measures, but can also be used as a stand-alone method when others are not accessible. Based on the comments, the Swedish translated CDAT has been revised to better suit the target population.

Conflicts of interests
The authors have no conflict of interest to declare.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00020

Final poster ID: P4-03

Title: Delusion-Like Beliefs in Coeliac Disease: A Qualitative Investigation

Presenting author: Rose-Marie Satherley

Co-authors: Rose-Marie SATHERLEY (1), Fiona LERIGO (2) - (1)Kings College London, Royaume-Uni, (2)University of Birmingham, Royaume-Uni

ABSTRACT CONTENT

Objectives
This study aims to understand the beliefs of individuals who take a hypervigilant approach to managing the gluten-free diet (GFD) and the consequences of holding such beliefs.

Methods
Secondary analysis of qualitative data was conducted on 12 adults with Coeliac Disease (CD). All participants were classified as using hypervigilant approaches to manage the GFD based on the following criteria: food rigidity (i.e. unable to eat outside the home), avoidance of food settings, controlling behaviour and preoccupation with management of GFD (as opposed to awareness). Transcripts were analysed using interpretive phenological analysis in order to identify important aspects of the lived-experience of managing their diagnosis and diet.

Results
Participants reported confidence in GFD management in their own home, as they could control cross-contamination risk (I can eat gluten-free at home, because I'm in control. Everywhere else is danger zone). Individuals had sensible concerns about food-related cross-contamination but also described irrational concerns focussed on implausible cross-contamination from non-food products (I found out there was flour in my car air bag… so I don't drive anymore). This resulted in individuals refusing attendance at food-related social activities (I couldn't go to my cousin's wedding because of all the food... staying at home keeps me safe) and completing food shopping online (I only buy food online from gluten-free sites that I know well… supermarkets are dangerous), resulting in anxiety and social isolation (Coeliac has destroyed me and my friends. I can't see them anymore).

Conclusion
These findings suggest that cognitions related to coeliac disease management can take a delusional quality. Although strict management of the GFD is essential for those with CD, this needs to be balanced with the individual's well-being. As per CD recommendations, we recommend ongoing follow-up with gastroenterologists and dietitians, and psychosocial support and referrals, as needed.

Conflicts of interests
There are no conflicts of interest to report.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00038

Final poster ID: P4-04

Title: Assessing Gluten Free Diet Adherence using CDAT and Biagi Questionnaires in Patients with Coeliac Disease

Presenting author: Hugo A Penny

Co-authors: Hugo A PENNY (1), Elisabeth Mr BAGGUS (1), Anupam REJ (1), Michelle S LAU (1), Peter MOONEY (2), Michael REES (1), William L WHITE (1), Marios HADJIVASSILIOU (3), David S SANDERS (1) - (1)Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Royaume-Uni, (2)Leeds Teaching Hospitals NHS Trust, Royaume-Uni, (3)Department of Neurology, Royal Hallamshire Hospital, Royaume-Uni

ABSTRACT CONTENT

Objectives
Gastroscopy with duodenal biopsy remains the current gold standard method of assessing adherence to a gluten-free diet in individuals with coeliac disease. This approach is both invasive and costly. In view of this, we assessed the utility of the Coeliac Disease Adherence Test (CDAT) and Biagi1 questionnaires as a non-invasive approach to assess adherence to a gluten-free diet in this patient cohort.

Methods
Patients with an established diagnosis of coeliac disease, referred for further evaluation of dietary adherence and disease remission to the specialist coeliac clinic, Royal Hallamshire Hospital, between 01/2016 to 12/2018 were recruited to the study. Patients completed CDAT and Biagi questionnaires, had serum taken for assessment of IgA-tissue transglutaminase (tTG) and endomyseal (EMA) antibodies and underwent gastroscopy with duodenal biopsy sampling. The sensitivity and specificity of questionnaires and serum antibodies at detecting persistent villous atrophy in recruted patients was determined.

Results
151 patients were recruited; 101 females (66.9%), median age 55.0 years, median duration of gluten-free diet 72.0 months. The sensitivities of CDAT, Biagi and combined CDAT & Biagi at detecting persistent villous atrophy were 52.0% (95% confidence interval 37.6-66.1), 22.4% (12.2-37.0) and 61.2% (46.2-74.8), compared to 30.6% (18.7-45.6) and 34.3% (26.7-42.7) for IgA-tTG and -EMA antibodies, respectively. Specificity of CDAT, Biagi and combined CDAT & Biagi were 69.8% (60.9-77.5), 93.1% (85.6–97.0), and 69.3% (60.5-77.2), compared to 91.6% (83.6–96.0) and 92.5% (84.8–96.7) for IgA-tTG and EMA antibodies, respectively.

Conclusion
The CDAT and Biagi questionnaires are useful tools in the follow-up of patients with coeliac disease; however, duodenal biopsy sampling remains the gold standard for assessment of adherence to a gluten-free diet.

Conflicts of interests
None

Reference

1Biagi F, et al. A score that verifies adherence to a gluten-free diet: a cross-sectional, multicentre validation in real clinical life. Br J Nutr. 2012Nov 28;108(10):1884–8.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00040

Final poster ID: P4-05

Title: A Quantitative Analysis of Gluten Contamination in Everyday School Supplies and Concern for Children with Celiac Disease

Presenting author: Vanessa Weisbrod

Co-authors: Vanessa WEISBROD, Catherine RABER, William SUSLOVIC, Benny KERZNER, Blair RABER, James BOST, Nicole HERRERA, Joyana MCMAHON - (1)Children's National Medical Center, États-Unis

ABSTRACT CONTENT

Objectives
Gluten is commonly found in school cafeterias and classrooms, particularly in early childhood education centers and home economics classrooms where gluten is in school supplies, including Playdoh, paper maché, finger paints, pasta and ingredients used for cooking. To date, there is no research investigating potential levels of gluten exposure in school supplies and how the transfer of gluten could negatively impact a child with celiac disease. The objective of this study was to evaluate if and how much gluten is transferred from common school supplies to the hands of children and to gluten-free food products that a child with celiac disease may eat. Additionally, to measure the efficacy of various hand washing techniques to remove gluten from a child's hands.

Methods
Ten healthy children ages 4 to 16 completed seven experiments involving everyday school supplies, including: playing with Playdoh; creating art projects using paper maché; playing with cooked and uncooked pasta in a sensory table; touching gluten-containing bread while making sandwiches for a community service project; applying gluten-containing lotion; and cutting gluten-free and gluten-containing cupcakes with the same knife. After each encounter, the level of gluten was measured on the children's hands, as well as on gluten-free bread touched after exposure to each gluten-containing school supply. All measurements for gluten were made using the RIDASCREEN® Gliadin ELISA by R-Biopharma AG.

Results
Gluten was detected on the hands of children in all scenarios, however, the levels ranged greatly. Gluten was transferred in measurable amounts from the children's hands to the gluten-free bread in all seven scenarios. However, only four scenarios produced transfer levels that exceeded the FDA's accepted standard of 20 parts per million. The offending scenarios producing high contamination rates included handling the following supplies: paper maché (median:1,339.38ppm range:154.87-13,744.95ppm); cooked pasta (median:241.12ppm range:13.33-341.33ppm); sandwich making (median:8.17ppm range: 1.25-219.44ppm) and the cupcake (median:8.97ppm range:1.25-116.57ppm). Far lower transfer rates occurred in three scenarios using the following supplies: Playdoh, dry pasta, and lotion with median values of 1.25, 1.25, and 2.06, respectively, most of which had ranges below the 20ppm threshold. After pooling the data from children for hand washing methods, the only methods that significantly lowered the level of gluten on the hands were washing with soap and water and with water alone.

Conclusion
All of the selected scenarios offer a potential risk for gluten contamination. The most egregious scenarios were handling paper maché, cooked pasta and sandwich making. Our pilot data shows the potential for gluten contamination in a school setting is high and that schools should provide gluten-free materials for students with celiac disease or have a robust strategy in place to prevent contamination. Further evaluation is necessary to better understand the outlier transfer levels for some supplies.

Conflicts of interests
None

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00042

Final poster ID: P4-06

Title: An Educational App to Support the Gluten-Free Diet In Patients With Celiac Disease

Presenting author: Vanessa Weisbrod

Co-authors: Vanessa WEISBROD, Joyana MCMAHON, Benny KERZNER, Catherine RABER, Blair RABER, Sandra WERNESS, Lori STERN - (1)Children's National Medical Center, États-Unis

ABSTRACT CONTENT

Objectives
A gluten-free diet is difficult to follow and requires specific knowledge about food and medication ingredients, manufacturing processes, preventing cross-contact, dining in restaurants, traveling and engaging in everyday social activities. Data from surveys completed in our Children's National Medical Center Celiac Disease Multi-Disciplinary Clinic show that parents of children with celiac disease present with a wide gap in knowledge about the gluten-free diet that may lead to inadvertent gluten exposure for their children. The objective was to build an educational tool (digital app) for parents and children with celiac disease to improve knowledge about the gluten-free diet.

Methods
To build the Gluten-Free Diet Digital Resource Center, our Celiac Program partnered with the developer BuildFire. Using their platform, we designed an app with six education plugin modules including: Resource Materials; Classes & Events; Education & Cooking Videos; Gluten-Free Recipes; News Digest; and a bi-weekly Podcast. Users can also learn about our Celiac Program team, contact us and share the app.

To ensure that the information was comprehensive and encompassed all of the lessons the patient and family would require to successfully manage a gluten-free diet, the Resource Materials section includes multiple portals such as a digital flashcard tool that teaches users about various ingredients including safe (gluten-free), unsafe (gluten-containing) and questionable (may contain gluten). Each flashcard includes either a video, audio or photo slideshow as well as text about the safety profile of the ingredient. There is also information about dining in restaurants, going to school and setting up 504 plans, dining in restaurants and traveling on a gluten-free diet. The app is free to download via the iTunes Store and Android Marketplace. Patients visiting our Celiac Clinic are enrolled in the app at their initial appointment with our education director.

Results
At the time of abstract submission, the app had a total of 14,861 users. Users accessed an average of 3.34 plugins per app open. The most viewed plugins were the Interactive Gluten-Free Diet Guide (25.90%), Resource Materials (25.85%), Gluten-Free Recipes (24.2%), Education & Cooking Videos (13.6%), Classes & Events (8.8%), and News Digest (8.5%).

Conclusion
Initial feedback from patients and parents using the digital app has been uniformly positive and user numbers continue to rapidly increase. Over the next 12 months, our Celiac Program will continue to track how users engage with the materials and begin evaluating if the app is contributing to better knowledge of the gluten-free diet and better adherence outcomes for our patients.

Conflicts of interests
None.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00050

Final poster ID: P4-07

Title: Associations between executive skills and daily activities while maintaining a gluten free diet

Presenting author: Sonya Meyer

Co-authors: Sonya MEYER, Sara ROSENBLUM - (1)University of Haifa, Israël

ABSTRACT CONTENT

Objectives
Adherence to a gluten-free diet is the only available treatment for celiac disease (CD) and is especially challenging among adolescents. Taking part in daily food-related activities and managing the diet involve the use of cognitive skills and strategies such as inhibition, initiation and planning, which are defined as executive functions. The objective of this study was to explore the possible associations between participation in daily food-related activities and executive abilities among adolescents with CD, while adhering to the gluten-free diet. We hypothesized that lower participation characteristics would be associated with poorer executive functioning.

Methods
Participants were 65 adolescents aged 12 to 18 years (43 girls, 22 boys), and their parents. All participants were diagnosed with CD for over 6 months prior to the study. Adolescents were interviewed using the Celiac Disease-Children's Activities Chart (CD-Chart). Parents completed the Behavioral Rating Inventory of Executive Function (BRIEF) questionnaire about their adolescent's executive skills.

Results
As hypothesized, results revealed that poorer participation in food-related activities significantly correlated with poorer executive abilities, specifically with shifting, initiation and working memory. Different correlation patterns were found among adolescents with and those without executive deficits.

Conclusion
The findings underscore the complexity of participation in food-related activities among adolescents with CD while maintaining the diet. The evidence suggests that identification of specific executive profiles may contribute to understanding the daily functioning with CD. This may assist in promoting participation of these adolescents in food-related activities and consequently improve their life quality. We recommend considering assessing EF in CD follow-up to identify executive deficits due to its relevance to daily confrontations for this population.

Conflicts of interests
We have no potential conflict of interest to report.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00057

Final poster ID: P4-08

Title: A Family Affair: The Impact of Managing a Child's Celiac Disease on Caregivers

Presenting author: Mary Shull

Co-authors: Mary SHULL, Monique GERMONE, Merlin ARIEFDJOHAN, Marisa STAHL, Pooja MEHTA, Edwin LIU - (1)University of Colorado Denver, School of Medicine; Children's Hospital Colorado, États-Unis

ABSTRACT CONTENT

Objectives
Celiac disease (CD) is estimated to occur in 1 – 3 % of youth. Preliminary studies suggest that the treatment of a gluten-free diet (GFD) can impact the health-related quality of life (HRQoL) not only of individuals with CD but also their family. Systematic evaluation using validated measures of HRQoL is needed. In this study, we compare results from such measures to healthy and similar dietary restriction cohorts to report on the impact that a child's CD has on the caregiver.

Methods
Two hundred thirty four caregivers of children with CD (ages 2 to 18 years) were prospectively administered the Pediatric Quality of Life - Family Impact Module (PedsQL FIM), a validated self-report measure to assess functioning across various psychosocial domains. PedsQL FIM total, summary, and individual domain scores were statistically compared to values from a healthy cohort and cohort with eosinophilic esophagitis (EoE). Cohen's d was calculated to determine effect sizes. Regression modeling was applied to determine whether child age, caregiver age, duration of adherence to the GFD, and adherence serology (tTg IgA antibody titers) contributed to PedsQL FIM scores.

Results
Caregivers of children with CD endorsed more concerns for their HRQoL in all PedsQL FIM domains when compared to those caring for healthy cohort ($p<0.0001$, $d \geq 0.8$). Additionally, these caregivers endorsed more concerns for HRQoL compared to those caring for children with EoE ($p<0.05$, $d = 0.3$ to 0.5). None of the demographic and clinical variables tested appeared to significantly impact any of the PedsQL FIM domains ($p>0.05$ for all models).

Conclusion
Caregivers of children with CD expressed significant psychosocial challenges surpassing those endorsed by healthy and food allergy cohorts. Demographic and adherence variables did not explain differences in scores. Overall, future CD care and management needs to incorporate strategies for caregivers.

Conflicts of interests
None

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00069

Final poster ID: P4-09

Title: Daily life decision making in pediatric celiac disease: What are the decisions and who makes them?

Presenting author: Sonya Meyer

Co-authors: Sonya MEYER (1, 2), Elena LIONETTI (2), Carlo CATASSI (2) - (1)University of Haifa, Israël, (2)Università Politecnica delle Marche, Italie

ABSTRACT CONTENT

Objectives
Children and adolescents with celiac disease (CD) encounter a range of situations, where considering steps to manage the gluten-free diet is often needed. Shared decision making in pediatric chronic conditions raises challenges. As children grow, gradually involvement increases towards effective self-management. The aim was to identify the life situations in which children and adolescents with CD find they need to make decisions, and to examine who makes the decision.

Methods
The Decision-Making Involvement Scale (DMIS) was administered to126 children (8-11 yr) and adolescents (12-18 yr), with CD for over six months. The DMIS is a self-report questionnaire about a recent child-parent discussion concerning the chronic condition management. We focused on the discussion content and who made the final decision. Content was classified according to items and environments of the Celiac Disease-Children's Activity Report (CD-Chart).

Results
Discussions were mostly about the social environment (children: 65.6%; adolescents: 32.3%). Children mostly discussed class food activities (23.0%) and eating out with friends (19.7%), and among adolescents, meals on overnight school trips (16.9%) and family vacations (15.4%). The decision maker significantly differed in the two age groups regarding ($\chi 2(2)=10.06$, $p<.01$). In both groups, around half of the decisions were made together, yet parents made the decision for 44.3% of the children and 24.5% of the adolescents.

Conclusion
Decision making responsibility gradually moves from the parent in childhood to the adolescent as they mature. Still, about half of the dyads in both age groups, still made decisions related to managing the diet together. This emphasizes the importance of understanding the decision-making process to further promote self-management during the transition years from adolescence to young adulthood.

Conflicts of interests
No potential conflict of interest to report.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00077

Final poster ID: P4-10

Title: Prescribing gluten-free foods: the impact of policy changes on quality of life

Presenting author: Helen Crocker

Co-authors: Helen CROCKER, Mara VIOLATO, Crispin JENKINSON, Michele PETERS - (1)University of Oxford, Royaume-Uni

ABSTRACT CONTENT

Objectives
The English National Health Service has historically supported people with coeliac disease by prescribing gluten-free foods (GFF), however, this support has now stopped in some geographical areas. This study aimed to determine the impact of changes to prescribing policies on the quality of life (QOL) of adults with coeliac disease.

Methods
A cross-sectional postal survey was conducted of 4050 Coeliac UK members who lived in 26 geographical areas, of which half prescribed GFF. The survey included questions about GFF cost, prescription use, and QOL as measured by the CDAQ (stigma, dietary burden, symptoms, social isolation, and worries and concerns). An electronic version of the survey was accessible through social media. Bivariate and multiple linear regression analysis were conducted.

Results
A total of 1653 and 234 people completed the postal and electronic surveys respectively, of which 1697 were valid responses for analysis. Approximately half (52.3%, n=888) lived in non-prescribing areas. There were no significant differences in QOL between respondents in non-prescribing and prescribing areas, with the exception of dietary burden (43.31, SD 18.57 vs. 45.99, SD 19.96, p=0.005). The significant relationship between dietary burden and local prescribing policy remained after controlling for confounding factors ($p<0.001$, adjusted $R2 = 0.23$). Some respondents reported a severe impact of prescribing changes on their health (n=49, 9.2%), which was associated with a significantly lower QOL in all dimensions ($p<0.001$). QOL was worse in respondents reporting GFF as less affordable ($p<0.001$).

Conclusion
The QOL of adults with coeliac disease living in areas that do and do not prescribe GFF is similar. However, dietary burden was greater for respondents in non-prescribing areas, and QOL was worse in those reporting more severe impacts of prescribing changes, or GFF as less affordable. Retaining access to GFF for adults from more vulnerable groups should be considered.

Conflicts of interests
HC, CJ and MP developed the CDAQ.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00080

Final poster ID: P4-11

Title: Guidelines to determine Follow-up Intervals for Celiac Disease based on data mining techniques

Presenting author: Alfonso Rodríguez-Herrera

Co-authors: Alfonso RODRÍGUEZ-HERRERA (1), Cristina RUBIO-ESCUDERO (2), Belén VEGA-MÁRQUEZ (2), Isabel COMINO-MONTILLA (2), Carolina SOUSA-MARTÍN (2) - (1)1Saint Luke´s Hospital Kilkenny, Irlande, (2)Universidad de Sevilla, Espagne

ABSTRACT CONTENT

Objectives
Celiac disease (CD) patients should be followed-up to ensure adherence to strict gluten-free diet (GFD). Few data exist documenting evidence-based follow-up intervals for patients of Celiac Disease (CD). Timing of scheduled follow-up has an impact on the rate access to the health system and costs. In this work we aim at creating a criteria for clinical follow-up for CD patients using data mining techniques, which provide decision rules based on rate of diet compliance, aiming at detecting patients with higher chance of non-compliance and so potentially needing focussed follow-up.

Methods
We have applied data mining techniques to a dataset with 182 celiac disease (CD) patients, measured for the presence of gluten immunogenic peptides (GIP) in stools as a marker of gluten free diet (GFD) adherence. The variables taken into account are: gender, age, years following GFD and the adherence to the GFD by fecal GIP. The data mining technique applied is a widely used decision tree classification algorithm called C4.5.

Results
Patients correctly following GFD can be characterized as children below 3 years age, women with less than 2 years on GFD, and men up to 14 years old age with less than 2 years on GFD. Patients not correctly following the GFD can be characterized as CD patients over 3 years old, with more than 2 years of GFD, and men with less than 2 years of GFD but more than 14 years old. This decision tree identifies “expert patients”, those on GFD for more than two years, as more prone to poor compliance and so needing more frequent follow-up. This is against the most usual clinical practice of follow less the cohort of patients on long term GFD, as they are supposed to perform better. These results have obtained an Area Under the Curve (AUC) value of 0.7.

Conclusion
Appropriate follow-up intervals must be established based on healthcare outcomes. Timing of follow-up intervals should be different for newly diagnosed patients than veteran patients. A gender perspective should be consider as the risk off non-compliance is partially linked to gender in our results.

Conflicts of interests
None to declare.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00081

Final poster ID: P4-12

Title: Utility of Symptom Severity, Frequency, and Lability in Predicting Serology Status And Villous Injury in Adults with Treated Celiac Disease

Presenting author: Adam Bledsoe

Co-authors: Adam BLEDSOE (1), Jack SYAGE (2), Katherine KING (3), Tsung-Teh WU (4), Joseph MURRAY (5) - (1)Division of Gastroenterology and Hepatology, Mayo Clinic, États-Unis, (2)ImmunogenX, États-Unis, (3)Division of Biomedical Statistics and Informatics, Mayo Clinic, États-Unis, (4)Division of Anatomic Pathology, Mayo Clinic, États-Unis, (5)Division of Gastroenterology and Hepatology and Department of Immunology, Mayo Clinic, États-Unis

ABSTRACT CONTENT

Objectives
Evaluate symptom frequency and lability as predictors of serology status and villous injury in adults with celiac disease (CD).

Methods
This is a post hoc analysis of prospectively collected symptom data and duodenal biopsies of adults with CD and persistent symptoms despite a gluten free diet (GFD) screened for phase 2b clinical trial NCT01917630. Daily severity scores were computed for each symptom for 2 weeks pre-randomization. The mean severity, proportion of days with symptom present and standard deviation (measure of lability) were calculated. T-test and linear regression assessed association of symptom measures with serology and villous height to crypt depth ratio (Vh:Cd), respectively.

Results
1276 patients (19.2% male) were included. Positive serology was associated with lower Vh:Cd (-0.605; p<.001). Positive serology was associated with proportion of days with bloating (0.55 vs 0.50; p=.02), proportion of days with tiredness (0.70 vs 0.65; p=.02), mean daily bloating severity (2.93/10 vs 2.50/10, p=.002), mean daily tiredness severity (3.96/10 vs 3.43/10, p<.001), and increased overall mean symptom score (10.30/50 vs 9.05/50, p=.002). Increased age and male sex were associated with lower Vh:Cd (-0.011, p<.001) and (-0.199, p<.001) respectively. Lower Vh:Cd was associated with proportion of days with diarrhea (-0.215, p<.001), mean daily diarrhea severity (-0.061, p=.002) and increased standard deviation in diarrhea (-0.095, p=.002). No other symptom severity, frequency, and lability predicted lower Vh:Cd.

Conclusion
Symptoms are inconsistent in predicting objective measures of CD control, and the meaningful failure of symptom severity and lability to predict villous injury reinforces the importance that clinicians not rely solely on symptoms in assessing response to a GFD. Diarrhea severity, frequency, and lability were associated with lower Vh:Cd and should prompt clinicians to reevaluate the small bowel mucosa.

Conflicts of interests
JS-CEO, ImmunogenX.

JM-Consultant Lilly, Amgen, Celimmune, ImmunosanT, Intrexon, Innovate. Grants: NIH, Cour, ImmunogenX, Allakos

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00084

Final poster ID: P4-13

Title: A score to identify coeliac patients who need a follow-up biopsy

Presenting author: Annalisa Schiepatti

Co-authors: Annalisa SCHIEPATTI (1), Gaia HARDER (1), Federica BORRELLI DE ANDREIS (1), Gian Marco GABRIELLI (1), Catherine KLERSY (2), Federico BIAGI (1) - (1)Gastroenterology Unit, Department of Internal Medicine, IRCCS Pavia, ICS Maugeri, University of Pavia, Italy; Coeliac Centre/First Department of Internal Medicine, Fondazione IRCCS Policlinico San Matteo, University of Pavia, Italie, (2)Biometry and Clinical Epidemiology, Fondazione IRCCS Policlinico San Matteo, Italie

ABSTRACT CONTENT

Objectives
Coeliac disease (CD) is a chronic gluten-dependent enteropathy characterized by an extremely heterogeneous clinical picture, a very high prevalence in the general population and increased morbidity and mortality. Follow-up of CD patients is a very controversial issue. Despite its need is certain, neither who should take care of these patients nor the practical modalities of this follow-up have been established so far. Although clinical examination and serology are the most commonly used tools, systematic histological re-evaluation is also recommended in some centres. A few years ago, we demonstrated persistence of villous atrophy in 8% of CD patients despite 12-18 months on a gluten-free diet (GFD). Interestingly, these patients could not be identified using clinical, dietary or serological investigations only [Ann Med 2014;46:430-3]. Our aim is to develop a scoring system to stratify CD patients on a GFD according to their risk of persistent villous atrophy.

Methods
The clinical notes of all CD patients attending our unit between September 1999 and November 2018 were retrospectively examined. A bivariable model was developed based on GFD-adherence and clinical response.

Results
273 CD patients on a GFD (203 F, mean age at diagnosis 35±12 years) with a follow-up duodenal biopsy taken 12-24±2 months after diagnosis were enrolled. Patients who strictly adhere to a GFD and with good clinical conditions have a very low risk of persistence of villous atrophy (2%, CI 1-5%). Conversely, patients on a poor GFD and without a satisfactory clinical response have a 44% (CI 25-69%) risk of persistent villous atrophy.

Conclusion
60% of CD patients can be safely followed-up without a duodenal biopsy. A histological re-evaluation is necessary in only 10 % of them. A case-by-case evaluation is indicated in patients at intermediate risk (30%).

Conflicts of interests
None

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00089

Final poster ID: P4-14

Title: Perceived Psychosocial Distress Improves in Youth and their Parents after Diagnosis of Celiac Disease

Presenting author: Shayna Coburn

Co-authors: Shayna COBURN, Maegan SADY, Meredith ROSE, Margaret PARKER, William SUSLOVIC, Vanessa WEISBROD, Benny KERZNER, Ilana KAHN - (1)Children's National Health System, États-Unis

ABSTRACT CONTENT

Objectives
The primary objective of this study was to identify changes in perceived psychosocial symptoms following celiac disease (CD) diagnosis in youth and their parents. A secondary objective was to test whether time since CD diagnosis resulted in differences in symptoms.

Methods
As part of an ongoing clinic database study, participants included 39 parents (95% mothers) of youth seen in a multidisciplinary CD clinic. Parents completed an online survey about their own and their child's psychological symptoms using visual analog scales (VAS; 0=none, 100=extreme), retrospectively reporting before the CD diagnosis and in the past week. Paired t-tests examined differences in symptoms pre- and post-diagnosis, and post hoc testing explored differences by time since diagnosis.

Results
Youth age ranged from 3-20 years (M(SD)=11(4.6)), with time since diagnosis ranging from <1 month to 11 years. Most common endorsed symptoms were anger (39%; M(SD)=36.7(29.9)) and anxiety (33%; M(SD)=30.4(30.2)) followed by depression (28%; M(SD)=25(27.59), and overall distress (28%; M(SD)=32.0(27.3)). Mean symptom scores did not differ significantly between new (<3 months) versus established (3+ months) diagnoses. Newly diagnosed youth had improved anger and anxiety ($p<0.05$) post-diagnosis; youth with established diagnoses (>3 months) had improved anger, anxiety, overall distress and caregiver distress ($p<0.05$); no changes in depressive symptoms were detected for either group.

Conclusion
Within the first three months of CD diagnosis, parents report significantly improved symptoms of youth anger and anxiety. Additionally, among those with established CD diagnoses, improvements are more widespread to include reduced overall youth and parent distress. However, youth depressive symptoms may not improve on the gluten-free diet. Future studies should prospectively measure trajectories of psychosocial experiences following CD diagnosis and identify risk or protective factors.

Conflicts of interests
None.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00090

Final poster ID: P4-15

Title: Psychological Needs and Services in a Multidisciplinary Celiac Disease Clinic

Presenting author: Shayna Coburn

Co-authors: Shayna COBURN, Maegan SADY, Margaret PARKER, William SUSLOVIC, Vanessa WEISBROD, Benny KERZNER, Ilana KAHN - (1)Children's National Health System, États-Unis

ABSTRACT CONTENT

Objectives
Multidisciplinary care has been identified as a key element of celiac disease (CD) management (James, 2005). However, multidisciplinary models are relatively rare and have not been assessed. This study aims to (1) describe the psychological needs of patients attending a multidisciplinary CD clinic, and (2) evaluate screening results and patient experiences from their clinic visit.

Methods
Participants were parents and children attending a multidisciplinary CD clinic who consented for an ongoing clinic database study. They completed a pre-clinic survey about their child's physical and mental health history, current stressors, and psychological symptoms. In clinic, a psychologist conducted 30-minute consultations screening for psychological symptoms. Finally, families anonymously rated their experience on a 5-point Likert scale ranging from "very dissatisfied" to "very satisfied".

Results
Seventy-two parents (95% mothers) and children (age M(SD)=11(4.7) years; 49% diagnosed <3 months) completed pre-clinic surveys and a clinic visit. On their pre-clinic survey, 56.9% of children had at least one psychological diagnosis or elevated symptom. In their clinic visit, the psychologist identified mood/behavior concerns in 46.7% of patients and recommended initiating (26.6%) or continuing (20%) mental health treatment and/or neuropsychological assessment (6.7%). In post-clinic surveys (N=35), 68.1% of families identified mental health consultation as one of their top two priorities out of 5 disciplines. Visits averaged 3 hours; 91.2% reported being "very satisfied" with their experience. Suggestions for improvement included snacks, timing, and treatment summary.

Conclusion
A multidisciplinary clinic presents an opportunity for children with CD and their families to feasibly receive specialized and personalized care. The presence of psychological symptoms and mental health referrals in approximately half of patients highlights a substantial area of need in CD treatment.

Conflicts of interests
None.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00092

Final poster ID: P4-16

Title: Occasional ingestions of gluten are tolerated in a group of patients with celiac disease

Presenting author: Luca Elli

Co-authors: Luca ELLI (1), Lorenzo DI LERNIA (1), Karla BASCUNAN (2), Stefania ORLANDO (1), Francesca FERRETTI (1), Federica BRANCHI (1), Vincenza LOMBARDO (1), Alice SCRICCIOLO (1), Maurizio VECCHI (1), Leda RONCORONI (1), Sabrina FABIANO (3), Giulio BARIGELLETTI (3), Maria Teresa BARDELLA (1) - (1)Fondazione IRCCS Ca' Granda, Italie, (2)University of Chile, Chili, (3)Fondazione IRCCS Istituto Nazionale dei Tumori, Italie

ABSTRACT CONTENT

Objectives
Gluten free diet (GFD) decreases the quality of life of patients with celiac disease (CD) who frequently ask to occasionally ingest gluten containg food.

We evaluated CD patients reporting voluntary and occasional transgressions to the GFD.

Methods
CD patients undergoing annual follow-up were enrolled and divided in two groups: i) patients reporting an occasional and voluntary gluten ingestions (GFD-transgression) and ii) patients following a strict GFD (GFD-adherent). Patients underwent clinical examination, blood tests, duodenal biopsy. In the GFD-transgression group a capsule enteroscopy, a validated food-frequency questionnaire (FFQ) assessing the frequency and quantity of gluten intake and mortality were assessed.

Results
197 patients were included into the study (age 45±16 years, age at diagnosis 30 range 6-49 years, 38 females). In patients not adhering to the GFD (n=48), mean gluten intake was 185.2 ± 336.9 g/year, duration of GFD transgression was 8.6±6.9 years. Most of the patients reported an ingestion of gluten per week or per months. Among uncompliant patients, 23(47%) did not present any histological alteration; Marsh score profile was not different among the two groups. 75% of patients did not report any gastrointestinal symptoms after gluten ingestion. 23% of patients in the GFD-transgression group presented positvie tTG-IgA vs none in the GFD-adherent group (n=149). No association was found between gluten intake, clinical symptoms and biomarkers. Mortality was not different between groups and general population.

Conclusion
Our results showed that a group of CD patients with a long-term gluten intake does not show significant clinical symptoms or histological abnormalities, suggesting that a degree of tolerance towards gluten consumption can be reached. Although a strict GFD remains the only treatment available for CD patients, its tolerance should be accurately monitored over time.

Conflicts of interests
None

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00102

Final poster ID: P4-17

Title: Development and technical validation of tetramer staining for use as biomarker for assessing gluten-specific T cells in clinical studies

Presenting author: Glennda M. Smithson

Co-authors: Glennda M. SMITHSON (1), Will MCAULIFFE (1), Lynn KISSELBACH (2), Angelina BISCONTE (2), William KWOK (3), Deborah PHIPPARD (2), Jose ESTEVAM (1) - (1)Takeda Pharmaceuticals International Co., États-Unis, (2)Precision for Medicine, (3)Benaroya Research Institute at Virginia Mason, États-Unis

ABSTRACT CONTENT

Objectives
We developed and validated a 12-color tetramer flow cytometric assay to characterize gluten-specific T cells.

Methods
Method development: 1. Optimized staining reagents/protocols. 2. Select a CD4+ T cell enrichment method to avoid gluten-specific T cell loss. 3. Assessed method performance characteristics. 4. Defined a gating strategy to identify the rare target cells.

Human PBMCs or CD4+ T cells, spiked with gliadin α-I (QLQPFPQPELPY) or α-II (PQPELPYPQPE) T cells, were used for analysis. To optimize the staining and sensitivity of the assay, reagents were titrated on PBMCs or CD4+ T cells spiked with gliadin α-I/α-II T cells. The concentration selected was based on the best signal:noise ratio and optimal assay performance. CD4+ T cell enrichment was evaluated using negative or positive selection. For technical validation, enriched CD4+ T-cells from 3 healthy subjects were spiked with α-I or α-II T cells and precision tested based on pre-set validation criteria including: inter-assay, intra-assay and inter-operator precision. Post-staining stability was tested at 24/48hrs.

Results
Reagents were optimized and used to identify gluten-specific (tetramer+), naïve or memory (CD4/CD3/CD45RA/CD62L/CCR7), activated (CD38), regulatory (CD39) and gut-homing (B7/α4) T cells and exclude non-CD4+ T cells (CD11c/CD14/CD19/CD56). Positive selection was the most efficient method to enrich for CD4+ T cells. Validation criteria was successfully met.

Conclusion
Tetramer+ T cells in the blood are rare, even after gluten exposure, so a sensitive and selective assay is required for detection. The tetramer assay will enable characterization of the gliadin α-I/α-II CD4+ blood T cells for patients with celiac disease, reducing the need for biopsies to evaluate therapy response. As shown, the assay is technically feasible and the data interpretable, supporting its use in clinical trials.

Conflicts of interests
Employees of Takeda GMS, WM, JE; Precision for Med. LL, DP, AB

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00124

Final poster ID: P4-18

Title: A telephone clinic improves gluten-free dietary adherence in adults with coeliac disease

Presenting author: Yvonne Jeanes

Co-authors: Yvonne JEANES (1), Humayun MUHAMMAD (1), Sue REEVES (1), Sauid ISHAQ (2), John MAYBERRY (3) - (1)University of Roehampton, Royaume-Uni, (2)Dudley Group NHS Foundation TRust, Royaume-Uni, (3)University Hospitals of Leicester, Royaume-Uni

ABSTRACT CONTENT

Objectives
To determine whether a healthcare professional led telephonic clinic has an impact on gluten-free dietary adherence, with a three-month follow up period.

Methods
Adults with coeliac disease were recruited from a hospital database. All participants completed the validated Coeliac Dietary Adherence Test (CDAT) at baseline and three months later; a score <3 indicates dietary adherence. The intervention group received an information leaflet and a healthcare professional led telephone clinic which included improving participants' knowledge of coeliac disease and gluten-free foods, as well as discussing behaviour change. The control group received no intervention. The study was approved by the University of Roehampton and the NHS ethics committees (LCS16/190and 17/EM/00 56). Data presented as median and interquartile range (IQR).

Results
Out of 195 postal invitations, 125 were returned (64%). The intervention group consisted of 30 adults not adhering to the gluten-free diet (CDAT score >13; median score 16, IQR 14-17), mean age 50.5±17.7 years, 77% female and 100% Caucasians, 100% provided 3-month data. The control group consisted of 95 adults, and 86 (90%) provided 3-month data (CDAT score <13; median score 9, IQR 8-10), mean age 51.3±17.6 years, 77% female, 76% Caucasians. The gluten-free dietary adherence score in the control group remained the same at baseline and 3-months later (9; IQR 8-11). Within the intervention group there was a significant improvement in gluten-free dietary adherence from baseline score (16: IQR14-17) to the 3-month score (13: IQR 12-14), P<0.001. The component scores for 'How important are accidental gluten exposures' and 'how many times have you eaten gluten containing foods on purpose' significantly improved (both P<0.001) in the intervention group only.

Conclusion
This is the first study to report a healthcare professional led telephone clinic can improve gluten-free dietary adherence in adults with coeliac disease. This evidence suggests follow up via remote access to patients is effective.

Conflicts of interests
Study part funded by a Dr Shär International Nutrition Award

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00137

Final poster ID: P4-19

Title: Novel Celiac Disease Program Model Improves Follow-Up Adherence

Presenting author: M. Angie Almond

Co-authors: M. Angie ALMOND (1), Elizabeth T. JENSEN (2), Justin D. PARKS (3), Sarah J. SABA (4), Anca M. SAFTA (1) - (1)Wake Forest Baptist Medical Center, Department of Pediatric Gastroenterology, Hepatology and Nutrition, États-Unis, (2)Wake Forest University School of Medicine Health Sciences, Department of Epidemiology and Prevention, États-Unis, (3)Wake Forest Baptist Medical Center, Outpatient Clinical Nutrition, États-Unis, (4)Wake Forest University School of Medicine, États-Unis

ABSTRACT CONTENT

Objectives
Patients with a diagnosis of celiac disease (CeD) are often non-compliant with following recommended guidelines for follow-up visits. We hypothesized that more frequent contacts, 4 visits in the first year following diagnosis, with both a registered dietitian (RD) and gastroenterologist (MD), could lead to increased adherence to annual follow-up visits. The primary objective of this study was to determine if our program model improves adherence, over a 24-month period, for follow-up visits for patients with CeD.

Methods
We retrospectively identified all patients with biopsy-proven CeD. All pediatric incident cases of CeD diagnosed at our medical center between October 2014 and March 2017 were included. Demographic and adherence to clinic visit data was abstracted from the electronic medical record.

Results
83 patients were identified, with a mean age of 9.8 years of age consisting of 56 (67%) females and 27 (33%) males. In the initial diagnostic year, 75 (90%) patients attended at least 2 combined RD/MD clinic visits (36 [43%] adhered to the 4-visit schedule). In the second year, post-diagnosis, 60 (72%) of these patients adhered to the recommended annual visit follow-up schedule.

Conclusion
More frequent and combined RD/MD visits during the first year following diagnosis of CeD, yielded a significantly higher proportion of patients adhering to recommended guidelines for annual follow-up visits relative to other institution reports (20%- 39%). Prospective studies are needed to evaluate the specific components of our program model to determine which components lead to better compliance with long-term CeD follow-up care management guidelines.

Conflicts of interests
None of the authors have any conflicts of interest to report.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00140

Final poster ID: P4-20

Title: Coeliac Disease and the Family: A Mixed Methods Systematic Review

Presenting author: Rose-Marie Satherley

Co-authors: Rose-Marie SATHERLEY (1), Shayna COBURN (2), Monique GERMONE (3) - (1)King's College London, Royaume-Uni, (2)Children's National Health System, États-Unis, (3)Children's Hospital Colorado, États-Unis

ABSTRACT CONTENT

Objectives
A diagnosis of coeliac disease (CD) requires individuals to adopt a strict gluten-free diet (GFD). As children with CD must rely on their families for instruction, support and daily help with navigating the GFD, CD may challenge the entire family's emotional and social well-being. The primary objective of this mixed-methods systematic review was to synthesize research investigating the impact of CD on families.

Methods
Five databases were systematically searched from 1990-2018 to identify qualitative and quantitative studies that assessed the psychosocial well-being and implications for caregivers of children (0-18 years) with CD. All papers were quality assessed using QualSyst (Kmet et al., 2004) before being included in the review. Qualitative and quantitative data was extracted separately before being integrated to explore key themes across the papers.

Results
Twelve papers (3 qualitative and 9 quantitative) were included in the review reporting on a total of 560 children diagnosed with CD and 577 caregivers. The presence of CD contributed to economic hardship, family conflict and disrupted family routines. Families often adopted a GFD to support their children, and reported avoidance of travelling and dining at restaurants, to accommodate their child's dietary restrictions. Maternal quality of life was impaired and concerns around the child's GFD management and future were common. Five papers explored the relationship between family impact of CD and adherence to the GFD. Of these, three papers reported a greater impairment in psychosocial well-being and quality of life for caregivers of children who reported as non-adherent to the GFD.

Conclusion
Further research is needed to explore whether the impact of a child's CD on parents and families affects adherence to the GFD by impairing family-management of the disease, and by impacting CD through stress-related pathways. The family unit must be considered when providing education and support for children with CD.

Conflicts of interests
None.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00143

Final poster ID: P4-21

Title: Coexisting type 1 diabetes increases the risk of dietary lapses in adult celiac disease patients diagnosed in childhood

Presenting author: Laura Kivelä

Co-authors: Laura KIVELÄ (1, 2), Anna LAITINEN (1), Marleena REPO (1), Katri KAUKINEN (3), Kalle KURPPA (1) - (1)Center for Child Health Research, Tampere University and Department of Pediatrics, Tampere University Hospital, Finlande, (2)New Children's Hospital, Helsinki University Hospital, Finlande, (3)Celiac Disease Research Center, Tampere University, and Department of Internal Medicine, Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
Long-term adherence to gluten-free diet in children with celiac disease is poorly known. We evaluated the dietary adherence and associated factors in adult celiac disease patients diagnosed in childhood.

Methods
Comprehensive medical data of 955 children with celiac disease were collected, and specific study questionnaire and validated questionnaires for symptoms and quality of life were sent to 559 currently adult patients. All variables were compared between strictly adherent and non-adherent patients.

Results
237 adults (median age 27 [range 18-63] years, 69% women) responded the questionnaires a median of 19 years after childhood diagnosis. Altogether 78% reported strict gluten-free diet and 22% had lapses. The groups were comparable in gender, age, symptoms, growth, laboratory parameters and severity of histopathology at diagnosis, and in short-term dietary adherence after 1-2 years. In adulthood, patients with lapses had higher body mass index (25.5 vs 23.2, p=0.013), more coexisting type 1 diabetes (18% vs 5%, p=0.002) and less other gastrointestinal diseases (0% vs 8%, p=0.045). They more often experienced difficulties with the diet (39% vs 17%, p<0.001) particularly due to expenses of gluten-free products (12% vs 1%, p=0.002). Avoidance of symptoms (49% vs 79%, p<0.001) or complications (65% vs 89%, p<0.001) were less common reasons to maintain the diet than in adherent patients. Non-adherent patients had higher prevalence (39% vs 19%, p=0.004) and more severe current symptoms, whereas the groups were comparable in socioeconomic and lifestyle factors, experience of health, presence of follow-up and quality of life.

Conclusion
Most celiac disease patients diagnosed in childhood adhere to a strict gluten-free diet in adulthood, but concomitant type 1 diabetes predisposes to lapses. Experiences of the diet should be considered during the transition to adult care and subsequent long-term follow-up.

Conflicts of interests
None.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00155

Final poster ID: P4-22

Title: Patients with celiac disease are at high risk of metabolic syndrome and fatty liver

Presenting author: Govind Makharia

Co-authors: Govind MAKHARIA, Ashish AGARWAL, Alka SINGH, Vipin GUPTA, Wajiha MEHTAB, Namrata SINGH, Vineet AHUJA - (1)All India Institute of Medical Sciences, Inde

ABSTRACT CONTENT

Objectives
Gluten free diet (GFD) is known to have excess of fats and simple sugars and hence puts patients with celiac disease (CeD) at risk of metabolic complications including metabolic syndrome and fatty liver. We assessed prevalence of metabolic syndrome in two cohorts of patients with CeD.

Methods
Study was done in two groups. In group 1, 54 treatment naïve patients with CeD were recruited and were put on GFD. They were reassessed after one year of GFD. In group 2, 130 patients with CeD who were already on GFD for more than 1 year were recruited. They all were assessed for anthropometric characteristics, metabolic parameters and fatty liver. Metabolic syndrome was defined as per consensus definition for Asian Indians. Presence of fatty liver was defined as Controlled Attenuation Parameter (CAP) value >263 decibels by Fibroscan.

Results
In group 1, of the 54 treatment naïve patients with CeD, 5 (11.2%) had metabolic syndrome before GFD. Of them, 44 returned after one year of GFD and 9 (18.2%) had metabolic syndrome. Amongst individual components of metabolic syndrome, fasting hyperglycemia altered more often (11.9% before vs. 30.9% after; p 0.039) in them. The number of patients having fatty liver increased from 6 patients (14.3%) at baseline to 13 (29.5%) after 1 year of GFD (p=0.002). In group 2 including 130 patients CeD on GFD for a median duration of 4 years, 30/114 (26.3%) and 30/124 (24.2%) patients had metabolic syndrome and fatty liver, respectively.

Conclusion
Patients with CeD are at higher risk of developing metabolic syndrome and fatty liver with the initiation of GFD, which increases further with duration of GFD. Patients with CeD on GFD should be assessed for nutritional and metabolic features at regular interval. They should be counseled about a balanced diet and physical activity

Conflicts of interests
None

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00167

Final poster ID: P4-23

Title: Assessment of Knowledge of Gluten-Free Diet Amongst Food Handlers in a Health Care Institution

Presenting author: Tyler Mullen

Co-authors: Tyler MULLEN, Tasha KULAI, Mohsin RASHID - (1)Dalhousie University, Canada

ABSTRACT CONTENT

Objectives
Celiac disease (CD) is a common disorder; therefore, it would not be uncommon for individuals with CD to be admitted to healthcare facilities where they do not have direct control over their diet. Availability of safe gluten-free (GF) meals is important as gluten contamination is associated with numerous comorbidities and increased mortality. Ensuring food-handlers are trained to prepare GF foods is critical to diminish this risk. Our study investigated the knowledge of CD and GF diet amongst food handlers in a healthcare institution.

Methods
A questionnaire of 40 multiple-choice test items to assess knowledge of CD (n=5) and GF diet (n=35) was developed. This was reviewed for feasibility, readability, and content accuracy by gastroenterologists, dietitians with expertise in GF diet, adult patients with CD, and parents of children with CD. The questionnaire was distributed to food handlers at a tertiary care hospital in Halifax, Nova Scotia. A score of 80% or more was considered a Pass.

Results
To date 44 surveys have been completed, with data acquisition ongoing. Participants included 13 cooks, 23 utility workers, 4 Food Services supervisors, and 2 dietary technicians. Overall, 27 (61%) received a failing grade with an average score of 74.3%. The average score for CD questions was 73.2% ±24 (range 20%-100%) and 74.4% ±14.6 (25.7%-100%) for questions on GF diet. All had heard of gluten or GF and 39 (89%) had heard of CD. The average of those who failed was 66.8% ±10.3 (32.5%-77.5%), and 88.7% ±6.6 (80%-100%) for those who passed. All supervisors and dietary technicians passed. Of the cooks, 9 (69.2%) received a failing grade. The average score was 70.6% ±15.3 (32.5%-87.5%). Of the utility workers, 18 (78%) failed, with average score being 71.0% ±9.6 (37.5%-85%).

Conclusion
Knowledge regarding CD and GF diet amongst food handlers including cooks and kitchen utility workers who prepare meals for patients, at a health care institution is inadequate. This has an increased risk of gluten contamination in meals, leading to potentially negative health consequences.

Conflicts of interests
Nil.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00181

Final poster ID: P4-24

Title: The role of low FODMAP plus gluten free diet on the quality of life of irritable bowel syndrome patients

Presenting author: Mohammad Rostami-Nejad

Co-authors: Mohammad ROSTAMI-NEJAD (1), Saeede SAADATI (2), Amir SADEGHI (1), Hamid MOHAGHEGH-SHALMANI (1), Kamran ROSTAMI (3), Hamid ASADZADEH-AGHDAEI (2), Mohsen NOROUZINIA (1), Mohammad Reza ZALI (1) - (1)Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (2)Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d', (3)Department of Gastroenterology MidCentral District Health Board, Palmerston North Hospital, Nouvelle-zélande

ABSTRACT CONTENT

Objectives
The major dilemma in medical practice is the role of different diet in decreasing symptoms and improving the quality of life of IBS patients. For this purpose, we designed a trial to evaluate the efficacy of low FODMAP plus gluten-free diet on the quality of life among IBS patients.

Methods
In this randomized controlled trial, patients with celiac disease and wheat allergy excluded if serology and histological evaluations and wheat-specific IgE levels were negative, respectively. Participants were asked to follow low FODMAP+ strict gluten-free diet for 6 weeks. Then all patients were randomly allocated to one of the following groups: Group A (n=15): continued low FODMAP and gluten-free diet for more 6 weeks; Group B (n=10): received regular gluten-containing diet for 6 weeks. Participants were asked to fill SF-36, at the beginning and completion of the study. Gastrointestinal symptomatology and general well-being were evaluated by visual analog scale (VAS) scores.

Results
There was a significant difference in social functioning score across group A (5.79±1.25) and B (6.14±1.95) (p=0.045). There were no significant differences between groups for other domains, including energy/fatigue (p= 0.24), emotional well-being (p= 0.20), Bodily Pain (p= 0.20), general health (p= 0.33), physical functioning (p= 0.23), role physical (p= 0.30), and role emotional (p= 0.93).

Conclusion
A short-term low FODMAP plus gluten free diet helps to improve the social functioning and gastrointestinal symptomatology with enhanced well-being of IBS patients with gastrointestinal symptom. The long-term clinical effects of this diet need further evaluation.

Conflicts of interests
no conflict of interest

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00185

Final poster ID: P4-25

Title: The awareness of health care professionals for diagnosis and treatment of celiac disease compared with celiac patients

Presenting author: Farnoush Barzegar

Co-authors: Farnoush BARZEGAR, Mohammad ROSTAMI-NEJAD, Hamid MOHAGHEGH SHALMANI, Amir SADEGHI, Mohammad Reza ZALI - (1)Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Iran, République Islamique d'

ABSTRACT CONTENT

Objectives
Clinicians play a crucial role in the diagnosis and management of celiac disease, so it is essential to ensure that they have the necessary knowledge to have a high-quality clinical practice. In this study, we assessed the knowledge of health care professionals and celiac patients regarding the diagnosis and treatment of celiac disease in an Iranian population.

Methods
190 clinicians (63.6% male) and 100 celiac disease patients (77% female) were recruited for this study and invited to complete a questionnaire. The patients were chosen from those who were attended to an educational meeting in September 2017. Participants completed a questionnaire regarding the epidemiology, diagnosis, and treatment of celiac disease. The questionnaires were scored and study data were analyzed using SPSS version 20.

Results
The mean age of the participants in health care professionals and celiac patients was 42.3 and 39.2 years respectively. Analysis of data showed that except for awareness of cross-contamination with gluten, the knowledge of health care professionals was significantly higher than patients with celiac disease regarding epidemiology, diagnosis, and treatment ($p=0.001$).

Conclusion
This study suggests that a significant proportion of health care professionals have limited knowledge regarding the cross-contamination of foods with gluten but their significant knowledge in diagnosis and treatment may lead to improvements in patients' health.

Conflicts of interests
no conflict of interest

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00217

Final poster ID: P4-27

Title: The Milano questionnaire: a new dietary score for evaluation of compliance to gluten free diet in patients with celiac disease

Presenting author: Luca Elli

Co-authors: Luca ELLI, Simone SEGATO, Leda RONCORONI, Alice SCRICCIOLO, Vincenza LOMBARDO, Maurizio VECCHI, Federica CUTAIA, Francesca FERRETTI - (1)Fondazione IRCCS Ca' Granda, Italie

ABSTRACT CONTENT

Objectives
We aimed to develop a novel questionnaire to monitor adherence to gluten free diet in celiac disease

Methods
The “Milano” questionnaire is composed of 9 items: 6 questions are based on a visual analogue scale (VAS, obtaining continuous variables) and 3 of them are yes/no questions. Questions have been expressly formulated in order to investigate factors strictly connected with adherence to gluten free diet (GFD). In particular: voluntary gluten assumption, accidental gluten assumption (i.e. possibility of contaminations) and attention paid on the control of nutritional labels of GF products. Two questions evaluate the presence and severity of symptoms experienced in case of accidental or voluntary gluten assumption. The questionnaire was compared to tTGA titres and duodenal histology.

Results
The Milano questionnaire was administered to 285 patients (209 females and 76 males). We observed a significant correlation between the score obtained and serological status of the patients. In particular lower scores obtained were associated with higher probability of positivity to tTGA, suggesting a score of 30 as a cut off value. In particular, among the questionnaire items, 3 of them resulted significantly different between the groups based on tTGA positivity: question number 1 about general attention to GFD, question number 2 concerning the frequency of voluntary assumption of gluten and question number 7 about the eventual check of nutritional labels of products. We also observed a positive correlation between a score minor than 30 and the grade of villous atrophy at biopsy obtained during GFD.

Conclusion
This study shows that a new dietary questionnaire, the Milano questionnaire, is an useful tool to evaluate compliance to the GFD of celiac patients during clinical follow up.

Conflicts of interests
none

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00230

Final poster ID: P4-29

Title: High prevalence of persisting symptoms, fatigue and reduced quality of life among treated adult coeliac patients in a national cross-sectional study

Presenting author: Frida Van Megen

Co-authors: Frida VAN MEGEN (1), Gry SKODJE (1), Marianne STENDAHL (2), Marit BRAGELIEN VEIERØD (3), Knut Erik LUNDIN (4), Christine HENRIKSEN (2) - (1)Department of Clinical services, Oslo University Hospital Rikshospitalet, Norvège, (2)Department of Nutrition, Institute of Basic Medical Sciences, University of Oslo, Norvège, (3)Oslo Centre for Biostatistics and Epidemiology, Department of Biostatistics, Institute of Basic Medical Sciences, University of Oslo, Norvège, (4)K.G. Jebsen Coeliac Disease Research Centre, University of Oslo, Norvège

ABSTRACT CONTENT

Objectives
Many coeliac disease (CD) patients have continued gastrointestinal (GI) symptoms or reduced general health even after starting a gluten free diet (GFD). Few studies investigated prevalence of persistent symptoms despite following a strict GFD. We investigated prevalence of persistent GI symptoms, health related quality of life, fatigue and GFD adherence in Norwegian CD patients.

Methods
In a web-based survey in adults (18-75 years) with CD in Norway (in collaboration with the Norwegian Coeliac Disease Association, NCF), respondents were anonymously asked about their diagnosis, age, gender, county of residence, symptoms at diagnosis and family members with CD. They also filled in the Gastrointestinal Symptom Rating Scale, IBS version (GSRS-IBS), Coeliac Symptom Index (CSI), Coeliac Disease Adherence Test (CDAT) and Fatigue Questionnaire (FQ). Pearson correlation coefficient, r, was calculated.

Results
In 4059 responders (estimated 4-8% of total CD patients in Norway (where of ~10 000 are members of NCF), 82% women, mean age 47 years), 54% reported GI symptoms the previous week, and 9.5% had mean score ≥4, i.e. moderate to severe discomfort. Respondents scored highest on the GSRS-IBS domains “pain syndrome” (20% scored ≥4) and “bloating syndrome” (24% scored ≥4). Furthermore, 19% had CSI score ≥45, i.e. poor quality of life and worse GFD adherence. CDAT score was ≤12 (adequate adherence) for 43%. However, self-reported adherence was very good in 88 %. Symptoms of fatigue where reported by 59%. Moderate correlation was found between total GSRS-IBS score and CSI ($r=0.66$, $p<0.001$), CDAT ($r=0.35$, $p<0.001$) and FQ ($r=0.43$, $p<0.001$).

Conclusion
In this national cross-sectional study, we found high prevalence of persisting GI symptoms, fatigue and reduced quality of life in treated adult coeliac patients. The IBS-like symptoms pain and bloating were the most prominent complains. More research is needed to find the cause of persisting GI symptoms and potential treatment methods.

Conflicts of interests
none

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00238

Final poster ID: P4-30

Title: Factors associated with non adherence to gluten free diet in adults celiac patients in Israel

Presenting author: Dana Zelnik Yovel

Co-authors: Dana ZELNIK YOVEL, Lena BEREZOVSKY, Efrat BROIDE - (1)Assaf Harofeh Medical Center, Israël

ABSTRACT CONTENT

Objectives
The cornerstone of the recommended treatment for celiac disease (CD) is a lifelong strict gluten-free diet (GFD). We aimed to identify prospectively the demographic, clinical, social and psychological profile associated with non adherence to a GFD in adult CD patients in Israel

Methods
An anonymous online questionnaire has been sent via the Israeli Celiac association and through social networks. Only CD patients≥18 years old were included. Socio-demographic, laboratory and clinical data as well as anxiety and depression score were reported. Adherence to GFD was assessed by Biagi questionnaire.

Results
301 patients completed the questionnaire, mean age of 37.5 ± 14.9 years, 79.2% female. The most common presenting symptoms were: anemia (59.7%), abdominal pain (50.8%) and diarrhea (42.8%).
According to the Biagi score, 82% of patients were found to be high adherent to GFD (Biagi 3-4) and 18% were low adherent (Biagi-0-2).
Univariate analysis revealed that: age of patient, age at diagnosis, duration of disease, education, income level, origin, smoking, gastroenterological follow up and membership in a supporting group, were all significantly associated with adherence to GFD.
However in multivariate analysis, only age at diagnosis and smoking were significantly associated with adherence to GFD (HR 1.083, 0.287, respectively).

Conclusion
Understanding risk factors for non adherence in celiac disease in an important issue. Intervention strategies in young adult celiac patients as well as in smokers might improve adherence and reduce future complications with better quality of life.

Conflicts of interests
none

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00251

Final poster ID: P4-31

Title: Gall Bladder Dysfunction In children With Celiac Disease

Presenting author: Sadhna Bhasin Lal

Co-authors: Sadhna BHASIN LAL, Subhamoy DAS, Aneesh BHATTACHARYA, Akshay SAXENA, Satyawati RANA - (1)PGIMER, Inde

ABSTRACT CONTENT

Objectives
Malabsorption may cause altered Gastrointestinal & Gall Bladder Motility. Gall Bladder Function in Celiac Disease (CD) children was prospectively evaluated at baseline by Tc 99 labeled Mebrofenin scan and Ultrasonography. Gall Bladder Ejection Fraction (GBEF) was reassesed after 6 months of Gluten Free Diet (GFD)

Methods
Fifty consecutive freshly diagnosed children with CD according to ESPGHAN 2012 criteria, aged 5-15y were enrolled. Eight (16%) patients with gall bladder dysfunction were re evaluated after 6 months.

Results
Mean age of the study group was 9.06 years with 46.2% in the age group 5 – 8 years. Male : Female ratio was 1.17 : 1. 52% had diarrhea, 40% had abdominal pain, 82 % had poor growth & 36 % had no abdominal symptoms. Out of 50 subjects screened at baseline, 8 (16%) subjects had decreased GBEF. Duration of illness was significantly longer in these children. The percentage decrease in gall bladder volume (post fatty meal) was significantly lower in subjects with low EF as compared to group of patients with normal EF. The mean % change in GB volume (from fasting to post fatty meal) at baseline was 25.43 % and it significantly improved to 51.56% at 6 months. The GBEF difference of the group of patients with impaired ejection fraction (n=8; 19.25) was significantly lower than the group with normal ejection fraction (n=42; 71.28). Patients with low GBEF also had significantly slower orocecal transit time than those with normal ejection fraction. The improvement in GBEF in the patients with impaired ejection fraction after gluten withdrawal was also statistically significant .($p < 0.001$; 19.25 vs. 76.75).

Conclusion
16% of children with celiac disease had reduced Gall Bladder Contractility, which improved on Gluten Free Diet. Gluten Free Diet in childhood may reduce Gall bladder related morbidity in adulthood.

Conflicts of interests
The authors have no conflicts of Interest to declare

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00253

Final poster ID: P4-32

Title: Gluten-Free Global Threshold Wars - How Safe is Safe?

Presenting author: Paul Valder

Co-authors: Paul VALDER - (1)BRCGS, Canada

ABSTRACT CONTENT

Objectives
To inform and educate consumer celiac organizations, regulators and industry stakeholders around the globe how acredited and certfied gluten-free management certification systems, within the food supply chain, can reduce the risks associated with gluten-free product failure, far beyond relying on the dependency of random end product testing results and brand self-declarations.

Methods
A 25 minute Power Point presentation, speaking about the evolution and current state of the global food safety industry and why industry and consumers depending on a GF diet, may be misinformed and confused. Reviewing a multitude of global GF standards should clearly demonstrate how the food safety world has long moved beyond unrealiable end product testing results and how implementing proven science-based and non-conflicting food standards, certifications, testing regimes and regualtory requirements, provides manufacturers, brands and ultimately, the celiac consumer with "peace of mind". Should time permit, we will close with a 5-10 minute Q&A.

Results
Those attending should come away with a more indepth understanding and apprecaition around the benefits of implementing the right proven approaches, for effectively managing gluten, from the farm to the grocery store shelves.

Conclusion
A globalized set of rigorous gluten controls, which also consider the small producers, will provide more confidence with stakeholders throughout the food supply chain and result in:

1. safer, more reliable GF foods

2. more innovation, better tasting products

3. More GF product choice in super markets

4. more affordable choices for GF products

5. less confusion for industry & the celiac/coeliac consumer

Conflicts of interests
There is clearly a conflict of interest when those that develop and own their own GF standards, are also conducting assessments, issuing and managing certifications for those manufacturers, brands and producers of gluten-free foods. For many years, the I

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00254

Final poster ID: P4-33

Title: High Rates of Depression in Adolescent Celiac Patients

Presenting author: Ritu Verma

Co-authors: Ritu VERMA - (1)University of Chicago Medicine, États-Unis

ABSTRACT CONTENT

Objectives
To test the impact of celiac disease (CD) on depression symptoms and quality of life in adolescent patients.

Methods
We conducted a prospective survey of 12-18 year old celiac patients and their caregivers between January 2015 and November 2016. Enrolled parents and youth completed standard measures of adjustment to celiac disease, depression, and quality of life.

Results
We enrolled 105 patients with CD and their parents. Both parents and youth reported high levels of depression symptoms. There were no associations between age, duration of CD or following a gluten free diet (GFD) and quality of life. Moderate associations were observed between adolescent reports of depression and quality of life (r=.556, p=0.000) and between parental reports of adolescent depression and quality of life (r=.384, p=.004). No significant associations were found between adolescent perception of CD state and quality of life, whereas parental report of adolescent's adjustment to CD and youth report of quality of life were significantly associated (r=.279, p= <.05).

Conclusion
Adolescents with CD report levels of depression comparable to those reported by adolescents seeking mental health services. Length of time living with CD, or on GFD, age at diagnosis and perception of disease state do not appear to contribute to depression. Since high rates of depression may contribute to poor compliance to the GFD, screening for depression in adolescents with CD appears critical. Identification and intervention may lead to improved rates of adherence to the GFD thus limiting harmful long term sequelae.

Conflicts of interests
None

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00270

Final poster ID: P4-35

Title: A Real-Life Assessment of Gluten Cross-Contact In A Shared Kitchen Environment

Presenting author: Vanessa Weisbrod

Co-authors: Vanessa WEISBROD, Catherine RABER, Joyana MCMAHON, Blair RABER, Amy DAMAST, Maureen BASYE, Shayna COBURN, Benny KERZNER - (1)Children's National Medical Center, États-Unis

ABSTRACT CONTENT

Objectives
Recommendations for preventing cross-contact with gluten in kitchens include using separate pots/pans, scrubbing utensils with soap/water, and using a dedicated toaster. Our study evaluates if gluten is transferred from gluten-containing (GC) to gluten-free (GF) pasta, bread, and cupcakes prepared in a shared kitchen. Also, to determine if cross-contact can be prevented either by washing the equipment or rinsing the contaminated pasta.

Methods
Experiment 1: we measured the amount of gluten transferred to GF pasta that was cooked in water previously used for GC pasta (n=12). This was repeated after either washing the pots with soap/water (n=6) or rinsing the pots with water alone (n=6). In a third repetition, the level of gluten was measured on contaminated pasta that was rinsed with tap water for 30 seconds (n=6). Experiment 2: the level of gluten was measured on GF bread toasted in a shared rolling toaster (n=10) and a shared pop-up toaster (n=10). Experiment 3: the level of gluten was measured on GF cupcakes sliced with knives previously used to slice GC cupcakes (n=30). All measurements made using R-Biopharm R7001 R5-ELISA Sandwich assay.

Results
Substantial amounts of gluten were detected on all GF pasta (33.9ppm-115.7ppm) cooked in water previously used for GC pasta. Rinsing the pots with water was as effective as scrubbing with soap/water to remove gluten, with both allowing for transfer levels <5ppm. Rinsing GF pasta resulted in detectable gluten levels <20ppm. A shared toaster produced surprisingly little gluten transfer, with most samples having <5ppm gluten. Only two samples had levels >5ppm, with one measuring 5.1ppm and the other 8.3ppm. Five cupcake samples had gluten transfers just at or above 20ppm.

Conclusion
Cooking GF pasta in water used to cook GC pasta and using a shared knife poses a considerable risk of gluten exposure. Employing basic cleaning methods to the pots/utensils offers sufficient gluten removal. A shared toaster produced little risk of gluten transfer, which may relieve anxiety for celiac patients and change recommendations about the requirement to purchase a new toaster.

Conflicts of interests
None

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00275

Final poster ID: P4-36

Title: A qualitative exploration of what people living with coeliac disease think about their long-term follow up care

Presenting author: Rosie Cooper

Co-authors: Rosie COOPER (1), Manpreet BAINS (2), Rebecca BELL-WILLIAMS (2), Kathy WHITTAMORE (2), Nicola HALL (3), Joe WEST (2) - (1)Derby City Council, Royaume-Uni, (2)University of Nottingham, Royaume-Uni, (3)University of Sunderland, Royaume-Uni

ABSTRACT CONTENT

Objectives
Recommendations for following up individuals with coeliac disease suggest regular review by a relevant physician or dietician in secondary or primary care. However, the evidence underpinning guidelines is limited and the views of individuals managing the condition have not been considered. We explored what persons living with coeliac disease thought of their follow up.

Methods
Fifty semi-structured interviews were conducted with individuals with coeliac disease, recruited from Coeliac UK's membership. Individuals were purposively sampled to include those receiving and not receiving follow up (through choice or discontinued). Interviews explored follow up experiences, perceived importance and how it could be improved. Interviews were audio-recorded, transcribed verbatim and analysed using the framework approach.

Results
Three themes were identified: nature of follow up received, the purpose of follow up, the process and relation to attendance, and follow up preferences.Participants reported wide variation in process from blood tests to repeat bone scans and endoscopies, to nothing at all. Regularity also varied, suggesting it was rarely in line with guidelines. Attendance reassured some individuals that they were on track, while others attended to 'stay in the system'. Thus, understanding on the purpose of follow up was lacking. Non-attendance related to not viewing it as worthwhile, or due to previous negative experiences with healthcare professionals. Most agreed that an annual review at a local location with a consistent and knowledgeable person would be sufficient, but some highlighted that they were happy to have it offered as needed rather than with prescribed regularity.

Conclusion
Whilst most individuals with coeliac disease seem to express a preference for receiving some form of annual follow-up, the reason for having it was unclear. Some had a preference for not attending follow up or having it provided as needed.

Conflicts of interests
No conflict of interests.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00277

Final poster ID: P4-37

Title: Healthcare Professionals' Views On The Long-term Follow Up Of Coeliac Disease: A Qualitative Study

Presenting author: Rosie Cooper

Co-authors: Rosie COOPER (1), Rebecca BELL-WILLIAMS (2), Kathy H. WHITTAMORE (2), Nicola HALL (2), Joe WEST (2), Bains MANPREET (2) - (1)NHS, Royaume-Uni, (2)University of Nottingham, Royaume-Uni

ABSTRACT CONTENT

Objectives
Recommendations for following up persons with coeliac disease suggest regular review by a physician or dietician in secondary or primary care. However, the evidence underpinning guidelines is limited and views of healthcare professionals (HCP) involved in the management of the condition have scarcely been studied, and thus was the focus of this study.

Methods
Forty-three semi-structured interviews were conducted with HCPs (10 gastroenterologists, 18 general practitioners and 15 dietitians). Interviews explored HCPs' current practices, perceived importance of follow up and future improvements. Interviews were audio-recorded, transcribed verbatim and analysed using the framework approach.

Results
Four themes were identified: importance of follow up, non-attendance, current follow up practices and improvements. Some HCPs stated the evidence base for follow up was insufficient and thus current practice varied. Nonetheless, some HCPs felt follow up was crucial to ensure individuals were adhering to a gluten free diet, and for vulnerable individuals; than those more proactive in their self-management. Nonattendance was not seen as problematic by most. However, it was acknowledged that some non-attendees were likely to be less compliant and therefore would benefit most. Current practice tends to revolve around recap and reassurance for patients, whilst the main concerns for HCPs are the deteriorating timelines in which some patients are left without support. HCP opinion on and knowledge of current national guidelines for following up individuals with coeliac disease was varied, with most admitting that they were not following them. A lack of clear guidelines at a local level added to the confusion and disparity in treatment and needed to be addressed to improve management.

Conclusion
There was a wide variety of follow up arrangements currently being delivered by HCPs. HCPs felt improvements at a national level would require clear evidencebased guidelines that could be implemented in a resource poor environment.

Conflicts of interests
We declare no competing interests.

This study was funded by Coeliac UK.

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00284

Final poster ID: P4-38

Title: Different mineral and vitamin content in gluten free products comparing to gluten-containing counterparts

Presenting author: I Larretxi

Co-authors: I LARRETXI (1, 2), I CHURRUCA (1), V NAVARRO (1), A LASA (1), M.A. BUSTAMANTE (1), M. Pilar FERNÁNDEZ-GIL (1), O MARTÍNEZ (1), J SALMERÓN (1), J MIRANDA (1), E SIMÓN (1) - (1)Gluten Analysis Laboratory of the University of the Basque Country, Department of Nutrition and Food Science, University of the Basque Country (UPV/EHU), Espagne, (2)GLUTENS research group, Department of Nutrition and Food Science, University of the Basque Country (UPV/EHU), Espagne

ABSTRACT CONTENT

Objectives
Despite the gluten free (GF) products growing market, data about their vitamin and mineral contribution remain scarce. Most of studies about their nutrient composition are based on their ingredients and composition databases. The aim of this study was to assess analytically the micronutrient content of a selection of GF products, and to compare it with their respective gluten-containing counterparts.

Methods
GF products from three main cereal food-types contributing to a balanced diet, such as flakes (n=13), pasta (n=12) and bread (n=12), were selected. For mineral determination, analysis of selenium, manganese and cooper was performed by using ICP-M. In the case of calcium, sodium, zinc and iron quantification ICP-OES was used. Biotin, Folate, Niacin, Piridoxin, Riboflavin, Tiamin, vitamin B5 and B12 were measured by LC-M and vitamin E by HPLC. Analytical results of GF products were compared to nutritional composition of their gluten-containing counterparts (Spanish Food Composition Database).

Results
Lower iron, piridoxin, riboflavin and thiamin content was found in the three GF products groups analyzed. Niacin reduction was observed in GF flakes and breads. Folate content was lower in GF bread; manganese amount was lower in GF pasta, and that of vitamin B5 and E in GF flakes. Biotin content was higher in cereal flakes and lower in GF pasta than in their counterparts.

Conclusion
Our data confirmed different mineral and vitamin content in cereal-based GF products comparing to gluten-containing counterparts.

Conflicts of interests
Authors declare no conflicts of interest.

FOUNDING: University of the Basque Country, UPV/EHU (GIU18/078, US15/06 and US18/15).

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00285

Final poster ID: P4-39

Title: Tools for nutritional education in the field of gluten-free diet

Presenting author: I Larretxi

Co-authors: I LARRETXI (1, 2), S PIÑEIRO (1), M LÓPEZ (1), V NAVARRO (1), A LASA (1), O MARTÍNEZ (1), I CHURRUCA (1) - (1)Gluten Analysis Laboratory of the University of the Basque Country, Department of Nutrition and Food Science, University of the Basque Country (UPV/EHU), Espagne, (2)GLUTENS research group, Department of Nutrition and Food Science, University of the Basque Country (UPV/EHU),, Espagne

ABSTRACT CONTENT

Objectives
Nutritional Education is a basic tool for healthy gluten-free diet promotion , for spreading knowledge about gluten related diseases, as well as for educating society about sustainable feeding. One of the research lines of GLUTENS team is to develop tools to carry out Nutritional Education among celiac people and general population.

Methods
The first step was to define the message that each tool needs to cover: it should be based on scientific knowledge, cover a lack of knowledge or mend fake beliefs and be adapted to a specific target population, such as children. After, attractive methodologies and materials have to be designed, from brochures and softwares to practical workshops.

Results
Here are briefly described different strategies carried out by GLUTENS team with satisfactory results:

1. Guides: printed dissemination of the knowledge about gluten, celiac disease and balanced diet in a friendly language.

2. Informatics tools: a software for the specific design and evaluation of gluten free diet.

3. Practical workshops:

a) For children, including both celiac and non-celiac children

- Scientific approach to gluten and celiac disease: scientific based experiments to actively generate knowledge - Cooking workshop for families: cooking balanced gluten-free recipes, including ingredients shopping , to promote celiac people´s social inclusion

b) For general adult population

-“Gluten: from lab to table”: a seminar to promote science to public

4. Science Exhibitions: development of scientific skills in the context of celiac disease

Conclusion
Aforementioned tools are valuable and useful to promote the so necessary Nutritional Education, especially in gluten related disorders, whose only effective treatment is gluten-free diet. This diet has not only to be safe, but also nutritionally balanced and socially known.

Conflicts of interests

Authors declare no conflicts of interest.

FOUNDING: University of the Basque Country, UPV/EHU (GIU18/078 and US18/15).

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00286

Final poster ID: P4-40

Title: FODMAP consumption among celiac people and its relationship with the gastrointestinal symptomatology

Presenting author: I Larretxi

Co-authors: I LARRETXI (1, 2), M VÁZQUEZ (1), G PÉREZ (1), B ESTEBAN (3), Fj EIZAGUIRRE (4), C TUTAU (5), E SIMÓN (1), M.A. BUSTAMANTE (1) - (1)Gluten Analysis Laboratory of the University of the Basque Country, Department of Nutrition and Food Science, University of the Basque Country (UPV/EHU), Vitoria, Spain, Espagne, (2)GLUTENS research group, Department of Nutrition and Food Science, University of the Basque Country (UPV/EHU), Vitoria, Spain, Espagne, (3)Asociación de Celiacos y Sensibles al Gluten de Madrid, Madrid, Spain, Espagne, (4)Unidad de Gastroenterología Pediátrica, Hospital Universitario Donostia, San Sebastián, Spain, Espagne, (5)Unidad de Gastroenterología Pediátrica, Hospital Universitario de Cruces, Barakaldo, Spain, Espagne

ABSTRACT CONTENT

Objectives
The objective of this study was to analyze foods´ fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAP) content of foods, to measure FODMAP consumption of celiac children and adults, and to study whether this intake was related to their gastrointestinal symptoms.

Methods
The nutritional composition of foods present in Spanish Food Composition Database (BEDCA) was completed with their FODMAP content. FODMAP composition, concretely glucose, fructose, lactose, inulin, rafinose, estaquiose and sorbitol content of 435 foodstuffs were obtained from the Australian Food Composition Database and included in Spanish Food Composition Database -BEDCA-. Then, all data were transferred to a new software for gluten free diet (GFD) design and evaluation. In order to measure FODMAP consumption, 24 hour recalls and symptom questionnaires were collected from 30 celiac children and 25 celiac adults at three moments (at diagnosis, after 3 months on GFD and after 12 months). FODMAP intake was calculated through the software and classified using Ong et al and Varney et al criteria. Symptoms were also classified. Statistical analysis was performed by SPSS program.

Results
Children´s FODMAP intake did not change during 12 months. By contrast, FODMAP intake in adults increased during the first 3 months. Symptoms decreased significantly in children and adults after 3 months on GFD. No correlation was observed between FODMAP intake and the symptomatology among participants.

Conclusion
FODMAP consumption was not the cause for the remission of symptoms in celiac people. Even so, this work created a tool to measure FODMAP intake which will be useful for future studies.

Conflicts of interests
Authors declare no conflicts of interest.

FOUNDING: University of the Basque Country, UPV/EHU (GIU18/078 and US18/15).

POSTERS

THEME :
GLUTEN-FREE-DIET MANAGEMENT/COPING

Abstract #: ICDS00299

Final poster ID: P4-41

Title: Serum IgA anti-tissue transglutaminase antibody trend of normalization in response to the gluten-free diet at short-term follow-up evaluations.

Presenting author: Chiara Monachesi

Co-authors: Chiara MONACHESI (1), Elisa FRANCESCHINI (1), Anil K. VERMA (1), Tiziana GALEAZZI (1), Simona GATTI (1), Elena LIONETTI (1), Carlo CATASSI (1, 2) - (1)Department of Pediatrics, Marche Polytechnic University, Ancona, Italy, Italie, (2)Mucosal Immunology and Biology Research Center, Division of Pediatric Gastroenterology and Nutrition, Massachusetts General Hospital, Boston, USA, États-Unis

ABSTRACT CONTENT

Objectives
The gluten-free diet (GFD) is the only effective treatment for celiac disease (CD). Current guidelines recommend serial IgA anti-tissue transglutaminase antibody (anti-tTG) measurements to monitor successful treatment and serology normalization. Time course of IgA anti-tTG normalization in celiac children on GFD was evaluated in this study.

Methods
Consecutive pediatric CD patients attending medical follow-up visit with confirmed diagnosis of CD, satisfactory GFD compliance, celiac serology assayed in the laboratory of our hospital, were identified. Age, symptoms, Marsh score at diagnosis, serum IgA anti-tTG levels at diagnosis, 6, 12, 24 months were examined. CD patients were classified into: group A (normal IgA anti-tTG within 12 months) and group B (normal IgA anti-tTG after 12 months). Logistic regression analysis was performed.

Results
54 CD patients were investigated, with 68% normal IgA anti-tTG within 12 months. Median age at diagnosis was 4 years(IQR 2-7) in group A and 4 years(IQR 3-8) in group B (p=0.4). Median baseline IgA anti-tTG was 129 U/ml (IQR 52-186) in group A vs 200 U/ml (IQR 129-369) in group B (p=0.02). Marsh score was available in only 16 patients and was not considered in the model. Male patients were 11 times more likely to normalize anti-tTG levels within 12 months, the risk of abnormal IgA anti-tTG values at 12 months was increased by 20% for each additional year of age at diagnosis and by 10% for each additional 10 U/ml of baseline IgA anti-tTG level.

Conclusion
Higher baseline IgA anti-tTG, older age at diagnosis and female gender were predictors of longer time required for IgA anti-tTG normalization.

Conflicts of interests
Carlo Catassi is a scientific consultant to Dr. Schär, all other authors declare no conflict of interest.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00014

Final poster ID: P5-01

Title: Relative rates of gluten digestion by nine commercial dietary digestive supplements.

Presenting author: Gregory Tanner

Co-authors: Gregory TANNER (1), Angéla JUHÁSZ (2), Christakis FLORIDES (3), Michelle COLGRAVE (3) - (1)The University of Melbourne, Australie, (2)Edith Cowan University, Australie, (3)Murdoch University, Australie

ABSTRACT CONTENT

Objectives
To measure digestion of pepsin/trypsin-treated gliadin by commercial preparations: 1 Gluteguard, 2 GlutenBlock, 3 GliadinX, 4 GlutnGo, 5 GlutenRescue, 6 Eat E_Z Gluten+, 7 Glutenease, 8 Glutezyme, and 9 Gluten Digest.

To characterize the cleavage specificity.

To examine if any alpha-gliadin 33-mer, epitopes associated with celiac disease (PFPQPQLPY, PYPQPQLPY and PQPQLPYPQ) remained after digestion.

Methods
Gliadin digestion at pH 3.5 (stomach digestion) or pH 7 (small intestine) was measured by Ridascreen and Gluten-Tec competitive ELISA. Mean initial rates and half-lives were deduced. Mass spectroscopy determination of the amino- and carboxy-termini of peptides remaining after digestion, characterized the cleavage specificity of proteases and examined if immuno-reactive alpha-gliadin 33-mer, 9 amino-acid long core epitopes remained after digestion.

Results
Ridascreen (pH 7), showed preparation 1 was the fastest-acting, more than twice as fast as the next fastest preparations, 5, 6, 7 and 8. At pH 7, preparations 2, 3 and 4 showed little activity using Ridascreen, but Gluten-Tec identified low activity levels. At pH 3.5, preparation 1 was more than twice as fast as the next fastest preparations, 2 and 3, when measured by Ridascreen but preparations 2 and 3 were over two times faster than enzyme 1 when measured by Gluten-Tec. Preparations 1, 2, 3, 4 cleaved predominantly on the C- and N-terminal side of both glutamine and proline residues. None of the alpha-gliadin 9 amino-acid epitopes were detected after digestion with enzymes 1, 2, 3 or 4.

Conclusion
The faster-acting preparations identified by ELISA may be more efficient at digesting immuno-stimulatory peptides. Preparations 1, 2, 3, 4, were capable of digesting gliadin albeit at different rates. Preparation 1 most rapidly digested the key immuno-reactive gluten epitopes - identified in the Codex approved competitive Ridascreen ELISA method – and associated with symptoms and pathology of coeliac disease and gluten sensitivities.

Conflicts of interests
This work was done in our labs (GT, AJ) to international scientific standards. This research was funded by Glutagen Pty Ltd who make preparation 1, designed to overcome accidental gluten consumption. Glutagen had no scientific input into the study beyond

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00018

Final poster ID: P5-02

Title: Concordance of Bulb and Distal Duodenum in Celiac Disease Follow Up Biopsies: Limited Clinical Relevance of Bulb Only Persistent Mucosal Injury

Presenting author: Marie Robert

Co-authors: Marie ROBERT (1), Natalie PATEL (1), Amporn ATSAWARUNGRUANGKIT (2), Maria WESTERHOFF (3), John HART (4), Andrea OLIVAS (4), Michael VIETH (5), Balint MELCHER (5), Abdulbaqi AL-TOMA (6), Chris MULDER (6), Rish PAI (7), Marcela SALOMAO (7), Mary BRONNER (8), Purva GOPAL (9), Bita NAINI (10), Cherise MEYERSON (10), Luca ELLI (11), Alessandro DEL GOBBO (11), Sanjay KAKAR (12), Daniel LEFFLER (13) - (1)Yale University School of Medicine, États-Unis, (2)Beth Isreal Deaconess Medical Center, États-Unis, (3)University of Michigan, États-Unis, (4)University of Chicago, États-Unis, (5)Institute of Pathology Klinikum Bayreuth, Allemagne, (6)Ist. Antonius Hospitalnikum Bayreuth, Pays-Bas, (7)Mayo Clinic, États-Unis, (8)University of Utah, États-Unis, (9)University of Texas, Southwestern, États-Unis, (10)University of California, Los Angeles, États-Unis, (11)Fondazione irccsca granda ospedale maggiore policlinico, Italie, (12)University of California, San Franscisco, États-Unis, (13)Beth Isreal Deaconess, États-Unis

ABSTRACT CONTENT

Objectives
Persistent symptoms despite adherence to a gluten free diet (GFD) occur in 30% of celiac disease patients. Ongoing mucosal injury is associated with serious complications. At initial diagnosis, protocols require bulb and distal duodenal biopsies, whereas sampling recommendations at follow up are lacking. In a multi-national patient cohort, we aimed to define the concordance between pathology findings in duodenal bulb and distal duodenal biopsies at initial and follow up exam and to correlate mucosal changes with symptoms, diet, and serology.

Methods
Samples from patients with initial and follow up biopsies were evaluated blindly by two pathologists. Symptoms, tTG serology, and diet adherence were recorded. Agreement between duodenal biopsies was analyzed using interrater reliability.

Results
In 79 patients (mean re-biopsy interval 2.1 years) fifty-eight (62%) at diagnosis and 65 (69%) at follow up had separately designated bulb/distal duodenal biopsies. Using two categories of Marsh 3 and Marsh 0-2, at diagnosis 52/58 (90%) paired biopsies showed concordant Marsh scores, compared to 54/65 (83%) paired biopsies at follow up. Eight patients were found to have bulb only villous blunting with normal distal histology at follow up. Those patients reported fewer symptoms (4/14 possible) compared to 30 patients with persistent distal atrophy (10/14). Patients with only bulb atrophy in the second biopsy had less persistent diarrhea (13% vs 37%), bloating (0 % vs 17%), weight loss (0% vs 10%), and irregular bowels (0% vs 10%). Further, considering all patients with persistent bulb Marsh 3 scores (17/47; irrespective of distal duodenal scores), diet adherence, tTG status and symptom profile did not predict Marsh score status.

Conclusion
Contrary to data that established best practices at diagnosis, inclusion of duodenal bulb biopsies at follow up in celiac disease appears to have limited clinical relevance. Further, GFD adherence and normalization of tTG were not different in patients with improved or persistently abnormal bulb Marsh score at follow up.

Conflicts of interests
no

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00029

Final poster ID: P5-03

Title: Utility of PAXgene molecular fixative for tissue-based histological, immunohistochemical and RNA gene expression assays of duodenal biopsies in coeliac disease

Presenting author: Juha Taavela

Co-authors: Juha TAAVELA (1, 2), Keijo VIIRI (2), Alina POPP (2), Mikko OITTINEN (2), Valeriia DOTSENKO (2), Markku PERÄAHO (1), Synnöve STAFF (3), Jani SARIN (4), Francisco LEON (5), Markku MÄKI (2), Jorma ISOLA (4) - (1)Central Finland Central Hospital, Department of Internal Medicine, Finlande, (2)Tampere Centre for Child Health Research, Faculty of Medicine and Health Technology, Tampere University and Department of Paediatrics, Tampere University Hospital, Finlande, (3)Department of Gynaecology and Obstetrics, Tampere University Hospital, Tampere, Finland, Finlande, (4)Laboratory of Cancer Biology, Faculty of Medicine and Health Technology, Tampere University, Finlande, (5)Celimmune LLC, Bethesda, États-Unis

ABSTRACT CONTENT

Objectives
The gold standard for successful treatment is healed small intestinal mucosa and therefore, the outcome measures especially in proof-of-concept clinical trials should be based on histologic and molecular evaluation of small intestinal biopsies.We here evaluated the utility of PAXgene molecular fixative for duodenal biopsies to obtain quantitative morphometric, both architectural and inflammatory, measures as well as the fixative suitability for immunohistochemical and gene expression analysis techniques.

Methods
Fifteen well treated coeliac disease patients were challenged with 4 grams of gluten per day for 10 weeks. Twenty-eight non-coeliac disease control patients were included as controls. A wide array of histological and immunohistochemical stainings and messenger RNA (mRNA)-based gene expression tests (RT-qPCR and RNAseq) were carried out in PAXgene fixed biopsies.

Results
Quantitative villus height crypt depth ratio (VH:CrD) measurements revealed significant duodenal mucosal deterioration in all coeliac disease patients on gluten challenge. In contrast, the Marsh-Oberhuber class worsened in only 80% of coeliac patients. Measuring simultaneously the intraepithelial CD3+ T-lymphocyte and CD138+ plasma cell densities proved to be a meaningful new measure of inflammation. The γδ+ lymphocyte and immunoglobulin A deposit stainings were also successfully detected in PAXgene-fixed biopsies. Messenger RNA extraction from the same paraffin-embedded biopsy block was successful and allowed large-scale qRT-PCR and RNAseq analyses for gene expression. A novel molecular morphometry approach was tested using the ratio of villus epithelium specific gene APOA4 and crypt proliferation gene Ki67 mRNA. With molecular morphometry, a similar distinction between paired baseline and post gluten challenge biopsies was achieved as with VH:CrD measurements.

Conclusion
With PAXgene the typical shortcomings common in celiac disease diagnostics can be overtaken in comparison to the traditional histomorphometric analyses. Also, molecular histomorphometry is a promising utensil to be used in situations where assessment of mucosal health is of paramount importance.

Conflicts of interests
None

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00036

Final poster ID: P5-04

Title: Assessing Gluten Free Diet Adherence using Gluten Immunogenic Peptides in the urine of patients with Coeliac Disease: First UK Pilot Study

Presenting author: Hugo A Penny

Co-authors: Hugo A PENNY (1), Anupam REJ (1), Elizabeth Mr BAGGUS (1), Graeme WILD (2), David S SANDERS (1) - (1)Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Royaume-Uni, (2)Department of Immunology, Sheffield Teaching Hospitals NHS Foundation Trust, Royaume-Uni

ABSTRACT CONTENT

Objectives
Adherence to a gluten free diet (GFD) is essential, as poor adherence can lead to persistent villous atrophy and subsequent complications of coeliac disease. We have previously shown1 that non-invasive markers of adherence have a poor sensitivity in comparison to the gold standard of duodenal biopsy. As a result of this, we assessed the novel technique of gluten immunogenic peptides (GIP) in the urine.

Methods
Patients with coeliac disease with a new diagnosis and those referred to secondary care for further evaluation of dietary adherence and disease remission were assessed from September 2018 to December 2018. Patients were tested for GIP using a rapid immunochromatographic test, following the collection of mid-stream urine samples. All patients were also tested for tissue transglutaminase (IgA-TTG) and endomysial antibodies (IgA-EMA) via blood tests. At least 4 duodenal biopsies were taken from D2 and at least one biopsy from the duodenal bulb, with the presence/absence of villous atrophy used to determine sensitivities of the tests.

Results
17 patients were recruited (n=12 female, 71%), median age 52 years (range 25-74 years), median duration of GFD 96 months (0-840 months). 2 patients were newly diagnosed CD, 15 patients were established diagnosis of CD. The sensitivity of GIP was 66.7% (24.1-94.0), with a specificity of 63.6% (24.1-94.0). There was no statistically significant difference between the sensitivity and specificity for GIP, IgA-TTG and IgA-EMA.

Conclusion
Urine GIP testing was not superior to IgA-TTG or IgA-EMA. Further data is required to assess this modality as a predictor of villous atrophy and adherence before this can be used in clinical practice.

Conflicts of interests
None

References

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POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00068

Final poster ID: P5-05

Title: Towards predictive circulating biomarkers for celiac disease - a next-generation sequencing microRNA transcriptomics approach

Presenting author: Ineke Tan

Co-authors: Ineke TAN (1), Rodrigo ALMEIDA (2), Rutger MODDERMAN (1), - PREVENTCD STUDY GROUP (3), Yang LI (1), Cisca WIJMENGA (1), M Luisa MEARIN (4), Sebo WITHOFF (1) - (1)Department of Genetics, University of Groningen and University Medical Center Groningen, Pays-Bas, (2)Department of Biomedical Data sciences, section Molecular epidemiology, Leiden University Medical Center, Pays-Bas, (3)PreventCD Study Group, (4)Department of Pediatrics, Leiden University Medical Center, Pays-Bas

ABSTRACT CONTENT

Objectives
The diagnosis of celiac disease (CD) can be challenging due to the clinical heterogeneity of CD. The currently available diagnostic markers, such as anti-tissue transglutaminase antibodies (TTGA), peak at the time that full blown villous atrophy has already developed. If CD could be detected at an earlier stage, consequences of CD could be prevented by quicker initiation of a gluten free diet. In this study, we examined whether microRNA (miRNA) transcriptomics could identify novel early circulating biomarkers for CD.

Methods
The prospective PreventCD cohort consists of infants at high risk of developing CD. Blood was drawn at predefined time points after birth, at time of diagnosis and 6 months after the start of gluten free diet. MiRNA profiles were determined in 250 serial serum samples of 53 PreventCD participants, of whom n=33 developed CD (TTGA+ and biopsy proven) and n=20 did not develop CD (19 seronegative children, 1 potential CD (TTGA+ and normal biopsy)). The microRNA libraries were sequenced on the Illumina HiSeq2500 and aligned to MiRBase 22.

Results
After quality control, 219 miRNA samples were included in the analyses. 35 miRNAs were significantly differentially expressed between the samples taken before gluten exposure (4 months of age) and samples taken at the time of diagnosis. Intriguingly, 4 of these candidates were already significantly deregulated in the pre-diagnostic samples (TTGA-), up to 1 year before diagnosis was made. These early markers for CD include miR-500, a miRNA that was previously identified as one of the deregulated microRNAs in small-intestinal biopsies of CD compared to controls.

Conclusion
Our results suggest that circulating miRNAs are promising early biomarker candidates for CD, as miRNA levels already start to rise in CD patients well before conventional diagnostic antibodies peak.

Conflicts of interests
We have nothing to disclose.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00070

Final poster ID: P5-06

Title: Establishing kit-independent calibrators for measuring serum transglutaminase 2 antibody concentrations for the prediction of coeliac disease

Presenting author: Rita Elek

Co-authors: Rita ELEK (1), Szilvia HORVÁTH (1), Ádám DIÓS (1), Róbert KIRÁLY (2), Boglárka TÓTH (2), Judit GYIMESI (3), Ildikó SZABÓ (1), Daniele SBLATTERO (4), Zsófia SIMON-VECSEI (2), Katharina WERKSTETTER (5), Sibylle KOLETZKO (5), László FÉSÜS (2), Ilma Rita KORPONAY-SZABÓ (1, 6) - (1)Departments of Pediatrics, University of Debrecen, Hongrie, (2)Department Biochemistry and Molecular Biology, University of Debrecen, Hongrie, (3)Heim Pál National Paediatric Institute, Budapest, Hungary, Hongrie, (4)Department of Life Sciences, University of Trieste, Italie, (5)Von Hauner Children Hospital, Ludwig-Maximilian University, Allemagne, (6)Heim Pál National Paediatric Institute, Hongrie

ABSTRACT CONTENT

Objectives
High serum levels of IgA autoantibodies against transglutaminase 2 (TGA) predict villous atrophy in coeliac disease (CeD). However, all currently available commercial TGA measuring kits provide only relative values compared to a positive coeliac sample. Consequently, clinically used numerical values are neither directly comparable, nor their predictive value is the same. Our aim was to measure absolute serum TGA concentrations directed to specific transglutaminase 2 (TG2) epitopes and evaluate predictive value of these antibody subpopulations.

Methods
TG2 proteins selectively expressing coeliac epitope 1 and 2 were recombinantly produced and used for the affinity purification of epitope 1 and 2-specific TGA IgA and IgG from serum samples of CeD patients. These antibodies served as binding reference in bio-layer interoferometry (Blitz) which measures a signal proportional to absolute concentration in µg/ml. Signals were compared with the binding of epitope-specific coeliac TG2 minibodies and TGA+ patient serum samples of the ProCeDe study.

Results
Untreated CeD patient samples contained predominantly epitope 2 TGA-IgA (67-96%, median 87%), while the proportion of epitope-1 IgA was significant (>20%) only in patients with severe general condition or malabsorptive symptoms (median 11%). The TGA-IgG content was highly variable and in most samples low. A cut-off range value of 80-120 µg/ml of epitope-2 serum TGA-IgA concentration was associated in Blitz with the prediction of 99% specificity for Marsh III lesion. It was not possible to establish a reliable predictive cut-off for epitope-1 specific TGA-IgA.

Conclusion
Serum concentrations of epitope 2-specific TG2 antibodies correlated with villous atrophy and thus the final CeD diagnosis, while epitope 1-specific TG2 antibodies only correlated with the severity of clinical symptoms. Epitope-specific submolecular TG2 antibody tests would allow a more precise prediction of villous damage.

Grant support: GINOP-2.3.2-15-2016-00015, NKFI 120392, EFOP-3.6.1-16-2016-00022, CE111 Interreg Focus in CD.

Conflicts of interests
None.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00078

Final poster ID: P5-07

Title: Use of Enteric-Release Budesonide in Non-Responsive Celiac Disease

Presenting author: Amelie Therrien

Co-authors: Amelie THERRIEN (1, 2), Jocelyn SILVESTER (2), Maureen LEONARD (3), Daniel LEFFLER (1), Alessio FASANO (3), Ciaran KELLY (1) - (1)Celiac Center, Beth Israel Deaconess Medical Center, États-Unis, (2)Celiac Research Program, Harvard Medical School, États-Unis, (3)Center for Celiac Research and Treatment, Massachusetts General Hospital, États-Unis

ABSTRACT CONTENT

Objectives
Enteric-release budesonide(BUD) is used for refractory celiac disease(RCD) and celiac crisis.We here describe the use and clinical response to BUD among celiac disease(CeD) patients evaluated for non-responsive celiac disease(NRCD).

Methods
Multicenter case-series of consecutive biopsy-confirmed CeD adults prescribed BUD in the setting of NRCD,defined as symptoms of CeD despite ≥ 1 year of gluten-free diet(GFD).Clinical response(CR):complete or partial resolution of symptoms.Mucosal recovery(MR):normal villous architecture on subsequent duodenal biopsies and/or normal videocapsule endoscopy(VCE) during/< 1year following BUD.

Results
We report 50 cases(80% females, mean age 43 SD18 years).BUD was initiated because of chronic symptoms and villous atrophy on previous biopsies/VCE in 82%(despite gluten contamination exclusion diet in 18% n=9) or enteritis-like symptoms without enteropathy in 18%.Most frequent symptoms included diarrhea(68%), abdominal pain(66%) and bloating(52%). BUD was initiated at 9 mg daily in 82%, for an initial median treatment duration of 12 weeks(IQR 4-16).A CR was seen in 60% of subjects and MR in 12 out of 24(50%).There was no association between CR and MR. Final suspected etiology of NRCD included:gluten contamination(n=15 CR73% MR60%), RCD(n=15 CR67% MR30%), postpartum flare(n=3 CR100%), other enteritis(n=2 CR100% MR0%), microscopic colitis(n=2 CR50%), non inflammatory(mostly IBS n=12 CR25% MR100%).Recurrence rate after CR was 70% and 47% received ≥2 courses of BUD.Fatigue($p<0.01$) was associated with no CR.Side effects were present in 42%, leading to discontinuation of BUD in 14%.

Conclusion
BUD may be effective to induce CR in some with NCRD. However, the absence of association between CR and MR after BUD and the high rate of recurrence highlight that 1)CR may be faster than MR, which may necessitate a prolonged course and 2)despite initial enteropathy, alternative diagnosis may explain NRCD symptoms.

Conflicts of interests
All outside the submitted work:
Takeda(DL,JS,CK,AF,ML)Cour(JS,CK)Biomedal(JS)Glutenostics(JS,CK,ML)Innovate(CP,AF)ImmunogenX,Aptalis(CK) AbbVie(AF)Alba (AF) Mead Johnson Nutritional(AF) uBiome (AF)

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00079

Final poster ID: P5-08

Title: Investigation of binding properties and kinetics of antibodies against deamidated gliadin peptides from celiac and non-celiac subjects

Presenting author: Ádám Diós

Co-authors: Ádám DIÓS (1), Rita ELEK (1), Judit GYIMESI (2), Róbert KIRÁLY (3), Sibylle KOLETZKO (4), Luisa M. MEARIN (5), László FÉSÜS (3), Ilma Rita KORPONAY-SZABÓ (2, 1) - (1)Departments of Pediatrics, University of Debrecen, Hongrie, (2)Coeliac Centrum, Pediatrics of Heim Pál, Hongrie, (3)Department of Biochemistry and Molecular Biology, University of Debrecen, Hongrie, (4)Pediatrics Gastroenterology- Hepatology, Clinics of Munich University, Allemagne, (5)Department of Pediatrics, Leiden University Medical Center, Pays-Bas

ABSTRACT CONTENT

Objectives
In a previous prospective study (www.preventcd.com), deamidated gliadin peptide-specific (DGP) antibodies were observed after the administration of 100 mg gluten per day to 4-6 months old infants from coeliac families. At this age, none of the children produced transglutaminase-specific antibodies and most remained healthy in later age (Group 1), but a few developed coeliac disease (CeD) years later (Group 2). In this study we compared these two groups.

Methods
We individually affinity-purified DGP-specific antibodies from serum samples of Group 1 and Group 2 and examined their binding properties to DGP, corresponding non-deamidated gliadin peptides (NGP), their shortened core peptide (DG0) and to an irrelevant negative control peptide in ELISA and by biolayer interferometry in a label-free molecular interaction system (BLItz, Pall ForteBio). DGP-specific antibodies isolated from children at the time of CeD diagnosis (Group 3) were used as positive controls.

Results
Children at the time of manifest CeD (n=4) displayed higher binding affinity (Ka = 6.98±3.9*104) and lower equilibrium dissociation constant (KD = 1.59±1.15*10-8) indicating stronger binding to DGP than antibodies of infants in either Group 1 (Ka = 4.8±1.51*104 and KD = 3.9±1.27*10-8) or Group 2 (Ka = 5.3±0.44*104 and KD = 3.47±0.22*10-8). There was no significant difference between the binding parameters to DGP and NGP in either group, but only children with manifest CeD reacted with the shorter DG0 peptide (p=0.0002).

Conclusion
DGP antibodies have high binding affinity but are not specific for CeD. Before the appearence of transglutaminase-specific antibodies DGP-specific antibodies do not differ in coeliac and non coeliac cases. Isolated DGP positivity does not have diagnostic or prognostic value.

Grant support: GINOP-2.3.2-15-2016-00015, NKFI 120392, EFOP-3.6.1-16-2016-00022, CE111 Interreg Focus in CD.

Conflicts of interests
None.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00083

Final poster ID: P5-09

Title: Analysis of faecal Gluten Immunogenic Peptides to determine gluten intake during the diagnosis of coeliac disease and in the transition to a gluten-free diet

Presenting author: Remedios Domíguez

Co-authors: Remedios DOMÍGUEZ (1), Carolina SOUSA (2), Isabel COMINO (2), Verónica SEGURA (2), Alfonso RODRÍGUEZ-HERRERA (3), Ángel CEBOLLA (1) - (1)Biomedal SL, Espagne, (2)Universidad de Sevilla, Espagne, (3)Instituto Hispalense de Pedriatría, Espagne

ABSTRACT CONTENT

Objectives
A lifelong strict gluten-free diet (GFD) is the only treatment for Coeliac Disease (CD), but good compliance can be difficult for these patients. Furthermore, the current monitoring tools for GFD follow-up, such as dietary interviews and serology, do not offer an accurate measure to ensure the adherence to the diet. The aim of this study was to evaluate the measurement of Gluten Immunogenic Peptides (GIP) in stool to confirm significant gluten intake at diagnosis and as a marker of GFD adherence in CD paediatric patients.

Methods
This multicentre prospective nonrandomized observational study included 64 CD children. Faecal GIP, anti-tissue transglutaminase (anti-tTG) and anti-deamidated gliadin peptide (anti-DGP) IgA antibodies were analysed at diagnosis and during follow-up visits at 6, 12 and 24 months. Correlations between GIP and serum antibodies were conducted by Cochran's and Friedman tests.

Results
Most children (97%) had detectable GIP at diagnosis, whereas only 23% had detectable GIP on a GFD. However, the rate of positive GIP stools increased from 13% to 25% during the follow-up, especially in older children. In contrast, anti-DGP normalised by 24 months and only 20% had elevated anti-tTG antibody. The elevation of anti-tTG antibody was more prolonged in patients with detectable GIP ($p<0.05$). Nevertheless, serologic tests had low sensitivity to identify patients with detectable GIP considering absolute values ($p>0.1$).

Conclusion
Faecal GIP could be a valuable tool for CD management at different levels:

1. Confirmation of previous gluten challenge at diagnosis.
2. Monitoring short- and long-term GFD compliance, as serological tests had no significant sensitivity to assess the adherence to the diet.
3. Identification of real unresponsive CD from non-compliant patients.

Conflicts of interests
Biomedal SL is the company that sells the products used in this study and some of the authors work at this company.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00098

Final poster ID: P5-10

Title: Stratification of a Large Cohort of Hungarian Celiac Patients at Diagnosis and Follow-up by a New Particle-Based Multi-Analyte Assay

Presenting author: Gary Norman

Co-authors: Gary NORMAN (1), Dilruba NABI (1), Peter MARTIS (1), Maria PAPP (2), Ildiko FOLDI (2), Prisciila CARRION (1), Kishore MALYAVANTHAM, (1), Michael MAHLER (1) - (1)Research and Development, Inova Diagnostics, États-Unis, (2)Department of Internal Medicine, Division of Gastroenterology, University of Debrecen, Hongrie

ABSTRACT CONTENT

Objectives
The concept that high levels of anti-transglutaminase (tTG) IgA antibodies together with appropriate clinical features, HLA phenotype, and a positive secondary serological on a second specimen, has put increased focus on the ability of anti-tTG assays to effectively stratify patients. Assays with higher dynamic range offer the potential to separate patient reactivity more effectively. In this study we evaluated the ability of a new particle-based multi-analyte assay to characterize a cohort of Hungarian patients at diagnosis and follow-up.

Methods
Serum specimens from 101 celiac patients were analyzed. 72 patients had an initial and 2-6 follow-up specimens, while 29 patients had only a single specimen. Biopsy results were available on 82 patients. Specimens were analyzed for tTG and deamidated gliadin peptide (DGP) IgG and IgA antibodies using a novel fully automated particle-based multi-analyte technology (PMAT, Inova Diagnostics, Research Use Only). Positive results for all 4 tests was >5 fluorescence light units (FLU).

Results
Of 51 patients not on GFD, the median initial tTG IgA value was 156.0 FLU. 80.0% (41/51) of the initial tTG IgA values were >10x ULN, 64.7% (33/51) >20x ULN, 37.2% (19/51) >50x ULN , and 19.6% (10/51) >75x ULN. Most of these patients were also positive for 1 or more additional antibodies (tTG IgG, DGP IgG, and/or DGP IgA). With commencement of GFD, initial tTG IgA values fell up to 20 fold.

Conclusion

The PMAT celiac assays classified 80% of the initial, pre-GFD, specimens as tTG IgA >10 ULN. The simultaneous measurement of tTG IgG, DGP IgA, and DGP IgG allows a comprehensive initial assessment of patients suspected of celiac disease as well for follow-up.

Conflicts of interests
Gary L. Norman, Dilruba Nabi, Peter Martis, Priscilla Carrion, Kishore Malyavantham, and Michael Mahler are employees of Inova Diagnostics.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00101

Final poster ID: P5-11

Title: Quantitative Histology-Based Classification System for Assessment of the Intestinal Mucosal Histological changes in Patients with Celiac Disease

Presenting author: PRASENJIT Das

Co-authors: Prasenjit DAS, Gaurav Ps GAHLOT, Alka SINGH, Vandana BALODA, Ramakant RAWAT, Anil VERMA, Gaurav KHANNA, Maitrayee ROY, Archana GEORGE, Ashok SINGH, Aasma NALWA, Prashant RAMTEKE, Rajni YADAV, Vineet AHUJA, Sreenivas VISHNUVATHLA, Siddhartha DATTA GUPTA, Govind K MAKHARIA - (1)All India Institute of Medical Sciences, Inde

ABSTRACT CONTENT

Objectives
The existing histological classifications for interpretation of small intestinal biopsies are based on qualitative parameters with high intra-observer and inter-observer variations. We developed a quantitative histological (Q-histological) classification system for assessment of intestinal mucosal biopsies.

Methods
We performed a computer-assisted quantitative histological assessment of histopathological images of duodenal biopsies from 137 controls and 124 patients with celiac disease (CeD) [derivation cohort]. Receiver operating curve analysis, followed by multivariate and logistic regression analyses suggested parameters which could differentiate biopsies of controls from those with CeD. We repeated the quantitative histological analysis on a validation cohort (105 controls and 120 patients with CeD). Based on the results, we propose a Q-histological classification system. The new classification was further compared with existing histological classification systems for inter-observer and intra-observer agreements by a group of qualified pathologists who were blinded about the patient detail.

Results
Among the histological parameters, intraepithelial lymphocyte count ≥25/ 100 epithelial cells, adjusted villous height fold change ≤ 0.7 and crypt depth: villous height ratio ≥ 0.5 showed good discriminative power between mucosal biopsies from patients with CeD and controls, with 90.3% sensitivity, 93.5% specificity and 96.2% area under the curve. Our quantitative histological classification showed highest intra-observer (69.7% to 85.03%) and inter-observer (24.6% to 71.5%) agreements among pathologists, in comparison to the existing histological classifications.

Conclusion
Quantitative assessment increases the reliability of the histological assessment of mucosal biopsies in patients with CeD. Such a classification system may be used for clinical trials in patients with CeD.

Conflicts of interests
All authors declare no conflict of interest.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00106

Final poster ID: P5-12

Title: I-FABP - serological biomarker of an impaired epithelial barrier in children with type 1 diabetes mellitus and celiac disease

Presenting author: Bozena Cukrowska

Co-authors: Bozena CUKROWSKA (1), Ewa KONOPKA (1), Marta WYSOCKA-MINCEWICZ (2), Artur GROSZEK (2), Beata ORALEWSKA (3), Ilona TROJANOWSKA (1), Joanna Beata BIERLA (1), Mieczyslaw SZALECKI (2) - (1)Department of Pathology, The Health Children's Memorial Health Institute, Pologne, (2)Department of Endocrinology and Diabetology, The Health Children's Memorial Health Institute, Pologne, (3)Department of Gastroenterology, Hepatology, Nutrition Disorders and Paediatric, The Health Children's Memorial Health Institute, Pologne

ABSTRACT CONTENT

Objectives
Intestinal barrier seems to play an important role in activation of processes leading to autoimmunity including celiac disease (CD) and type 1 diabetes mellitus (T1DM). The aim of this study was to analyze the level of intestinal fatty acid binding protein (I-FABP) a serological biomarker of an impaired epithelial barrier in patients with T1DM, active CD, T1DM with active CD (T1DM-CD) and patients on gluten free diet (GFD) in comparison to healthy controls.

Methods
Study included pediatric patients with active CD (n=15), T1DM without known CD during the 3 years of follow-up (n=15), T1DM-CD (n=15) and the same patients with negative CD serology one year before CD diagnosis (T1DM-CD-1), children on GFD for at least 6 months from group CD (n=15) and T1DM (n=15). As controls age matched healthy children were used. CD was diagnosed according ESPGHAN criteria. I-FABP (in pg/ml) was measured in patients' sera with the use of immunoenzymatic test (Hycult Biotech).

Results
The highest mean levels of I-FABP, which were significantly increased as compared with controls (346±135), were found in two groups: patients with active CD and with T1DM-CD (1332±1142 and 1322±920, respectively). GFD induced a significant decrease in I-FABP levels into values comparable to controls in both CD and T1DM groups (441±297 and 408±286, respectively). Interestingly, in T1DM-CD-1 and T1DM children, I-FABP levels were comparable (800±398 and 756±335, respectively), and significantly increased as compared both to healthy controls and T1DM-CD children on GFD.

Conclusion
The results indicate that epithelial barrier is disrupted in T1DM patients independent on CD development. GFD can significantly improve epithelial damage in children with T1DM-CD and CD, but still it is open question whether GFD could have beneficial effect on intestinal barrier in early stages of T1DM.

Conflicts of interests
No conflict of interest. The study was financed by the Children's Memorial Health Institute Grant S156/2017.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00107

Final poster ID: P5-13

Title: Endopeptidase-40 (E40), a novel glutenase from the actinomycete Actinoallomurus strain A8

Presenting author: Linda Cavaletti

Co-authors: Linda CAVALETTI, Lucia CARRANO, Anna TARAVELLA, Alessandro SIGURTÀ, Monica ABBONDI, Mara BRUNATI, Nicola SOLINAS - (1)FIIRV, Italie

ABSTRACT CONTENT

Objectives
Supplemented exogenous enzymes able to complement the partial digestion of gluten proteins by human proteases, and used to adjuvate the gluten-free diet that is the only validated, longlife treatment for Coeliac Disease (CD), are currently considered a promising approach in the dietary management of gluten intolerance. We screened acidophilic actinomycetes as potential sources of new, secreted glutenases capable of efficiently cleaving gluten immunotoxic epitope sequences upstream the duodenum, where the gluten-dependant pathologic process begins.

Methods
A screening project for the identification of secreted glutenases from newly isolated acidophilic strains, based on hydrolysis at acidic pH of gluten and of commercial peptides having proline residues close to the enzymatic cleavage site. Selected samples were further tested for their ability to degrade the immunotoxic 33-mer.

Results
Actinoallomurus strain A8 was selected as producer of the new glutenase Endopeptidase-E40 (E40; WO2013/083338). E40 crude purification from the supernatant culture resulted in a fraction displaying clear proteolytic activity at acidic pH, as well as gliadin and 33-mer degradation in presence of pepsin. E40 coding gene was identified through MudPit analysis and Actinoallomurus A8 genome sequencing. Blast analyses showed E40 to be a novel protease belonging to the S53 protein family of serine-carboxyl-peptidases. E40 whole coding gene was cloned in S.lividans TK24/pIJ86 as the expression system, the recombinant protein was successfully secreted and processed to its active mature form, with an activity profile as per its wild form.

Conclusion
The actinomycete Actinoallomurus strain A8, isolated from an italian acidic soil, was identified as source of the new glutenase E40, endowed with properties suitable for investigation as oral supplement to gluten-free diet for CD patients.

Conflicts of interests
LC, LC, AT, MA, MB are inventors of WO 2013/083338.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00108

Final poster ID: P5-14

Title: The microbial endopeptidase-40 (E40) efficiently neutralizes the T cell stimulatory activity of gluten proteins

Presenting author: Carmen Gianfrani

Co-authors: Carmen GIANFRANI (1), Gianfranco MAMONE (2), Linda CAVALETTI (3), Stefania PICASCIA (1), Anna TARAVELLA (3), Lucia CARRANO (3), Giacomo CARENZI (3), Luigia DI STASIO (2), Maria Cristina COMELLI (4), Riccardo TRONCONE (5) - (1)Institute of Protein Biochemistry - CNR, Italie, (2)Institute of Food Sciences - CNR, Italie, (3)Fondazione Istituto Insubrico di Ricerca per la Vita (FIIRV), Italie, (4)Nemysis Limited, Irlande, (5)Department of Translational Medical Science (Section of Paediatrics), and European Laboratory for the Investigation of Food-Induced Diseases, University “Federico II”, Italie

ABSTRACT CONTENT

Objectives
The high content of proline and glutamine residues renders gluten proteins largely inaccessible to human gastrointestinal proteases. This allows large undigested peptides to reach the small intestinal mucosa and trigger the adverse inflammatory reactions in patients with celiac disease (CD). Supplementing exogeneous gluten-digestive enzymes (glutenases) to the gluten-free diet seems to be a promising approach to protect CD patients from harmful effects of toxic gluten, particularly in the case of inadvertent exposure. Endopeptidase-40 (E40) is a novel glutenase isolated from the actinomycete Actinoallomurus A8 and recombinantly expressed in S. lividans TK24 (WO 2013/083338).

Methods
The enzymatic activity of E40 was assessed in gastrointestinal simulated conditions, in presence or absence of pepsin and trypsin proteases. E40 glutenase activity was evaluated on the immunodominant 33-mer and whole gliadins by LC-MS/MS, G12 competitive ELISA and on gliadin-reactive T cells from duodenal biopsies of 5 celiac patients.

Results
The LC MS/MS spectra analysis demonstrated that E40 breaks down all the six 33-mer T-cell epitopes, within 15 minutes of treatment, with no 33-mer signal detectable within 1 hour of treatment. The whole gliadin proteins from hexaploid wheat were markedly proteolized within 1 hour of E40 digestion. Finally, the validated human T-cell assay indicated a strong reduction, or even absence, of IFN-g release when T cells were exposed to E40-digested gliadins compared to untreated gliadins.

Conclusion
A comprehensive microbiological, proteomic and immunological analyses demonstrated that E40 is a fast-acting and strongly efficient glutenase. E40 is a candidate for the oral enzymatic therapy in the dietary management of gluten toxicity.

Conflicts of interests
Maria Cristina Comelli is R&D Director at Nemysis Limited, Dublin, Ireland. Carmen Gianfrani. is member of the Advisory Board for Nemysis Limited.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00113

Final poster ID: P5-15

Title: Analysis of gluten immunogenic peptides in faeces to assess adherence to the gluten free diet in coeliac patients.

Presenting author: Ester Donat

Co-authors: Ester DONAT (1), María ROCA LLORENS (2), Etna MASIP (1), Paula CRESPO-ESCOBAR (1), Begoña POLO (1), Victoria FORNES (1), Carmen RIBES-KONINCKX (1) - (1)Gastrohepatología Pediátrica, Hospital Universitario y Politécnico La Fe, Espagne, (2)Unidad de Enfermedad Celiaca e Inmunopatología Digestiva, Instituto de Investigación Sanitaria La Fe, Espagne

ABSTRACT CONTENT

Objectives
To evaluate the efficacy of gluten immunogenic peptides (GIP) detection in faeces, to monitor the adherence to the gluten-free diet (GFD) in coeliac disease (CD).

Methods
136 stool samples were analyzed. Group 1: 31 CD patients, aged 10.1 ± 6.3 (mean, SD) years, on a GFD for 4 months to 8 years (5.8±3.7 years). One sample per patient was collected as well as food records (FR) of the 4 days prior to the faeces sampling. Group 2: 18 CD patients aged 5.2 ± 3.1 years. We collected 105 samples corresponding to day 0 (gluten consumption) and days 1, 2, 3, 4 and 5 after starting a GFD; also FRs were registered.

Samples were analyzed using a rapid immunochromatographic (IC) test: iVYCheck®GIP Stool, and an ELISA: iVYLISA®GIP-S (Biomedal).

Results
Group 1: according to the FR, GFD adherence was correct in 29/31 patients and 2 children (5 and 11 years) confessed voluntary transgressions. By ELISA, GIP was detected in 14/31 individuals, 9/14 had positive anti-transglutaminase antibodies (ATG2). Moreover, by IC strips, GIP was detected in 6/14 individuals, 5 with positive ATG2. In 3/31 in whom their parents suspected dietary transgressions (all negative ATG2), no GIP were found.

In group 2, the dynamics of GIP disappearance studied over the days, showed that GIP levels decline with time ($p < 0.001$) non-linearly ($p = 0.028$). GIP levels decreased considerably in the first 2 days, and after the 3rd day, they remain close to or below the detection limit, in most individuals. We found a significant correlation ($r=0.40$ IC95% [-0.01, 0.69]) between the gluten ingested in day 0 and the GIP concentration detected by ELISA.

Conclusion
GIP in faeces detection by ELISA seems to have a higher sensitivity as compared to the, IC strips. GIP was detected in faeces of CD patients on a GFD, by ELISA and IC strips, in which no consumption of gluten has been registered in the FR, confirming the scarce utility of FR to detect involuntary transgressions.

Conflicts of interests
This study was partially supported by grant from the Asociación de Celiacos y Sensibles al Gluten de la Comunidad de Madrid.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00127

Final poster ID: P5-16

Title: Epicutaneous Immunotherapy Suppresses Gluten Dependent Inflammation In A Mouse Model Of Celiac Disease

Presenting author: Eric Marietta

Co-authors: Eric MARIETTA (1), Irina HORWATH (1), Stephanie MEYER (1), Rokseon CHOUNG (1), Katie MATTHEWS (2), Hugh SAMPSON (3), Joseph MURRAY (1) - (1)Mayo Clinic, États-Unis, (2)DBV Technologies, États-Unis, (3)DBV Technologies, France

ABSTRACT CONTENT

Objectives
Background: Antigen-based immunotherapy is a feasible therapeutic option for celiac disease (CD) to restore tolerance towards gluten. Epicutananeous immunotherapy (EPIT) is a novel immunotherapy, which aims to desensitize patients with food allergy. EPIT works by delivering biologically active compounds to the immune system through intact skin using the Viaskin technology. We aim to investigate the potential of EPIT to induce tolerance to gluten in a CD mouse model.

Objectives: 1:Screen HLA-DQ8-binding antigens in gliadin sensitized NOD Abo DQ8 mice. 2:Perform a proof-of-concept study in NOD Abo DQ8 IL-10-/- mice, which spontaneously develop gluten dependent intestinal inflammation.

Methods
1:Sensitized mice were treated with Viaskin containing either an immunogenic DQ8-restricted gliadin peptide (nDQ8), deamidated DQ8 peptide (dDQ8), pepsin trypsin digest of gliadin (PTD-G), deamidated PTD-G (PTD-G treated with tTG), or excipient. Tregs were quantified in the brachial lymph nodes (Flow Cytometry). 2:At disease onset, mice were switched onto gluten-free chow and EPIT initiated until study-end (week 30). Mice were re-challenged with gluten (week 22) and examined for intestinal inflammation.

Results
1:nDQ8 and PTD-G significantly increased Tregs in NOD Abo DQ8 mice. 2:PTD-G decreased intestinal inflammation in NOD Abo IL-10-/- HLA-DQ8 mice, which correlated with increased Tregs in lymphoid aggregates.

Conclusion
These data indicate PTD-G as a potential antigen for CD immunotherapy and warrant further investigation.

Conflicts of interests
DBV employees: KM & HS

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00128

Final poster ID: P5-17

Title: Efficacy Of Pancreatic Enzyme Supplementation For Symptom Control In Non-Responsive Celiac Disease Patients

Presenting author: Caitlin Barrett

Co-authors: Caitlin BARRETT, Shakira YOOSUF, Sarah MADOFF, Josh HANSEN, Jocelyn SILVESTER, Konstantinos PAPAMICHAIL, Daniel LEFFLER, Prashant SINGH, Jillian TESSING, Ciaran KELLY - (1)Beth Israel Deaconess Medical Center, États-Unis

ABSTRACT CONTENT

Objectives
Non-Responsive Celiac Disease(NRCD) affects one-third of Celiac Disease(CeD) patients. In prior studies, 12% of NRCD patients had pancreatic exocrine insufficiency. We evaluated the efficacy of pancreatic enzyme supplementation with pancrelipase to alleviate gastrointestinal(GI) symptoms in NRCD patients on gluten-free diet(GFD).

Methods
Randomized, double-blind, cross-over study of pancrelipase in adults with NRCD(biopsy-confirmed CeD & persistent symptoms after 12 months GFD). Omeprazole (20 mg/day) was given in a 7day run-in and continued throughout study. Treatment periods were 10 days, separated by 7 day washout. Evaluation included tTG-IgA and DGP IgA/IgG, fecal elastase(Fe-1), Celiac Disease Gastrointestinal Symptom Rating Scale(CeD-GSRS) and Celiac Symptom Index(CSI). Primary outcome was average CeD-GSRS score on pancrelipase vs placebo.

Results
12 subjects(75% female, 25-73 years) completed study. First treatment randomization: pancrelipase n=3 and placebo n=9.During the study, there were no significant changes in the CeD-GSRS and CSI scores. On placebo, 3(25%) subjects had ≥30% decrease in CeD-GSRS score.For abdominal pain, 6(50%) subjects on pancrelipase and 2(16%) on placebo had ≥30% decrease in CeD-GSRS score, including 4 subjects(3 placebo; 1 pancrelipase) who had a ≥50% decrease. At baseline, 1 subject(8%) had low Fe-1. During run-in, all subjects had significant improvement in abdominal pain(p=0.02) and CeD-GSRS scores(p=0.03) when receiving only omeprazole.

Conclusion
Pancrelipase did not significantly improve GI symptoms in NRCD cohort. During run-in, the signifcant improvement in abdominal pain and CeD-GSRS scores may be related to an effect of omeprazole. To characterize the clinical effectiveness of pancreatic enzyme supplementation, future trials will require a larger sample size, wider range of symptom severity and improved measures of pancreatic exocrine function.

Conflicts of interests
Sponsor is Allergan plc

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00174

Final poster ID: P5-20

Title: Real life patterns of dietary transgressions in long-term gluten-free diet treated celiac patients by using GIP excretion.

Presenting author: Sonia Niveloni

Co-authors: Sonia NIVELONI (1), Juan STEFANOLO (1), Martín TALAMO (1), Samanta DODDS (1), Emilia SEGAI (1), María TEMPRANO (1), Ana COSTA (1), María MORENO (1), María PINTO-SANCHEZ (2), Edgardo SMECUOL (1), Horacio VÁZQUEZ (1), Andrea GONZÁLEZ (1), Elena VERDÚ (2), Eduardo MAURIÑO (1), Julio BAI (1) - (1)Dr. C. Bonorino Udaondo Gastroenterology Hospital, Argentine, (2)McMaster University, Canada

ABSTRACT CONTENT

Objectives
The frequency of gluten-free diet transgressions in a real life scenario of celiac disease (CD) patients is unclear. We aimed to explore pattern of fecal and urinary excretion of gluten immunogenic peptide (GIP) during a 4-week period in CeD patients on long-term GFD.

Methods
This prospective study enrolled consecutive adult CeD patients on a GFD for more than two years. At baseline, patients completed a celiac symptom index (CSI) questionnaire to determine presence of symptoms. Patients collected stool and urine samples for 4 weeks. The collection protocol was designed to ensure coverage of gluten excretion during week-days (last stool on Fridays) and week-ends (urine samples during Sunday morning and evening). An ELISA test for stool (iVYLISA GIP-S , Biomedal S.L. Spain) and point-of-care tests (GlutenDetect ; Biomedal S.L., Spain) for urine were used for GIP detection.

Results
23 CD patients on a GFD for a median time of 7 yrs. had a median number of transgressions of 3 times/4week (IQR: 1-5). GIP excretion in week-end (urine samples) was shown in 21/23 patients (91.3%), while GIP in stools (week-days) was detected in 11/23 patients (47.8%) (Fisher's Exact test: $p<0.004$). While 41/92 (44.6%) GIP determinations in urine were positive, GIP was detected in 24/92 (26.0%) of stools (Chi square test: $p<0.02$). Frequency of GIP excretion for each of the 4 weeks, progressively increased as the study progressed (1 vs. 4 week GIP excretion in either stool and/or urine: $p<0.05$). No differences were observed comparing symptomatic (CSI scores >35 points) vs. asymptomatic patients. A significant correlation was observed between frequency of transgressions and baseline serology (rho: vs. IgA tTG $p<0.04$; vs. IgA DGP $p<0.0009$).

Conclusion
The study shows evidence of a high frequency of dietary transgressions in CeD patients on a long term GFD, independently of the presence of symptoms. Ingestion of gluten was notably more frequent during week-ends. We show evidence of a relaxation of dietary control along the 4-week study.

Conflicts of interests
No conflict of interest

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00179

Final poster ID: P5-21

Title: Celiac Facts – Online-Courses for Health Care Professionals and Patients

Presenting author: Katharina Julia Werkstetter

Co-authors: Katharina Julia WERKSTETTER (1), Marie-Theres KARLA (2), Andrea SUSTMANN (2), Jernej DOLINŠEK (3), Thomas KRENCNIK (3), Petra RIZNIK (3), Jasmina DOLINŠEK (4), Judit GYIMESI (5), Ilma KORPONAY-SZABÓ (5), Daniele SBLATTERO (6), Tarcisio NOT (7), Ivona BUTORAC-AHEL (8), Barbara DECANIC (8), Goran PALCEVSKI (8), Marina MILINOVIC (9), Giulia ROGGENKAMP (2), Berthold KOLETZKO (2), Sibylle KOLETZKO (1) - (1)Ludwig Maximilian's University Medical Center, Dr. von Hauner Children's Hospital, Allemagne, (2)Stiftung Kindergesundheit, Allemagne, (3)University Medical Center Maribor, Slovénie, (4)Municipality of Maribor, Slovénie, (5)Heim Pal Children's hospital Celiac Disease Center, Hongrie, (6)University of Trieste, Italie, (7)Institute for Maternal and Child Health IRCCS "Burlo Garofolo", Italie, (8)University Hospital Center Rijeka, Croatie, (9)Association of celiac patients Primorsko-goranska County, Croatie

ABSTRACT CONTENT

Objectives
Celiac disease (CD) requires a life-long gluten-free diet to treat symptoms and avoid long-term health consequences. A correct and early diagnosis is of utmost importance. However, many health-care professionals (HCPs) have a poor knowledge of CD, leading to impaired patient care. Most patients seek more details about CD online with the risk of misinformation. To improve this situation we developed online courses on CD within the „Focus IN CD" project (Interreg Central Europe Projekt CE111).

Methods
Twelve project partners from Germany, Slovenia, Hungary, Italy & Croatia developed free, autodidactic online-courses with comprehensive, understandable, varied and evidence-based content, tailored to the target group. Project partners and external reviewers revised the drafts before the online implementation. Patients and HCPs are currently evaluating the courses before and after their use by completing anonymous online questionnaires.

Results
The courses contain written explanations illustrated by graphics, interactive elements, explain movies, self-tests and a dictionary. The HCP's course comprises two units (background & diagnosis, treatment & follow-up), being published in parallel to the new guidelines of the European Society of Pediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN). The patient's course includes four units (background, diagnosis, treatment, living with CD), explains the medical background in lay terms and is already available in six languages. The courses are accessible via www.celiacfacts.eu (English), www.zöliakie-verstehen.de (German), www.coeliakia.info (Hungarian), www.poznam-celiakijo.com (Slovenian), www.sveocelijakiji.hr (Croatian) and www.celiachia-info.it (Italian). Preliminary data of the evaluation show a significant knowledge improve and high user satisfaction.

Conclusion
The online courses "Celiac Facts" increase the knowledge of CD among HCPs and patients which may improve patient care. More language versions are planned.

Conflicts of interests
None; public funding Interreg Central Europe Project-No. CE111

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00191

Final poster ID: P5-22

Title: Bifidobacterium infantis NSL Super Strain in highly symptomatic celiac disease patients on long-term gluten-free diet. A pilot study.

Presenting author: Sonia Niveloni

Co-authors: Sonia NIVELONI (1), Edgardo SMECUOL (1), María TEMPRANO (1), Ana COSTA (1), Emilia SUGAI (1), María MORENO (1), María PINTO-SÁNCHEZ (2), Horacio VÁZQUEZ (1), Juan STEFANOLO (1), Andrea GONZÁLEZ (1), Chris D´ADAMO (3), Elena VERDÚ (2), Eduardo MAURIÑO (1), Julio BAI (1) - (1)Dr. C. Bonorino Udaondo Gastroenterology Hospital, Argentine, (2)McMaster University, Canada, (3)University of Maryland School of Medicine, États-Unis

ABSTRACT CONTENT

Objectives
Despite apparent compliance with the gluten-free diet (GFD), 30-50% of treated patients have gastrointestinal symptoms. We explore the effect of a three-week course of Bifidobacterium infantis NLS super strain (B. infantis NSL-SS) on persistent symptoms in CeD patients following a long-term GFD.

Methods
Prospective, randomized, cross-over, double-blind, placebo-controlled trial. Adult patients on a GFD for at least two years were enrolled if they were and were symptomatic at screening according to the GSRS (>3 points in the mean global score or >2 for any individual syndromes). After a one-week run-in, were randomized to receive B. infantis NSL-SS (Natren LIFE START 2 Natren Inc. CA.) (2 capsules 3 t.i.d.; 2 x 10 CFU/capsule) or placebo for 3 weeks. After a 2-week wash-out, patients switched treatment for the next 3 weeks. Outcome was based on changes (Δ) in the celiac symptoms index (CSI) for each treatment. Stool and urine samples were also collected for detection of GIP excretion.

Results
18 patients were enrolled; 2 were excluded due to intentional transgressions and 4 due to inconsistence in reports. In the per protocol analysis (n=12), there were no significant changes in the CSI total score and subscales comparing probiotics vs. placebo. There was a significant improvement of specific CeD symptoms in B. infantis treatment compared to placebo (median Δ [range]: 5.0 points [0 to 9] vs. 2.5 [-7 to 4], respectively; $p<0.03$; Mann-Whitney) when this analysis was restricted to patients with total CSI scores above the median. There was a significant placebo effect in general health subscale ($p<0.04$). Globally, we observed a non-significant carryover effect when probiotics was the first treatment. GIP excretions were similar and no side effects were detected in both intervention.

Conclusion
This exploratory study suggests that B. infantis NSL-SS may improve specific CeD symptoms in a subgroup of GFD treated patients with higher symptomatic burden despite adherence to the diet. These findings require confirmation in larger studies.

Conflicts of interests
No conflict of interest

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00193

Final poster ID: P5-23

Title: AGY for Patients with Symptomatic Celiac Disease: Protocol for a Randomized, Placebo-controlled Phase II Trial

Presenting author: Dory Sample

Co-authors: Dory SAMPLE, Justine TURNER, Leo DIELEMAN - (1)University of Alberta, Canada

ABSTRACT CONTENT

Objectives
AGY is an oral anti-gliadin antibody made from the yolks of immunized laying hens. An open label pilot study was completed with 10 adults with celiac disease (CD), to determine safety of 500mg AGY taken with meals for 4 weeks, and to explore potential efficacy related to symptoms, anti-tissue transglutaminase antibody (aTTG) levels, and lactulose/mannitol excretion ratios (LMER) at baseline and after treatment. No safety concerns were identified, and participants had improvements in symptoms, aTTG, and LMER. Due to the positive pilot observations, a phase II study was designed to test both efficacy and safety in a larger trial. The primary objective is to determine the efficacy of AGY as measured by the Daily Celiac Symptom Index (CSI). Secondary objectives include safety, quality of life assessment, monthly symptom scores, aTTG, and LMER.

Methods
We plan to conduct a 16 week, double-blind, placebo-controlled crossover trial, for individuals age 10-65 years, with symptomatic CD at least 1-year post diagnosis. Because AGY has not yet been tested in pediatric patients, we have incorporated an innovative strategy to mimic the previous pilot study, but in a pilot pediatric cohort imbedded in a larger trial. Total enrollment in the study will be 149, allowing 80% power and 5% alpha. Participants will be stratified by age and screening aTTG levels at study entry.

Results
We plan to begin enrollment in spring 2019.

Conclusion
A non-toxic, food source based natural health product that could neutralize the gliadin in food, thus preventing gliadin absorption and subsequent gliadin-induced pathogenesis, could dramatically improve the quality of life for individuals with CD

Conflicts of interests
None

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00203

Final poster ID: P5-24

Title: CD38 expression on gluten-specific CD4+ T cells is a sensitive biomarker for gluten exposure in celiac disease patients on a gluten-free diet

Presenting author: Louise Fremgaard Risnes

Co-authors: Louise Fremgaard RISNES (1), Asbjørn CHRISTOPHERSEN (2), Henrik REIMS (1), Ronan DOYLE (1), Ellen S. PETTERSEN (1), Elin BERGSENG (1), Shuo-Wang QIAO (2), Knut E.A. LUNDIN (2), Ludvig M. SOLLID (2) - (1)Oslo University Hospital, Norvège, (2)University of Oslo, Norvège

ABSTRACT CONTENT

Objectives
Unlike current diagnostic tools for celiac disease (CeD), detection of gluten-specific blood T cells accurately distinguishes CeD patients from healthy individuals, even on a gluten-free diet (GFD). However, the kinetics and activation of these cells and other disease-specific biomarkers following treatment have not been thoroughly investigated. In this study we aimed to monitor gluten-specific T cells and CeD-associated biomarkers during the first year of treatment with GFD.

Methods
We followed 17 CeD patients at five time points and assessed frequency of gluten-specific CD4+ blood and gut T cells with HLA-DQ:gluten tetramers and expression of CD38 (a marker of activated T cells). In addition, serum levels of disease-specific antibodies, histological alterations (i.e. Marsh score, villus height-to-crypt depth ratios, intraepithelial lymphocyte (IEL) counts) as well as symptom scores were evaluated.

Results
The frequency of CD38-expressing gluten-specific T cells decreased significantly within the first four weeks on GFD ($p<0.05$, $p< 0.0001$, respectively). In contrast to serum antibody levels, HLA-DQ:gluten tetramer positive CD4 cells remained at a detectable level even after the initial decline. Interestingly, there was a significant correlation between increased number of IELs and CD38-expressing gluten-specific T cells in blood after the first year (Spearman's rho=0.64, $p=0.016$).

Conclusion
Frequency and activation of gluten-specific CD4+ T cells declined rapidly within the first four weeks on a GFD. After 1 year, activated gluten-specific T cells were still present in patients with increased number of IELs. Thus, CD38 expression by gluten-specific T cells appears to be a precise biomarker for gluten exposure in patients treated with a gluten-free diet.

Conflicts of interests
The authors declare no conflict of interests.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00207

Final poster ID: P5-25

Title: A novel artificial intelligence based approach to the diagnosis of coeliac disease, based on T-cell receptor repertoires.

Presenting author: Elizabeth Soilleux

Co-authors: Elizabeth SOILLEUX (1), Anna FOWLER (1), Muhammad Saad SHOUKAT (2), Oliver WELSH (2), Killian DONOVAN (1) - (1)Dr., Royaume-Uni, (2)Mr, Royaume-Uni

ABSTRACT CONTENT

Objectives
Current testing strategies in coeliac disease (CD) (serology and histopathological examination of small intestinal endoscopic biopsies) require patients to eat appreciable amounts of gluten prior to testing, meaning that significant numbers of likely undiagnosed gluten-sensitive patients choose not to seek testing. Tests often give equivocal results, meaning that even after an endoscopy patients may remain unsure about whether they are gluten-sensitive. We aimed to develop a more robust and objective test that could identify CD in patients regardless of whether they consumed gluten.

Methods
DNA was extracted from 60 formalin fixed paraffin embedded (FFPE) biopsy-proven cases of CD (histologically Marsh 3B or 3C) and 45 control cases (no histological features of coeliac disease, no history of anaemia or abdominal bloating, biopsy taken for suspected gastro-oesophageal reflux disease). Bulk amplification of the T-cell receptor gamma and delta repertoires was undertaken with LymphotrackTM and Biomed-2 kits (Invivoscribe) followed by next generation sequencing (Illumina). Novel methods for bioinformatic analysis were constructed in Python and R, using the IMGT database as a reference.

Results
We developed a novel algorithm to analyse T-cell receptor repertoires (TCRR), followed by dimensionality reduction and unsupervised nearest neighbour classification (e.g., clustering), grouping together cases with similar TCRR. By modifying the parameters, we could train/ supervise the algorithm to ensure that new cases were correctly clustered. Importantly, biopsies with normal histology from CD patients on a gluten-free diet without raised anti-TTG antibodies were classified as having CD.

Conclusion
Our methodology has the potential to revolutionise the diagnosis of CD, so that it no longer relies on either the rather subjective opinion of a histopathologist or on sufficient gluten consumption by the patient. It is also applicable to FFPE biopsies and may, in future, be modified for use as a blood test.

Conflicts of interests
UK Patent Application Ref. JA90039P.GBA (3.11.2017).

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00216

Final poster ID: P5-26

Title: The enzyme activity of normal structure of small intestinal mucosa in adult celiac disease patients, followed gluten-free diet

Presenting author: Svetlana Bykova

Co-authors: Svetlana BYKOVA, Elena SABELNIKOVA, Olga AKHMADULLINA, Asfold PARFENOV, Nikolay BELOSTOSKIY, Saria DBAR - (1)Moscow Clinical Research Center, Russie, fédération de

ABSTRACT CONTENT

Objectives
Aim: to determine the activity of enzymes (glucoamylase, maltase, sucrase and lactase) in coeliac disease patients, who followed GFD and had normal histological structure of small intestinal mucosa.

Methods
Materials and methods: 33 patients with celiac disease were examined (10 men - mean age 28,1±14,7 and 23 women – mean age 45,8±17,0). All patients strictly followed gluten free diet, from 1,2 to 35 years. The main symptoms of this group were bloating and rumbling (48,4% and 90,9% - respectively), an unstable stool (change normal stool and diarrhea), which was observed in 51,4% patients. The control group consisted of 20 healthy persons. (10 men and 20 women, mean age was 33,9±10,3) with no symptoms of bowel disease and normal results of instrumental and laboratory studies. All patients underwent routine examination in accordance with celiac disease diagnosis. Levels of all determined antibodies were normal. According to the Marsh classification all patients had normal histological structure of the mucosa. The disaccharidase activity (lactase, sucrase, glucoamylase and maltase) was measured in tissue by Dahlqvist method with Trinder's reagent for glucose measurement. The unit of activity of the used substance is defined as the output of 1 ng of glucose per 1 min on 1mg of tissue (wet weight) at pH 6.0, temperature 37°C.

Results
Determination of enzyme activity showed that 45,5% patients had glucoamylase and sucrase deficiency, 39,4% - maltase and 69,7% - lactase deficiency. The levels of median of some enzyme activity (glucoamylase, sucrase and lactase) were significantly reduced in GFD group compared to the control group, only mean level maltase was normal.

Conclusion
Conclusions:

Among CD patients who followed GFD and had normal histological structure, 69,7% had lactase defficiency, 39,4% - maltase, 45,5% - glucoamylase and sucrase deficiency. A decreased activity of intestinal enzymes may be one of the reasons for the persistence of intestinal symptoms in patients with CD who follow GFD.

Conflicts of interests
No cofllicts of interests

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00234

Final poster ID: P5-27

Title: Tissue Transglutaminase Immunoglobulin A versus Duodenal Mucosal Biopsies—How to Best Assess Duodenal Healing in Pediatric Celiac Disease and Eosinophilic Esophagitis

Presenting author: Lisa Fahey

Co-authors: Lisa FAHEY (1), Kaitlin PAYNE (1), Lydia RAMHARACK (1), Patricia BIERLY (1), Kara FEIGENBAUM (1), Janel STEINHOFF (1), Karen HLYWIAK (1), Ann FARRARA (1), Arun SINGH (1), Ritu VERMA (2) - (1)The Children's Hospital of Philadelphia, États-Unis, (2)University of Chicago, États-Unis

ABSTRACT CONTENT

Objectives
We aimed to determine the correlation between tissue transglutaminase immunoglobulin A (TTG –IGA) and duodenal mucosal biopsies in children with biopsy-confirmed celiac disease (CD) and eosinophilic esophagitis (EoE) who had repeat biopsies at least 1 year after initiating a gluten free diet. Specifically, we aimed to determine the rate of duodenal healing, and the accuracy of using TTG-IGA as a marker of healing. We also assessed symptomatology.

Methods
Charts of all children with CD and EoE that were seen at The Children's Hospital of Philadelphia between 2003-2017 were retrospectively reviewed. Those who had multiple esophagogastroduodenoscopies with biopsies and TTG-IGA levels were included. Data collected included esophageal, gastric and duodenal biopsy pathology results, TTG-IgA, endomysial antibody IgA, deaminated gliadin IgA and IgG levels, human leukocyte antigen genotype, symptom report, diet compliance, and dietician involvement. Chi-square statistical analysis was used.

Results
Thirty eight of these children with CD and EoE had a normal IgA level. Forty two percent (16 of 38) had a normal repeat duodenal biopsy 1 year after starting the gluten free diet. Of these, 56 percent (9 of 16) had an abnormal TTG IGA despite normal duodenal biopsies. Twenty six percent (10 of 38) had both increased intraepithelial lymphocytes and villous atrophy on repeat duodenal biopsy. Of these, 20 percent (2 of 10) had a normal TTG IgA despite having duodenal mucosal injury ($p=0.45$).

Conclusion
For children with CD and EoE, an abnormal TTG-IGA one year after starting the gluten free diet was not correlated with duodenal mucosal injury. Furthermore, a normal TTG IgA did not ensure duodenal mucosal healing. Therefore, celiac surveillance with TTG IGA alone was not sufficient to monitor CD status in this patient cohort, and further consideration should be made regarding repeat duodenal biopsies to screen for duodenal mucosal healing.

Conflicts of interests
The authors have no conflicts of interest.

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00255

Final poster ID: P5-29

Title: Milk protein-induced villous atrophy and elevated serologies in four children with celiac disease on a gluten-free diet

Presenting author: Ritu Verma

Co-authors: Ritu VERMA - (1)University of Chicago Medicine, États-Unis

ABSTRACT CONTENT

Objectives
Most children with celiac disease (CD) respond to a gluten-free diet (GFD). Rarely elevation of celiac autoantibodies or villous atrophy (VA) persists almost always related to ongoing incidental gluten ingestion, yet some patients remain refractory despite the strictest GFD. Cow's milk protein allergy (CMPA) can cause enteropathy and recently was associated with elevated tissue transglutaminase IgA (TTG). We report here, for the first time, the occurrence of CMPA causing both persistently elevated celiac serologies and VA in four patients with CD on a GFD that only responded to further elimination of milk protein.

Methods
Data on symptoms, growth, laboratory results, and histology were retrospectively collected on 4 patients from two institutions with nonresponsive celiac disease to create a case series.

Results
Four female pediatric patients were diagnosed with CD based on abnormal celiac autoantibodies and duodenal histology. All patients improved symptomatically with the GFD; however, all had persistent autoantibody elevation and VA on repeated duodenal biopsies despite a strictly reviewed GFD. After additionally eliminating cow's milk protein (CM), all four had prompt serologic normalization for the first time. In two patients who had repeat endoscopies, a complete normalization of the duodenal mucosa was also documented.

Conclusion
We present four cases of pediatric CD with persistently elevated TTG, EMA, and VA despite a strict GFD that responded promptly to milk protein elimination with serologic normalization and documented histologic recovery in two cases so far. This demonstrates a concomitant CMPA may be responsible for some nonresponsive CD, and a CM-GFD should be tried before labeling a patient refractory.

Conflicts of interests
None

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00260

Final poster ID: P5-30

Title: Predictors for mucosal recovery in children with Celiac Disease: tTG is not the answer

Presenting author: Sadhna B Lal

Co-authors: Sadhna B LAL (1), Rajni THAKUR (2), Vybhav VENKATESH (2), Kaushal Kishore PRASAD (2), Satyawati RANA (2) - (1)Prof & Head, Division Of Paediatric Gastroenterology, PGIMER, Inde, (2)Division Of Paediatric Gastroenterology, PGIMER, Inde

ABSTRACT CONTENT

Objectives
There is a lack of prospective follow up studies for the assessment of histological recovery and treatment response in pediatric Celiac Disease (CD) patients. The aim of this study is to correlate duodenal histological recovery with anthropometric parameters, IgA anti-tTG antibody titers, Intestinal fatty Acid Binding Protein (IFABP), cytokines at baseline & at 1 year follow up, in pediatric CD patients

Methods
Children diagnosed as CD, showing subtotal villous atrophy were enrolled. Duodenal biopsies were repeated after 1 year of GFD. Clinical details, IgA anti-tTG titer, quantitative histology, I-FABP & cytokines were recorded at baseline & at 1 year.

Results
44 patients with CD (Median age 7 years, 43% boys), completed at least 1 year follow up on GFD. Median villous : crypt (V:C) at baseline was 0.4. They were divided into 2 groups- Group A (8): Histological improvement i.e., of > 2:1. Group B (36): persistent villous atrophy: villous : crypt of <2:1. All children in Group A had significant improvement of more than 1z from base line, in height z score weight z score (WAZ) & BMI z score compared to improvement only in WAZ in Group B. IFABP, TNF α, IFN γ and IL-15 levels remained elevated in Group B when compared to baseline (p=0.01) whereas they were decreased from baseline in Group A. On follow up, TTGA Ig A decreased to less than ULN in 77% of children (34) irrespective of histological improvement. There was no significant correlation between decrease in TTGA levels and histological improvement (r= -0.34, spearman ρ= 0.06)

Conclusion
*Reasonable Histologic recovery on a GFD in CD children occured only in 18% at 1 year
*Hidden sources of contamination could be a cause for poor mucosal recovery(MR)
*tTG normalized in 77%; thus it is a poor marker for mucosal recovery
*The IFABP & cytokines showed significant improvement in children with MR but not in those without MR & hence were a better predictor of MR
*Alternative tests to tTG are needed to follow up CD

Conflicts of interests
None

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00291

Final poster ID: P5-31

Title: Latiglutenase Treatment for Celiac Disease: Symptom and Quality of Life Improvement for Seropositive Patients on a Gluten-Free Diet

Presenting author: Jack Syage

Co-authors: Jack SYAGE (1), Peter GREEN (2), Chaitan KHOSLA (3), Daniel ADELMAN (4), Jennifer SEALEY-VOYKSNER (1) - (1)ImmunogenX, États-Unis, (2)Columbia University, États-Unis, (3)Stanford University, États-Unis, (4)Aimmune Therapeutics, États-Unis

ABSTRACT CONTENT

Objectives
Because there is no available treatment other than a gluten-free diet (GFD) for celiac disease (CD), many patients continue to experience chronic symptoms and intestinal damage. In this analysis we report on previously unpublished results on the efficacy of latiglutenase, an orally administered enzyme treatment, for improving multiple gluten-induced symptoms, and consequent quality of life (QOL) due to inadvertent gluten consumption.

Methods
This analysis is based on data from the CeliAction study of symptomatic patients (ALV003-1221; NCT01917630). Patients were treated with latiglutenase or placebo for 12 weeks and instructed to respond to a symptom diary daily and to multiple QOL questionnaires at weeks 0, 6, and 12 of the treatment periods as secondary endpoints. The results were stratified by serostatus.

Results
398 patients completed the 12-week CDSD study. In seropositive, but not seronegative CD patients a statistically significant and dose-dependent improvement was seen in the severity and frequency of abdominal pain, bloating, tiredness, and constipation. In subjects receiving 900 mg latiglutenase, improvements (p-values) in the severity of these symptoms for week 12 were 58% (0.038), 44% (0.023), 21% (0.164), and 104% (0.049) respectively, relative to placebo-dosed subjects. The reduction in symptoms trended higher for more symptomatic patients. Similar results were observed for the QOL outcome measures.

Conclusion
Post analysis of the symptom and QOL data supporting secondary endpoints showed for seropositive CD patients statistically and clinically significant evidence of latiglutenase-induced reduction of several key gluten-induced symptoms and QOL improvement.

Conflicts of interests
JAS and JASV are founders of and owns stock in ImmunogenX.

JAM serves on the advisory board of ImmunogenX and is a consultant to ImunnosanT, PvP Biologics and Innovate Biopharmaceuticals

PHRG is an advisor to ImmusanT, Bioniz, Janssen/J&J and Immuno

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00294

Final poster ID: P5-32

Title: Minimally-invasive Method for Monitoring Intestinal Villous Health in Recovering Celiac Disease Patients

Presenting author: Jennifer Sealey Voyksner

Co-authors: Jennifer SEALEY VOYKSNER (1), Joseph MURRAY (2), Chaitan KHOSLA (3), Robert VOYKSNER (4), Jack SYAGE (1) - (1)ImmunogenX, États-Unis, (2)Mayo Clinic, États-Unis, (3)Stanford University, États-Unis, (4)LCMS Limited, États-Unis

ABSTRACT CONTENT

Objectives
Patients newly diagnosed with celiac disease (CD) have histological damage of the small intestine that may recover over time following a gluten-free diet (GFD). The only currently accepted means for monitoring the villous health of the small intestine is an intrusive and expensive biopsy, which does not always provide an accurate assessment of how the villi are healing. Simvastatin (SV) is a commonly used medication that is highly metabolized by CYP3A4 expressed on the villi of the small intestine. We have designed a diagnostic tool that measures the metabolic rate of SV as a biomarker that provides a direct indication of the state of villous health.

Methods
A longitudinal trial was conducted for 20 newly diagnosed and 10 long-term treated CD patients as well as 10 healthy non-CD control patients for visits at 0, 6 and 12 months. SV was administered orally to the patients and blood (2 mL) was drawn at five timepoints (0 to 180 min). Quantification of SV, its primary metabolite simvastatin acid (SVA) and other metabolites in serum were measured using LC/MS. Based on the pharmacokinetic profile of SV and metabolites, the Cmax values from just two timepoints (60 and 120 min) are sufficiently accurate for a practical diagnostic method.

Results
Strong differentiation in SV Cmax values was observed in the expected trend of high values for newly diagnosed CD, low values for healthy non-CD controls, and intermediate values for long-term treated CD. For newly diagnosed patients whose initial SV levels are one standard deviation above the non-CD average (healthy controls) there is a strong correlation for SV levels tracking villous recovery following a GFD for 6 and 12 months.

Conclusion
This work supports the feasibility that this diagnostic tool can be used as a minimally invasive and economical means to monitor histologic recovery of celiac disease patients on a strict GFD. A new NIH-funded GC trial is underway at the Mayo Clinic to further study the simvastatin biomarker diagnostic as well as to study the effects of latiglutenase to relieve symptoms in diagnosed CD patients.

Conflicts of interests
none

POSTERS

THEME :
NEW TREATMENTS/NEW DIAGNOSTIC METHODS

Abstract #: ICDS00295

Final poster ID: P5-33

Title: Specific γc receptor targeting blocks reprogramming of human tissue-resident cytotoxic lymphocytes by IL-15 and IL-21

Presenting author: Valentina Discepolo

Co-authors: Valentina DISCEPOLO (1), Cezary CISZEWSKI (1), Alain PACIS (2), Olivier TASTET (3), Nick DOERR (4), Toufic MAYASSI (1), Asjad BASHEER (4), Peter GREEN (5), Thomas A. WALDMANN (6), Nazli AZIMI (4), Yutaka TAGAYA (7), Luis BARREIRO (1), Bana JABRI (1) - (1)University of Chicago Medicine, États-Unis, (2)Mc Gill University, Canada, (3)University of Montreal, Canada, (4)Bioniz Therapeutics, États-Unis, (5)Columbia University, États-Unis, (6)National Cancer Institute, États-Unis, (7)University of Maryland School of Medicine, États-Unis

ABSTRACT CONTENT

Objectives
Gamma chain (γc) cytokines signal through a common γc receptor. Among them, interleukin(IL)-21 and IL-15 are implicated in the pathogenesis of autoimmune disorders, including celiac disease (CeD). We investigated whether BNZ-2, a novel γc-binding peptide designed to selectively block IL-15 and IL-21, is a relevant therapeutic approach for CeD.

Methods
IL-21 and IL-15Ra transcripts were assessed in the duodenum of CeD patients. We tested the impact of IL-15 and IL-21 on intra-epithelial cytotoxic lymphocytes (IE-CTL) activation in vitro and ex vivo and the capacity of BNZ-2 to block their cooperative effects without affecting IL-2 signaling, which is required for Treg cells survival. The readouts included analysis of signal transduction by western blot and flow cytometry, the transcriptional program by RNA sequencing, expression of granzyme B and proliferation by flow-cytometry.

Results
This study revealed concomitant upregulation of IL-15Ra and IL-21 in CeD patients with villous atrophy, but not in potential CeD. These two cytokines cooperatively promoted the transcriptional activation, proliferation and cytolytic properties of IE-CTL in vitro and ex vivo. Importantly, BNZ-2 concurrently inhibited IL-15 and IL-21, without interfering with IL-2 signaling.

Conclusion
Our study supports a joint role for IL-15 and IL-21 in CeD pathogenesis where tissue-resident IE-CTL mediate tissue destruction and can undergo malignant transformation. BNZ-2 is a unique therapeutic candidate with the potential to block IE-CTL activation by simultaneously inhibiting IL-15 and IL-21, while preserving IL-2 signaling. More generally, BNZ-2 could be envisioned as a potential therapy for complex immune disorders in which IL-15 and IL-21 cooperate to promote CTL-mediated tissue damage.

Conflicts of interests
ND, AB, LAM and NA are employees, BJ advisor and shareholder of BIONIZ therapeutics, developer of BNZ2. BIONIZ holds the US patent for the peptide. The financial involvements of BIONIZ therapeutics did not undermine the scientific objectivity/integrity of

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00023

Final poster ID: P6-01

Title: Decreased expression of the gluten-degrading lysosomal protease Cathepsin S and the cytokine IL-27 in monocytes of pediatric celiac disease patients

Presenting author: Lea Costes

Co-authors: Lea COSTES (1), Danielle VAN HAAFTEN (1), Rolien RAATGEEP (1), Ytje SIMONS-OOSTERHUIS (1), Lisette VAN BERKEL (1), Johanna ESCHER (2), Michael GROENEWEG (3), Janneke SAMSOM (1) - (1)Laboratory of Pediatrics, Division of Gastroenterology and Nutrition, Erasmus Medical University Center-Sophia Children's Hospital, Pays-Bas, (2)Department of Pediatric Gastroenterology, Erasmus Medical University Center-Sophia Children's Hospital, Pays-Bas, (3)Department of Pediatrics, Maasstad Hospital, Pays-Bas

ABSTRACT CONTENT

Objectives
Celiac disease occurs consequently to a breach of tolerance to dietary gluten. Gluten is highly enriched in glutamine and proline residues, rendering it resistant to degradation. As a result, large gluten fragments translocate into the small intestinal tissue and are taken up by antigen presenting cells (APCs), namely macrophages. We previously showed that in mice, gluten degradation by lysosomal proteases present in macrophages triggers IL-27 expression and regulates the subsequent gluten-specific T cell response, processes that are essential to maintain gluten tolerance. Therefore, we hypothesized that in celiac disease patients, altered gluten degradation capacity by APCs and decreased IL-27 production could participate in the loss of tolerance to gluten.

Methods
Monocytes isolated from peripheral blood mononuclear cells of pediatric celiac disease patients (Marsh 3) and pediatric controls (Marsh 0) were analysed for lysosomal proteases and IL27 mRNA expression by quantitative polymerase chain reaction (PCR).

Results
The expression of the lysosomal protease Cathepsin S (CTSS) was significantly lower in monocytes from pediatric celiac disease patients compared to controls. This reduction did not reflect an overall increase in inflammatory function of patient monocytes as stimulation of healthy control monocytes with the inflammatory stimulus lipopolysaccharide led to increased CTSS expression rather than a decrease. Reduced Cathepsin S may affect the gluten-degrading capacity of monocytes as incubation of gluten protein with recombinant human Cathepsin S led to gluten degradation in Western blot analyses. In addition, and in line with our mouse data, IL27 expression was significantly decreased in monocytes of pediatric celiac disease patients compared to controls.

Conclusion
These findings suggest that altered gluten degradation capacity and associated decreased IL27 expression could participate in loss of tolerance to gluten in celiac disease.

Conflicts of interests
None.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00041

Final poster ID: P6-02

Title: Draft diseasome of the 33-mer gliadin peptide

Presenting author: Albert Garcia-Quintanilla

Co-authors: Albert GARCIA-QUINTANILLA (1), Joaquim AGUIRRE-PLANS (2), Meritxell GARCIA-QUINTANILLA (3), Juan PARRADO (1), Baldo OLIVA (2), Emre GUNEY (2) - (1)University of Seville, Espagne, (2)Pompeu Fabra University, Espagne, (3)Institute of Biomedicine of Seville, Espagne

ABSTRACT CONTENT

Objectives
To define the diseasome of the 33-mer gliadin peptide (33GP) based on its interactions with human proteins.

Methods
A human proteome microarray was used to identify candidates that interact with the 33GP. Valid spots were assigned a z-score based on the normalized fluorescence readouts, and interacting proteins ($z>1.65$). Then, a protein-protein interaction (PPI) network was created by integrating protein interactions from interactome databases. The selected candidates present in the PPI network were used as initial seeds for the NetScore algorithm, resulting in scores for all the proteins in the human PPI network based on their topological closeness to our given set of seed proteins that interact with the 33GP. The 33-mer nighbourhood of the network was defined by selecting the top 1% highest scoring proteins and its similarity was compared to the neighbourhoods of other diseases using Fisher's exact test for assigning the significance of the overlap. The p-values obtained were then corrected for multiple hypotheses testing using the Benjamini-Hochberg (BH) correction.

Results
We defined the human interactome of the 33GP and found 47 interacting proteins with $z>1.65$. From these, only 37 were in the human PPI network generated and were used as initial seeds. After analyzing the overlapping of the top 1% 33-mer neighbourhood with other diseases we obtained 517 diseases that shared at least 1 gene. However, after applying the BH correction only 108 were significant ($p<0.1$, of these 58 with $p<0.05$ and 27 with $p<0.01$). The diseases were further validated with the literature. Despite several diseases did not reach significance due to limitations of the study, comorbidity cases were also found.

Conclusion
We describe for the first time the preliminary human interactome and diseasome of the 33GP. Our work highlights the importance of the 33GP biochemical interactions as a hitherto unnoticed pathogenic mechanism for gluten-related disorders.

Conflicts of interests
None.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00052

Final poster ID: P6-03

Title: Delineating Causal SNPs in Celiac Disease Using SuRE-SNP

Presenting author: Roeland Broekema

Co-authors: Roeland BROEKEMA (1), Olivier BAKKER (1), Joris VAN ARENSBERGEN (2), Adriaan VAN DER GRAAF (1), Serena SANNA (1), Sebo WITHOFF (1), Yang LI (1), Bas VAN STEENSEL (2), Cisca WIJMENGA (1), Iris JONKERS (1) - (1)University Medical Center Groningen, Pays-Bas, (2)Netherlands Cancer Institute, Pays-Bas

ABSTRACT CONTENT

Objectives
Genetics strongly influences the risk for celiac disease (CeD). Apart from the HLA locus, GWAS has determined over 40 genetic loci that contribute to CeD, most of which are often shared with other autoimmune diseases. These loci comprise many different SNPs of which 95% are located in non-coding DNA regions, making them all equally likely to have a causal role in CeD. Causal SNPs likely affect gene expression regulating regions (enhancers) in these non-coding DNA regions. To reveal which SNPs truly have an in vivo effect on gene expression regulation we performed Survey of Regulatory Elements & SNPs (SuRE-SNP).

Methods
SuRE-SNP is a reporter-plasmid based assay which measures the autonomous transcription activity of a DNA fragment within cells and quantifies active regulatory regions in an unbiased way. As input we used target-enriched DNA from CeD associated loci, obtained from 30 CeD patients selected to contain all CeD-associated risk and wild-type SNPs, to determine SNPs that disrupt regulatory regions in CeD associated cell lines. SuRE-SNP can distinguish single-SNP effects by tiling randomly sheared DNA fragments, thus overcoming linkage disequilibrium limitations.

Results
Pilot results in K562 and Jurkat cells reveal that CeD-associated SNPs affect the transcriptional activity of regulatory regions, possibly by disrupting transcription factor binding sites. Currently we are generating and analyzing cell line specific effects of CeD-associated SNPs in both stimulated and unstimulated cells for CD4+ T-cells, B-cells, monocytes, CD8+ T-cells and intestinal epithelial cells.

Conclusion
We will be able to precisely determine which SNPs have effects on transcription in immune and epithelial cell lines. Moreover, our approach will reveal all CeD-associated SNPs that truly have an effect on regulatory elements which may alter gene expression in disease-associated pathways.

Conflicts of interests
None.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00054

Final poster ID: P6-04

Title: New Biophysical and Molecular Approach to Understand Gluten-related Disorders

Presenting author: Veronica Dodero

Co-authors: Veronica DODERO - (1)Universität Bielefeld, Allemagne

ABSTRACT CONTENT

Objectives
The 33-mer gliadin peptide has a protagonist role in celiac disease mainly related to its primary and secondary structure or in other words its sequence and folding, respectively. Nevertheless, the 33-mer has a quaternary structure because it oligomerizes spontaneously under physiological conditions forming superstructures. The identification of the 33-mer superstructures in vivo is a key step towards the establishment of this new pathogenic scenario. Herein, I will present our efforts to characterize the morphology of the 33-mer superstructures and their localization in human intestinal epithelial cells.

Methods
The employed methodology is a combination of biophysical, chemical and cellular biology approaches. The structural characterization was performed by spectroscopy, proteomics, molecular dynamics, and cryo-transmission electron microscopy. In general, conventional fluorescence microscopy cannot address questions regarding protein self-organization in cells. To obtained the resolution parameters to a level approaching the underlying protein nanostructures (below the diffraction limit of 200 nm), we employed two-color and 3D single-molecule localization microscopy.

Results
The 33-mer oligomerizes under physiological conditions forming different size superstructures. During the self-assembly process, a structural transition towards the characteristic amyloid β parallel structure occurs. Based on the structural and morphological similarities with amyloid aggregation, we focused on immunological aspects, discovering that the superstructures of 33-mer induce an innate immune response in macrophages mediated by human Toll-like receptor 4 (TLR4). I will show the morphology of 33-mer superstructures and their localization at the single-molecule resolution in the cell line Caco-2.

Conclusion
Taking into account that oligomerization and structural transformation followed by activation of the innate immune system are hallmarks of protein aggregation diseases, our findings open new avenues in the understanding of the early inflammatory events in gluten-related disorders.

Conflicts of interests
No conflicts of interests

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00055

Final poster ID: P6-05

Title: The influence of food processing on the release profile of celiac immunogenic peptides from food matrices

Presenting author: Olivia Ogilvie

Co-authors: Olivia OGILVIE (1), Nigel LARSEN (2), Sarah ROBERTS (2), Laura DOMIGAN (3), Juliet GERRARD (3) - (1)University of Auckland, Plant & Food Research, Nouvelle-zélande, (2)Plant & Food Research, Nouvelle-zélande, (3)The University of Auckland, Nouvelle-zélande

ABSTRACT CONTENT

Objectives
In gluten-containing foods such as bread, gluten proteins are present within a large polymer called the gluten-macropolymer (GMP), which varies in structure due to processing. In celiac disease, T-cell response is initiated when specific immunogenic peptides are digested from this insoluble polymer and released as soluble peptides during digestion. In genetically susceptible individuals, it has been suggested one's loss of tolerance to immunogenic peptides may be influenced by increases in gluten load. As both the process to make bread and prevalence of celiac disease vary throughout the world, this study investigated via proteomics if food processing can alter the GMP's digestibility and release profile of immunogenic peptides (such as the 33mer).

Methods
Specifically variations in baking temperature (150, 230°C), time (25, 35, 45 minutes), mixing speed (63, 120, 200 rpm), mixing degree (10%, 100%, 180% whkg) and transglutaminase (1, 3, 20 U mg-1) were investigated. Bread samples were digested with a simulated human digestion (INFOGEST) and release profile of model immunogenic peptides quantitated using mass spectrometry (Q Exactive Orbitrap).

Results
No processing condition investigated was found to alter the release profile of gluten's immunogenic peptides. Peptides P1-P5 were released from the GMP within 1 minute of intestinal digestion reaching peak concentration at 10 minutes. P6 conversely peaks at 70 minutes.

Conclusion
These results suggest that cultural differences in processing do not contribute to epidemiological differences in celiac disease prevalence. Additionally, processing conditions cannot be manipulated to reduce total gluten load by altering the rate production of immunogenic peptides from foods. Furthermore, the peptide release profiles demonstrated highlight the activity window required for post-consumption therapeutics (polymeric binders, enzymes).

Conflicts of interests
None.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00060

Final poster ID: P6-06

Title: Celiac disease-on-chip: Modeling a multifactorial disease in vitro

Presenting author: Renée Moerkens

Co-authors: Renée MOERKENS (1), Joram MOOIWEER (1), Jelle SLAGER (1), Maria ZORRO (1), Rutger MODDERMAN (1), Sebo WITHOFF (1), Cisca WIJMENGA (1, 2) - (1)Department of Genetics, University Medical Center Groningen, University of Groningen, Pays-Bas, (2)K.G. Jebsen Coeliac Disease Research Center, Department of Immunology, University of Oslo, Norvège

ABSTRACT CONTENT

Objectives
Celiac disease (CeD) is a complex immune-mediated disease, characterized by a strong inflammatory response in the small intestine. Such a response only occurs in individuals that are genetically predisposed to the disease. Since multiple genetic, epigenetic and environmental factors are involved in the disease etiology, it is difficult to fully recapitulate the multifactorial character of this complex disease. As part of a Dutch consortium (Netherlands Organ-on-Chip Initiative), we aim to develop an intestine-on-chip model that integrates the CeD-associated genetic background, various disease-relevant cell types and the biophysical microenvironment of the intestine.

Methods
Organ-on-chip systems are microfluidic devices in which cells are cultured in continuously perfused microchannels that mimic the physical microenvironment of an organ. To create the intestine-on-chip, we use induced pluripotent stem cells (iPSCs) derived from urine and blood of CeD patients and control individuals included in the Celiac Disease Northern Netherlands and LifeLines population biobanks. From the acquired iPSCs, we generate intestinal epithelial cells (IECs), which will be introduced to the intestine-on-chip system.

Results
We have successfully generated iPSCs from urine-derived epithelial cells from CeD patients and control individuals. We have differentiated some of these iPSC lines into IECs.

Conclusion
By combining patient- and control-derived IECs with the intestine-on-chip setup, we will be able to perform functional assays to study the role of genetics in CeD. Specific genes can later be studied in more detail using genetic engineering. Ultimately, these iPSC-based barrier systems will be combined on chip with the immune system and the microbiome, which are also available via the biobanks. These complex systems will allow the study of the interaction between these components in health and in complex intestinal diseases and will provide opportunities to design precision medicine approaches.

Conflicts of interests
None to declare

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00074

Final poster ID: P6-07

Title: Functional Study of Genes and Long Non-coding RNAs Associated with Celiac Disease with A Cell-type Specific CRISPR/Cas9 Pooled Screen

Presenting author: Chan Li

Co-authors: Chan LI - (1)UMCG, Pays-Bas

ABSTRACT CONTENT

Objectives
Genome wide association studies combined with expression quantitative trait locus (eQTL) mapping has identified many potentially causal genes including lncRNAs associated with Celiac disease (CeD). However, little is known about how they contribute to disease development. Functional studies are therefore required for the candidate genes and lncRNAs in a cell type specific context.

Methods
CRISPR/Cas9 based gene perturbation coupled with single cell RNA-seq (scRNAseq) has been applied to elucidate the mechanisms of many genes simultaneously by directly measuring the gene expression changes caused by guide RNA mediated knock-down in many cells. Using this approach, we aim to perturb the expression of genes and lncRNAs identified through eQTL analysis by a CRISPR/Cas9 pooled screens in the major cell types involved in CeD.

Results
In total, around 100 genes and lncRNAs that are potentially causal have been prioritized through four different statistical genetic approaches. Furthermore, a single clone from Jurkat cells stably expressing high levels of Cas9 has been validated. Next, we will pilot high-throughput perturbation of the prioritized genes in Jurkat cells.

Conclusion
In future, by combining CRISPR/Cas9 and scRNAseq in several cell types most relevant for CeD, we will elucidate the causality of the genes and lncRNAs involved in CeD in an unbiased way.

Conflicts of interests
No potential conflict of interest was reported by the authors.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00075

Final poster ID: P6-08

Title: Comparative analysis of capability to activate a pathogenic gluten-specific T cell response by HLA DR5/DR7 and DR3/DR1 positive antigen presenting cells

Presenting author: Giovanna Del Pozzo

Co-authors: Giovanna DEL POZZO (1), Carmen GIANFRANI (2), Laura PISAPIA (1), Stefania PICASCIA (2), Federica FARINA (1), Serena VITALE (2) - (1)Institute of Genetics and Biophysics-CNR, Italie, (2)Institute of Protein Biochemistry-CNR, Italie

ABSTRACT CONTENT

Objectives
We recently demonstrated that antigen presenting cells (APC) carrying the HLA DQ2.5 risk alleles in cis configuration (DR3/DR1) activate the gluten-specific CD4+ T cells at same extent of homozygous DQ2.5 APC (DR3/DR3). A comparable expression of DQA1*05 and DQB1*02 alleles (mRNA and DQ2.5 heterodimer) explained the similar APC function between DR3/DR1 and DR3/DR3 B cells, despite the different dose of HLA risk genes (Pisapia et al., 2016). In the present work, we expanded the analysis in B cells carrying the HLA DQ2.5 in trans configuration, DR5/DR7, being this haplotype highly frequent in Italian patients with celiac disease.

Methods
Immortalized B cell lines (EBV-transformed B-LCL) from both celiac children and healthy controls were analyzed. We quantified the DQA1*05 and DQB1*02 mRNAs by qRT-PCR using allele-specific primers, the DQα1*05 and DQβ1*02 surface proteins by flow cytometry using monoclonal antibodies and the INFγ response in gluten-specific CD4 T cells from celiac gut mucosa, by ELISA assay.

Results
In accordance to the cis configuration findings, we observed that the DQA1*05 and DQB1*02 risk alleles were more expressed in DR5/DR7 APC than the non-CD predisposing alleles, although the differential expression was much stronger in APC from celiac patients that non-celiac healthy subjects. The expression of risk alleles impacts on the DQ2.5 surface expression and on the activation of gluten-specific CD4+ T cells. In fact, we demonstrated that APC carrying DR5/DR7 haplotype induces an anti-gluten CD4+ T-cell proliferation as strong as APC carrying DR3/DR1 haplotype.

Conclusion
Our findings indicated that both the high expression of HLA class II risk alleles and the amount of gluten antigen influenced the strength of pathogenic CD4+ T-cell response in celiac disease

Conflicts of interests
We declare that we have no conflict of interest.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00076

Final poster ID: P6-09

Title: Constitutive alterations in vesicular trafficking increase the sensitivuty of cells from celiac disease patients to gliadin

Presenting author: Giuliana Lania

Co-authors: Giuliana LANIA, Maria Vittoria BARONE, Merlin NANAYAKKARA, Mariantonia MAGLIO, Renata AURICCHO, Monia PORPORA, Mariangela CONTE, Riccardo TRONCONE, Salvatore AURICCHIO - (1)University of Naples Federico II, Italie

ABSTRACT CONTENT

Objectives
Celiac Disease (CD) is an autoimmune disease characterized by inflammation of the intestinal mucosa due to an immune response to wheat gliadins. Some gliadin peptides (e.g., A-gliadin P57-68) induce an adaptive Th1 pro-inflammatory response. Other gliadin peptides (e.g., A-gliadin P31-43) induce a stress/innate immune response involving interleukin 15 and interferon α. In the present study, we describe a stressed/inflamed celiac cellular phenotype in enterocytes and fibroblasts due to an alteration in the early-recycling endosomal system.

Methods
Biopsy fragments from duodenum were obtained from CD patients with villous atrophy controls, affected by gastroesophageal reflux, and CD patients on GFD (Gluten free diet). Fibroblasts were cultured from skin and intestinal biopsies obtained from CD patients, (GFD, GCD) and controls. We used double immunofluorescence staining, western blotting and immunoprecipitation to evaluate EGFR and EEA1 levels and co- localization in fibroblasts and biopsy fragment from patients with CD and controls. We transfected cells with siHRS and mRNA analysis was perfomed to evaluate the levels of EEA1.

Results
In the present study, we found in CD biopsies and fibroblasts an increase of markers of the innate immune response (EGFR, IL15-R α, MXA) and of the inflammatory response (NFkB). CD cells presented a constitutive of the early-recycling vesicular compartment, the decay of the EGFR was prolonged and TfR levels were increased. We induced a delay in early endocytic trafficking by transfecting cells with siHRS in control cells and rendered them more sensitive to gliadin treatment using as read out STAT5 and NFkB levels.

Conclusion
In the present study we show that cells from celiac disease patients present a delay of the endocytic trafficking and are more sensitive to the wheat gliadin peptide P31-43 than controls. Inducing delays in early vesicular trafficking leads to a celiac-like cellular phenotype, implicating the early-recycling endosomal system in celiac disease

Conflicts of interests
No conflict of interests to declear

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00103

Final poster ID: P6-10

Title: T cell receptor (TCR) clonotyping in blood and duodenal mucosa: a potential clinical biomarker of gluten response in celiac patients

Presenting author: Glennda M. Smithson

Co-authors: Glennda M. SMITHSON (1), Scott VERROW (1), Lei SHEN (1), Daniel A. LEFFLER (1), Ciaran P. KELLY (2), Jocelyn A. SILVESTER (3), Julie RYTLEWSKI (4), Erik YUSKO (4), Sharon BENZENO (4) - (1)Takeda Pharmaceuticals International Co., États-Unis, (2)Celiac Center, Beth Israel Deaconess Medical Center & Harvard Medical School, États-Unis, (3)Boston Children's Hospital, États-Unis, (4)Adaptive Adaptive Biotechnologies, États-Unis

ABSTRACT CONTENT

Objectives
In celiac disease, the TCR repertoire changes after gluten exposure. The objectives of this study are to establish if these changes: 1) Can be detected by immunosequencing using unseparated PBMCs and formalin fixed paraffin embedded (FFPE) duodenal biopsies, and 2) Correlate with patient baseline characteristics or biomarkers of gluten responses.

Methods
In a gluten challenge study [Gut 2013 62:996], PBMCs (n=11) and biopsies (n=17) were collected prior to gluten challenge and on Days 3, 7 [PBMC only] and 15. Genomic DNA from PBMCs [≥4 million] and biopsies [≥25 microns] was isolated and the TCRβ sequenced using the immunoSEQ Assay®.

Results
Duodenal and circulating T cells had overlapping clonotypes that changed during gluten challenge. TCRβ sequencing resolved at the deep assay level (≥200,000 T cells) identified most gluten-responsive clonotypes. Sequencing at the ultradeep assay level (≥800,000 T cells) increased the number of TCRs detected, but not the number of significantly expanded unique TCRs. At least 1/5 previously published gluten-associated CDR3β motifs [J Clin Invest. 2018 128:2642] were identified in 9/11 patients. We found that patient age, changes in serology and intestinal morphology tended to correlate with the TCRβ repertoire changes.

Conclusion
TCRβ sequencing is feasible to monitor impact of gluten exposure and therapies on TCR repertoire in clinical studies. This study confirmed that deep sequencing of PBMCs is sufficiently sensitive to detect disease relevant clones. While the data generated is complex, TCRβ changes were identified using single chain TCRβ deep sequencing, without the need for pairing the TCRα and -β chains. This methodology does not require large blood volumes, viable cells, proprietary reagents or ex vivo cell culture.

Conflicts of interests
Employees of Takeda SV, LS, DAL, GS and Adaptive Adaptive Biotechnologies JR, SB, EY. CPK has consulted for COUR Pharma, Glutenostics, Immunogenx, Innovate & Takeda.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00104

Final poster ID: P6-11

Title: The intestinal expansion of TCRγδ+ T cells and the disappearance of IL4+ T cells characterizes the transition from potential to overt celiac disease

Presenting author: Serena Vitale

Co-authors: Serena VITALE (1), Stefania PICASCIA (1), Angela DI PASQUALE (1), Mariantonia MAGLIO (2), Lorenzo COSMI (3), Francesco ANNUNZIATO (3), Riccardo TRONCONE (2), Renata AURICCHIO (2), Carmen GIANFRANI (1) - (1)Institute of Protein Biochemistry - CNR, Italie, (2)Department of Translational Medicine & European Laboratory for the Investigation of Food-Induced Diseases, University Federico II, Italie, (3)Denothe Center, University of Florence, Italie

ABSTRACT CONTENT

Objectives
Celiac disease(CD) is characterized by a spectrum of intestinal lesions, ranging from morphologically normal mucosa (potential-CD) to villous atrophy (overt-CD). As the mechanism responsible of the transition to the villous atrophy is not completely elucidated, we investigated the mucosa phenotypic changes in these two conditions.

Methods
Cell phenotype and cytokine production profile (INF-γ, IL-4, IL-21, IL-17) were analyzed in gut biopsies from 19 children with overt-CD (mean age 5.9 yrs), 16 with potential-CD (mean age 8.7 yrs), and 12 non-CD control subjects (mean age 6.3 yrs). Cytokines were detected by intracytoplasmic staining after PMA/Ionomycin stimulation in both gluten-raised T-cell lines and in freshly isolated mucosal cells.

Results
T cells bearing the TCRγδ (TCRγδ+) were markedly increased in children with overt-CD compared to potential-CD or controls (HC) ($p<0.05$). In contrast, IL4+ T cells were significantly increased in potential-CD and HC ($p<0.05$). An indirect correlation between the frequency of TCRγδ+ and IL4+ T cells was observed in all children enrolled ($r=-0.5141$, $p=0.0013$). In addition, a direct correlation was found between the number of TCRγδ+ T cells and the serum levels of anti-tissue transglutaminase antibodies (anti-TG2-IgA) in CD patients (both overt- and potential-CD), ($r=0.4635$, $p=0.0086$). Conversely, IL4+ T cells indirectly correlated with the anti-TG2 titers ($r=-0.5863$, $p=0.0013$).

Conclusion
The transition to villous atrophy in CD patients is characterized by an expansion of TCRγδ+ T cells, and a concomitant disappearance of IL4+ T cells in the gut mucosa. These findings, along with the indirect correlation between the anti-TG2 titers and IL4+ T cell frequency, suggest that a shift from Th2 to Th1 phenotype may occur in villous atrophy. Further studies are required to validate the use of IL4+ and TCRγδ+ T cells as biomarkers of the different CD forms.

Conflicts of interests
We declare no conflict of interest.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00105

Final poster ID: P6-12

Title: Increased density of TCR-γδ+ intraepithelial lymphocytes is present in the duodenal mucosae from celiac patients in all stages of the disease and correlates with the extent of mucosal damage

Presenting author: Mariantonia Maglio

Co-authors: Mariantonia MAGLIO, Renata AURICCHIO, Valentina DISCEPOLO, Roberta MANDILE, Luciano RAPACCIUOLO, Erasmo MIELE, Luigi GRECO, Riccardo TRONCONE - (1)European Laboratory for the Investigation of Food-Induced diseases and Department of Medical Traslational Sciences, Pediatrics Section, University Federico II, Italie

ABSTRACT CONTENT

Objectives
TCR-γδ+ intraepithelial lymphocytes are considered a hallmark of coeliac disease (CD), although their specificity and functional role are still unclear. We have investigated this cell subset in the different stages of the disease, also in relation to lamina propria inflammation.

Methods
Duodenal biopsies were collected from 197 children. Study population included 54 active CD patients (ACD) (31 patients with mild villous atrophy, Marsh 3a and 23 with partial or subtotal atrophy, Marsh 3b/3c); 84 potential CD (PCD) (31 Marsh 0 and 53 Marsh 1), and 17 CD patients on a gluten free diet (GFD) for at least 2 years. 15 family members (FDR) and 27 non-CD individuals (CTR) served as control groups. Density of CD3+ and TCR-γδ+ intraepithelial lymphocytes, as well as number of activated mononuclear cells (CD25+) in lamina propria, were assessed by immunohistochemistry.

Results
In the epithelium of ACD and PCD patients, including Marsh 0 PCD, TCR-γδ+ cells were significantly increased in comparison to non-CD subjects ($p<0.0001$) and FDR ($p<0.0001$). This subset remained significantly increased also in GFD patients ($p<0.0001$). The density of TCR-γδ+ cells correlated positively with density of CD3+ cells (Pearson $r=0.82$, $p<0.0001$) and correlated negatively with the villous/crypt ratio (Pearson $r=-0.3$, $p<0.001$). In the lamina propria the number of mononuclear CD25+ cells was comparable in PCD, GFD patients, FDR and non-CD, being increased only in active CD ($p<0.0001$) and related to mucosal damage (Pearson $r= -0.46$, $p<0.0001$), but not with TCR-γδ+ cells density.

Conclusion
High density of TCR-γδ+ intraepithelial lymphocytes characterizes CD already at the very early stages of the diseas. This subset remains altered also after years of GFD. Our observations suggest a crucial role of TCR-γδ+ intraepithelial lymphocytes in the pathogenesis of CD and call for a renewed effort to define their specificity and function.

Conflicts of interests
The authors have no conflict of interests.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00112

Final poster ID: P6-13

Title: ATIs from ancient diploid wheat have a reduced ability to activate gut innate immune response

Presenting author: Vera Rotondi Aufiero

Co-authors: Vera ROTONDI AUFIERO (1), Luigia DI STASIO (1), Stefania PICASCIA (2), Nunzia IANNACCONE (1), Giuseppe IACOMINO (1), Carmen GIANFRANI (2), Nicola GIARDULLO (3), Gianfranco MAMONE (1), Riccardo TRONCONE (4), Giuseppe MAZZARELLA (5) - (1)Institute of Food Sciences-CNR, Italie, (2)Institute of Protein Biochemistry - CNR, Italie, (3)Department of Gastroenterology, San G. Moscati Hospital, Italie, (4)Department of Medical Translational Sciences and European Laboratory for the Investigation of Food-Induced Diseases, University of Naples Federico II, Italie, (5)Institute of Food Sciences-CNR Avellino and European Laboratory for the Investigation of Food-Induced Diseases, University of Naples Federico II, Italie

ABSTRACT CONTENT

Objectives
Several evidences suggest a role of amylase/trypsin-inhibitors (ATIs) of wheat species in promoting the innate immunity in gluten-related disorders. In this study we have compared the content and the immunological properties of ATIs obtained from diploid T. monococcum wheat, (Monlis and Norberto-ID331 cultivars), and hexaploidy T. aestivum wheat (Sagittario cultivar).

Methods
ATIs were purified from wheat flours and characterized by proteomic analysis. The ATIs were digested with pepsin-chymotrypsin (PC) enzymes and assayed on jejunal biopsies from 8 treated CD patients, to evaluate the expression of IL-8 and TNF-α, by qRT-PCR. The ATIs immunogenicity was also assayed on gut-derived T cell lines (TCLs), previously established from small intestinal biopsies obtained from 5 celiac patients and IFN-γ production measured by ELISA.

Results
Proteomic analysis revealed that T. monococcum ATIs showed a reduced stability to proteolytic enzymes compared to T. aestivum ones. A reduced expression of IL-8 and TNF-α pro-inflammatory innate cytokines was detected on intestinal biopsies cultured with ATIs from Monlis and Norberto-ID331 in comparison with ATI from Sagittario. As expected, high levels of INF-γ was released by intestinal gliadin-specific T cells in response to the deamidated gliadin digest; on the contrary, no significant INF-γ productions was released in response to ATI PC-digests from T. monococcum and T. aestivum wheats, either naïve or deamidated.

Conclusion
The nature of T. monococcum ATIs are substantially different from those of T. aestivum ATIs and showed a reduced ability to trigger the innate branch of immunity. Overall, these findings indicate that T. monococcum retains a lower toxicity for subjects suffering from gluten-related disorders.

Conflicts of interests
no conflict of interest.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00129

Final poster ID: P6-14

Title: LPP and C1orf106 variants confer a genetic predisposition for epithelial barrier dysfunction in celiac disease

Presenting author: Danielle Cardoso Da Silva

Co-authors: Danielle CARDOSO DA SILVA (1), Deborah DELBUE DA SILVA (1), Renée MOERKENS (2), Joram MOOIWEER (2), Sebo WITHOFF (2), Michael SCHUMANN (3) - (1)Institüt für Klinische Physiologie, Charité Universitätsmedizin Berlin, Allemagne, (2)Faculty of Medical Sciences, University of Groningen, Pays-Bas, (3)Medizinische Klinik m.S. Gastroenterologie, Infektiologie & Rheumatologie, Charité Universitätsmedizin, Allemagne

ABSTRACT CONTENT

Objectives
Genetic variants apart from HLA-DQ2/DQ8 contribute to 48% of celiac disease (CeD) genetic susceptibility. Polymorphisms in C1orf106 and LPP genes, both involved in the epithelial barrier function, were found in CeD patients. Functional and structural changes in the intestinal epithelial barrier are present in CeD patients; still, the genetic predisposition for barrier impairment in CeD has not been described. Thus, the aim of this project is to investigate the role of LPP and C1orf106 in the regulation of cellular junctions and epithelial barrier function.

Methods
CRISPR/Cas-9-Knocked-out Caco-2 clones for LPP and C1orf106, and an empty control (EC), were used. Transepithelial electrical resistance (TER) was measured as a barrier integrity parameter. The cells were depleted of calcium for 6 hours followed by calcium replacement to evaluate tight junction (TJ) regulation. TER values and samples for immunofluorescence (IF) analysis were collected in different time-points for 48 hours. Three-dimensional cysts were grown from single cells, for 5 days, in Matrigel. IF staining of ZO-1, Phalloidin and DAPI was detected using confocal microscopy.

Results
During cellular growth, C1orf106 KO cells increased their TER values slower than the LPP KO and EC cells. At the end of the third week in culture all three clones had similar TER values, suggesting that the absence of C1orf106 protein could affect the establishment of TJ. Following calcium depletion and replacement, both KO cells were slower than the control to re-establish the TJ and the barrier function. Cysts from KO clones lacked the luminal organisation of the EC cysts and showed actin structures that denote the presence of multiple lumina, suggesting that the lack of LPP and C1orf106 impairs the polarization process of epithelial cells.

Conclusion
Our results suggest that LPP and C1orf106 have a role in tight junction homeostasis that could be consequent to their role in the epithelial cell polarization process.

Conflicts of interests
None

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00157

Final poster ID: P6-15

Title: Molecular histomorphometry as a tool to assess intestinal injury and functional screen on epithelial factors transmitting the injury in celiac disease

Presenting author: Valeriia Dotsenko

Co-authors: Valeriia DOTSENKO (1), Mikko OITTINEN (1), Juha TAAVELA (1), Alina POPP (1), Francisco LEON (2), Jorma ISOLA (1), Markku MÄKI (1), Keijo VIIRI (1) - (1)Tampere University, Finlande, (2)Celimmune LLC, États-Unis

ABSTRACT CONTENT

Objectives
Traditional celiac disease (CD) diagnostics based on histomorphometric evaluations of villus height and crypt depth ratios (Vh/Cd) are liable to misinterpretations due to the common technical flaws or subjective errors. There is a need for molecular diagnostic tool which obviates these errors yielding an objective ratio instead. In addition, we aim to screen epithelial factors transmitting destructive signals in CD.

Methods
15 CD patients, who have been at least one year on gluten-free diet were enrolled. All participants were biopsied before and after the gluten challenge (10 weeks, 4 grams of gluten daily). 6 healthy non-CD individuals were included as controls. Biopsies were taken on PAXgene fixative and embedded in paraffin and Vh/Cd ratio was assessed. RNA was extracted from the same sections and subjected to 3'RNA-sequencing. Gluten-induced gene expression was reconstructed in human intestinal organoids with inflammatory cytokines. Gene silencing in organoids was performed using Crispr-Cas9 technology.

Results
230 positively and 166 negatively Vh/Cd correlating genes were identified. Among those,33 genes have significantly different expression during the challenge within the same patient with significant correlation between quantitative mRNA and conventional morphometry showing different degree of villous atrophy and crypt hyperplasia. Genes involved in cellular response to interferon-gamma and tumor necrosis factor alpha were over-represented.

Conclusion
Based on our results we could identify genes which convey the sensitivity of intestinal epithelium to cytokines using in vitro human organoids model. Adoption of molecular histomorphometry, with our set of target genes, could be quantitative and reliable way of estimating gluten-induced mucosal injury. Functional studies with identified genes have potential to recognize factors that sensitize epithelium to gluten and cytokine–mediated mucosal damage. These factors will serve as a potential target for medical intervention in gluten-induced epithelial damage in CD.

Conflicts of interests
Nothing to declare

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00158

Final poster ID: P6-16

Title: Aerobic energy production is impaired in small bowel epithelial cells in Celiac Disease

Presenting author: Heidi Kontro

Co-authors: Heidi KONTRO (1), Katri KAUKINEN (2), Katri LINDFORS (1) - (1)Celiac Disease Research Center, Tampere University, Finlande, (2)Celiac Disease Research Center, Tampere University, and Department of Internal Medicine, Tampere University Hospital, Finlande

ABSTRACT CONTENT

Objectives
The metabolic activity of small bowel mucosal epithelium along with the underlying mitochondrial energy production in Celiac Disease (CeD) is not well understood. Our aim was to investigate mitochondrial cristae complexity known to correlate with aerobic metabolism in histological samples.

Methods
Apart from its enzymatic activity, ATP synthase is also involved in bending mitochondrial inner membrane (MIM) into finger-like structures, cristae. Multiple cristae is a hallmark of active aerobic metabolism in cell types demanding ample energy. Cristae is independent of outer mitochondrial membrane (MOM) covering the whole organelle and delineating the amount of mitochondrial population (mito-mass). Mito-mass in cell and tissue types varies between individuals. In human histology this introduces challenges in quantification of mitochondrial proteins at mitochondrial level in various compartments of mitochondria. MOM protein (Tom20) was used to quantify mito-mass. The MIM residing DAPIT and ATP5a1, both subunits of ATP synthase, were used as markers for cristae complexity. By dividing expression level of cristae markers with Tom20 value would enable comparison of these parameters at mitochondrial level. The epithelial cells of cryosections from small intestinal biopsies of healthy controls, untreated (uCeD) and treated CeD patients (TCeD) were stained by Immunofluorescence, and microscope images were quantified by ImageJ.

Results
The expression levels of cristae markers DAPIT and ATP5a1 were comparable except in TCeD, where the ATP5a1 level was ~40% lower than in control and uCeD, pointing towards more simple cristae complexity. When compared to control, the level of mito-mass, was 40% lower in uCeD.

Conclusion
In summary, our results suggest that in CeD intestinal epithelial cells aerobic energy production is impaired. That in uCeD is due to impaired mitochondrial homeostasis and in tCeD defective cristae maturation.

Conflicts of interests
No conflicts of interests.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00170

Final poster ID: P6-17

Title: Comparative analysis of in vitro digestibility and immunogenicity of gliadin proteins from T. durum and T. monococcum wheat.

Presenting author: Gianfranco Mamone

Co-authors: Gianfranco MAMONE (1), Stefania PICASCIA (2), Luigia DI STASIO (1), Renata AURICCHIO (3), Serena VITALE (2), Laura GAZZA (4), Carmen GIANFRANI (2) - (1)Institute of Food Sciences, National Research Council,, Italie, (2)Institute of Protein Biochemistry, National Research Council, Italie, (3)Department of Translational Medical Science (Section of Paediatrics), and European Laboratory for the Investigation of Food-Induced Diseases, University “Federico II”,, Italie, (4)Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA-QCE), Italie

ABSTRACT CONTENT

Objectives
Recent studies suggested that gliadin proteins from the ancient (diploid) wheat T. monococcum retained a reduced number of toxic peptides and showed a high in vitro digestibility compared to modern wheat. In this study, we compared the immunological properties of gliadins from two T. monococcum cultivars with those of a T. durum, after in vitro gastrointestinal digestion.

Methods
Alcohol soluble gliadins from T. monococcum (Hamurabi and ID331-Pogna), and T. durum (Adamello) were digested either using a canonical enzymatic approach based on pepsin and chymotrypsin or by mimicking the in vitro gastrointestinal digestion process also including the brush border membrane enzymes. Peptides arising from digestion were characterized by proteomics and by ELISA (R5 competitive); the immune-stimulatory activity of gliadin digests was evaluated by detecting the IFN-γ production in gliadin-reactive T cell lines established from the small intestinal mucosa of HLA-DQ2+ with CD.

Results
Proteomics and ELISA experiments showed that several T cell epitopes of T. monococcum gliadins were degraded during the gastrointestinal treatment, whereas many immunogenic peptides of T. durum gliadins survived the gastrointestinal digestion. The T-cell response profile to T. monococcum gliadin was comparable to that obtained with T. aestivum gliadin after the pepsin/chymotrypsin hydrolysis. On the other hand, the in vitro gastrointestinal digestion drastically reduced the immune stimulatory properties of T. monococcum gliadin ($p<0.05$), whereas the activity of T. durum gliadins was only slightly affected.

Conclusion
In this study we demonstrated that gliadins from T. durum wheat are almost unaffected by the in vitro gastrointestinal digestion, whilst T. monococcum cultivars had a marked sensibility to digestion, thus determining lower toxicity for celiac disease patients.

Conflicts of interests
we declare no conflict of interest

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00187

Final poster ID: P6-18

Title: Effect of celiac peripheral blood mononuclear cells on intestinal epithelial barrier function

Presenting author: Deborah Delbue

Co-authors: Deborah DELBUE, Alice ITZLINGER, Bosse JESSEN, Hella PFFEIFERT, Federica BRANCHI, Donata LISSNER, Walburga DIETERICH, Britta SIEGMUND, Michael SCHUMANN - (1)Department of Gastroenterology, Infectious Diseases and Rheumatology, Campus Benjamin Franklin, Charité Universitätsmedizin, Allemagne

ABSTRACT CONTENT

Objectives
Intestinal epithelial barrier is altered in celiac disease (CD) patients. The role of non-adaptive immune mechanisms in the alteration of celiac barrier function is not fully understood. The aim of this study is to evaluate the effect of peripheral blood mononuclear cells (PBMCs) derived from CD patients on the barrier function of intestinal epithelial cells.

Methods
PBMCs were isolated from healthy controls, CD patients on a gluten-free diet (CD GFD) and active CD patients. Monocytes (CD14+) were sorted by MACS magnetic cell sorting. Caco2BBe cells were co-cultured with PBMCs or CD14+ cells. Cells were treated with or without IL15/Tglia to verify the role of gliadin stimulation on barrier function. Moreover, Caco2BBe cells were treated with IL15/Tglia alone to exclude possible toxic effects of gliadin on the epithelial barrier. Transepithelial resistance (TER) was measured to evaluate barrier integrity. Confocal microscopy after immunostaining was used to verify the localization of proteins with a role in epithelial barrier function (occludin, claudin-2 and ZO-1) and transcytosis of gluten peptides (CD71).

Results
Intestinal epithelial cells co-cultured with PBMCs and CD14+ cells from CD patients (CD GFD or active CD) presented a more pronounced decrease in TER in comparison with healthy controls. Intestinal epithelial cells treated with IL15/Tglia alone, as observed in untreated cells, did not show a decrease in TER. Although no differences in claudin-2 expression and localization were observed, co-culture of intestinal cells with CD monocytes caused a decrease in occludin expression, an abnormal subcellular distribution of ZO-1 as well as an altered localization of CD71.

Conclusion
PBMCs derived from CD patients have an effect on barrier function of intestinal epithelial cells, which is associated with changes in the expression pattern of tight junction proteins.

Conflicts of interests
None.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00201

Final poster ID: P6-19

Title: Investigating Celiac Disease Onset With Single-Cell RNA Sequencing

Presenting author: Aaron Daniel Ramirez-Sanchez

Co-authors: Aaron Daniel RAMIREZ-SANCHEZ (1), Xiaojing CHU (1), Yvonne KOOY-WINKELAAR (2), Frits KONING (3), Luisa MEARIN (2), Cisca WIJMENGA (1), Iris JONKERS (1), Yang LI (1), Sebo WITHOFF (1) - (1)UMCG, Pays-Bas, (2)Leiden University Medical Center, Pays-Bas, (3)Leiden University Medical Center - Leiden (Netherlands), Pays-Bas

ABSTRACT CONTENT

Objectives
Celiac Disease (CeD) is a complex immune disorder, triggered by gluten intake, in which immune and intestinal barrier homeostasis are deregulated. It is challenging to clearly identify the role of the primarily affected cell populations in CeD onset because this requires investigation of various cell populations involved in the processes mentioned above. Thus far, transcriptomic analyses of CeD samples have been performed on specific cell populations or cell mixtures. By these approaches, the molecular fingerprint of disease-associated cell-subtype specific changes might be missed or lost. Here, we investigate the differences in cell subtype specific transcriptome that exist in peripheral blood mononuclear cells (PBMCs) of CeD patients before and after development of the disease.

Methods
In total, we used frozen PBMC samples from 10 different children before and after being diagnosed, and from 10 control individuals matched for age, sex, and HLA-genotype condition. We generated single cell RNA sequencing profiles of more than 20000 cells using 10x Chromium platform.

Results
We identified the expected major lineages of PBMCs in our data and determined differential transcriptome profiles and cell-type abundance patterns in CeD onset. This data was compared with results from control individuals of the same cohort that did not develop CeD during the same follow-up period. Preliminary results show some variation at transcriptomic level in T cell population, but further processing of data needs to be performed in order to discard technical bias.

Conclusion
By doing this, we expect to better understand the changes that occur in the development of CeD. Moreover, we hope to find interesting markers that can be used as predictors of the disease. Lastly, we plan to intersect subject specific genotype information which was also generated with transcriptome data to uncover the effects of CeD-associated SNPs on gene expression in a cell-type specific manner.

Conflicts of interests
The authors declare no conflict of interest.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00202

Final poster ID: P6-20

Title: Identification of plasma cells as gluten peptide-presenting cells by use of peptide-MHCII-specific antibodies

Presenting author: Lene Høydahl

Co-authors: Lene HØYDAHL (1), Rahel FRICK (2), Lisa RICHTER (3), Ina HODNEBRUG (2), Omri SNIR (1), Kristin GUNNARSEN (1), Ole LANDSVERK (3), Rasmus IVERSEN (1), Jeliazko JELIAZKOV (4), Jeffrey GRAY (4), Shuo-Wang QIAO (1), Knut LUNDIN (5), Jørgen JAHNSEN (6), Frode JAHNSEN (3), Inger SANDLIE (2), Ludvig SOLLID (1), Geir Åge LØSET (2) - (1)Department of Immunology, University of Oslo and Oslo University Hospital, Norvège, (2)Department of Biosciences, University of Oslo, Norvège, (3)Department of Pathology, University of Oslo and Oslo University Hospital, Norvège, (4)Program in Molecular Biophysics, Johns Hopkins University, États-Unis, (5)Department of Gastroenterology, Oslo University Hospital, Norvège, (6)Department of Gastroenterology, Akershus University Hospital, Norvège

ABSTRACT CONTENT

Objectives
Celiac disease (CeD) is characterized by an inflammatory CD4+ T-cell response in the gut towards deamidated gluten peptides. These peptides are presented on disease-associated HLA-DQ molecules, but the cell subsets that express HLA-DQ and are responsible for specific peptide presentation in patients are largely unknown. The spatio-temporal details of antigen presenting are likely to be important for elucidating the disease mechanism, thus we aimed to explore this.

Methods
We generated monoclonal antibodies (mAbs) specific for the peptide-MHC (pMHC) complex of HLA-DQ2.5 and the immunodominant gluten epitope DQ2.5-glia-α1a using phage display. To improve our lead pMHC-specific mAb, we subsequently engineered high affinity variants using a semi-rational strategy based on docking models of the mAb:pMHC complex and phage display. Using these mAbs we assessed gluten-peptide presentation in freshly prepared single-cell suspensions of patient intestinal biopsies.

Results
The primary lead candidate mAbs binds the pMHC with nanomolar KD values and discriminate between highly similar gluten pMHCs. Analysis of cells from gut biopsies identified B cells and plasma cells as the most abundant cells presenting DQ2.5-glia-α1a in the inflamed gut mucosa. Further, we demonstrate that gut plasma cells from CeD patients express MHCII and the costimulatory molecules CD40 and CD86. The second generations mAbs engineered for high affinity achieved several 100-fold improved affinities over the mother clone while maintaining specificity.

Conclusion
The finding that B cells and plasma cells present gluten peptides points to a potential role of cells of the B cell compartment in CeD pathogenesis. We are currently exploring whether the pMHC-specific mAbs can be used block the pathogenic CD4+ T-cell response.

Conflicts of interests
LSH, RF, IS, LMS, and GÅL are holders of a patent application on the mAbs against gluten-pMHC complexes. The remaining authors disclose no conflicts.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00208

Final poster ID: P6-21

Title: Epitope mapping of mouse monoclonal 885 antibody recognizing a coeliac-related surface in transglutaminase 2

Presenting author: Dóra Csige

Co-authors: Dóra CSIGE (1), Rita ELEK (2), Matthew NOCK (1), Ádám DIÓS (2), Róbert KIRÁLY (1), Boglárka TÓTH (1), Ildikó SZABÓ (2), László FÉSÜS (1), Ilma Rita KORPONAY-SZABÓ (2, 3) - (1)Department of Biochemistry and Molecular Biology, University of Debrecen, Hongrie, (2)Departments of Pediatrics, University of Debrecen, Hongrie, (3)Heim Pál National Paediatric Institute, Hongrie

ABSTRACT CONTENT

Objectives
The main autoantigen of coeliac disease (CeD), transglutaminase 2 (TG2) has several biologically relevant conformational epitopes, including those recognised by CeD autoantibodies. We addressed these structural parts by mapping the binding epitope of MAb885 (non-commercial antibody developed and owned by Thermo Fisher Scientific, ImmunoDiagnostics) which is able to interfere with CeD binding to TG2 (Simon-Vecsei et al. PNAS 2012 109: 431-436).

Methods
Coeliac epitope 1 and 2 mutants of TG2 were produced by site-directed mutagenesis and tested with MAb885 in ELISA and bio-layer interferometry studies. Further point mutants and chimeric human-mouse TG2 constructs were designed and tested based on initial results. Competition with purified natural and cloned CeD patient-derived antibodies was assessed.

Results
The binding of MAb885 is highly conformational, thus recognises only structurally intact epitopes. MAb885 selectively interferes with the binding of CeD antibodies recognizing celiac epitope 2 and is able to release tissue-deposited IgA from CeD patients samples. However, the epitope of MAb885 only partially overlaps with the binding epitope of CeD antibodies and mutation of the main anchor point of epitope 2 (R19) does not decrease its binding, nor has MAb885 the same biological effects in cell culture as CeD antibodies. Results with chimeras indicate that the N-terminal domain of human TG2 and the core domain of both human and mouse TG2 have relevant anchor points for its binding. So far, six amino acids were found to be critical for building up the conformational epitope of MAb885.

Conclusion
Such antibodies or similar specific competitors can be useful in functional studies and in exploring whether interference with celiac antibody actions may lead to therapeutic benefits. Further, MAb885 is suitable to assess the structural integrity and amount of epitope 2 in various diagnostic ELISA tests for CeD.

Grant support: GINOP-2.3.2-15-2016-00015, NKFI 120392, EFOP-3.6.1-16-2016-00022, CE111 Interreg Focus in CD.

Conflicts of interests
MAb 885 featured in the patent application WO 2010/116196 A2

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00224

Final poster ID: P6-25

Title: Study of SIgA receptors in the Caco2 intestinal epithelial cell line

Presenting author: Roman Goguyer-Deschaumes

Co-authors: Roman GOGUYER-DESCHAUMES, Benoit CLEMENT, Corinne LEBRETON, Georgia MALAMUT, Nadine CERF-BENSUSSAN - (1)inserm 1163, France

ABSTRACT CONTENT

Objectives
We have suggested SIgA binding to the transferrin receptor (CD71) can promote transepithelial transport of gluten peptides. Yet, we recently observed that SIgA and CD71 are indirect and involves (an)other as yet unidentified receptor(s) for SIgA. Herein, we attempt to characterize the receptor(s) for SIgA in Caco2 epithelial cell line.

Methods
SIgA binding was analysed i) by cytometry after surface shaving with proteases and/or glycolipid depletion; ii) by screening an array displaying 300 glycan patterns. Proteins binding SIgA were searched by immunoprecipitation (IP) followed by mass spectrometry and their role in SIgA binding tested after or not CRISPR-Cas9 inactivation by flow cytometry, Fluorescence Resonance Energy Transfer (FRET) and Proximity Ligation assay (PLA). Alternatively, Caco-2 cells were transduced with a CRISPR library that targets 19050 genes and cells with impaired SIgA binding were FACS sorted and processed for next generation sequencing.

Results
Combined depletion of cell surface proteins and glycolipids abolished SIgA binding. IP and mass spectrometry identified three proteins, SCAMP3, BCAP31 and HM-13, in SIgA precipitates. Their close interaction with SIgA and CD71 was demonstrated by PLA and FRET but CRISPR-Cas9 depletion did not impair SIgA binding. Screening of the glycolipid array indicated preferential binding of SIgA to globosides (Gb3 and Gb4), isoglobosides (iGb3 and iGb4) and neolactosides. Caco-2 cells were successfully transduced with the CRISPR library and cells lacking SIgA binding will be sorted by flow cytometry for analysis.

Conclusion
Binding of SIgA to Caco2 cell surface is likely a complex process implicating both glycolipids and proteins and the formation of a large complex containing CD71. Definition of molecules that can directly bind SIgA is in progress, and should help to disentangle the role of SIgA in the transcytosis of gluten peptides.

Conflicts of interests
Authors declare no conflict of interest

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00227

Final poster ID: P6-26

Title: The Celiac Disease Nothern Netherlands cohort (CeDNN): Setting up a biobank allowing multi-omics analyses

Presenting author: Astrid Maatman

Co-authors: Astrid MAATMAN (1), Jody GELDERLOOS (1), Ineke TAN (1), Heleen VULPEN, VAN (2), Renate THIJEN (2), Gerda KAMMINGA (2), Rinse WEERSMA (1), Marijn VISSCHEDIJK (1), Gieneke GONERA (2), Cisca WIJMENGA (1), Sebo WITHOFF (1) - (1)UMCG, Pays-Bas, (2)WZA, Pays-Bas

ABSTRACT CONTENT

Objectives
Thusfar, 43 genetic risk loci have been associated to celiac disease. It is still unclear why some individuals carrying these risk factors develop Celiac disease (CeD), while others don't. Large cohort studies collecting both extensive phenotype information as well as samples for multi-omics analysis are pivotal to further elucidate the pathophysiology of CeD. Here, we describe the set-up of a large data and sample repository that will be used to fill this gap.

Methods
A multi-center study-protocol was approved by our local Medical Ethical Committee (METC). It is aimed to include 500 CeD patients, 1000 partners and relatives (genetic controls), 500 partners (environmental controls) and IBS patients (disease controls). Protocols for collection, processing and storage were harmonized with the LifelinesDEEP cohort study, designed for omics-analysis of the general population.

For example, the participants contributed lifestyle, environmental and gastro-intestinal health questionnaires, medical records and biomaterials, for instance genetics, transcriptomics, metabolomics and microbiome analyses. New to the CeDNN protocol is the collection of biopsies and fresh materials allowing single cell RNA sequencing analyses, generation of patient-specific pluripotent stem cells (iPSCs) and culturable microbiomes.

Results
Since 2015, in total 164 CeD patients (103 pediatric, 61 adults) of which 62% are female, and 121 relatives or partners (7 pediatric, 114 adults); 70% female) have been included. From 6 patients we have collected biomaterials before and after (3 months and 6 months) the start of a gluten free diet.

Conclusion
While this cohort keeps on growing it will provide valuable resources that will enable the study of CeD disease on clinical, cellular and molecular level, and allow to better understand the interplay of genetics, environment and microbiome role in CeD pathophysiology.

Conflicts of interests
We have nothing to disclose.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00228

Final poster ID: P6-27

Title: Mechanisms of human SIgA binding to human intestinal epithelial cells

Presenting author: Benoît Clément

Co-authors: Benoît CLÉMENT (1, 2), Roman GOGUYER-DESCHAUMES (1), Corinne LEBRETON (1), Georgia MALAMUT (1), Nadine CERF-BENSUSSAN (1) - (1)Laboratory of Intestinal Immunity - Inserm UMR1163 - IMAGINE Institute, France, (2)Université Paris-Descartes-Sorbonne Paris Cité, France

ABSTRACT CONTENT

Objectives
We have previously suggested that gliadin peptides can be transcytosed through the duodenal epithelium of patients with active coeliac disease due to internalisation of gliadin-secretory IgA (SIgA) complexes after interaction of SIgA with the transferrin receptor (CD71). Herein, we have analysed how SIgA binding to epithelial cells is affected by full inactivaction of CD71 and the possible contribution of other protein and lipid receptors.

Methods
CD71 was inactivated by the CRISPR-Cas9 method in the Caco-2 TC7 epithelial cell line. Binding of monomeric IgA, polymeric (pIgA), SIgA and of holotransferrin was tested by flow cytometry (FACS), immunoprecipitation (IP), fluorescence resonance energy transfer (FRET) and proximity ligation assay (PLA). Expression of IgA receptors was assessed by reverse transcription quantitative polymerase chain reaction, western-blot and FACS. Caco-2 cell surface shaving was performed by incubation with trypsin, and glycolipids-deficient cells were obtained by inactivation of UGCG by CRISPR-Cas9 method.

Results
Caco-2 cells fully inactivated for CD71 (KO cells) were obtained and stably expanded. While binding of pIgA and holotransferrin was abolished in CD71 KO cells, binding of SIgA was not modified. CD71-SIgA interactions could be demonstrated by FRET and PLA but not by IP. No other IgA receptor was detected in Caco-2 cells. Cell surface shaving and inactivation of glycolipid synthesis suggested that proteins and glycolipids respectively account for 60% and 30% of SIgA binding to Caco-2 cells with an additive effect.

Conclusion
Our results indicate that SIgA and CD71 interact at the surface of the Caco-2 epithelial cell line but that the interaction is indirect and involves (an)other as yet unidentified receptor(s) that is(are) necessary for SIgA binding. Further work in progress aims at defining the receptor(s) and its(their) interaction(s) with CD71 and SIgA (see complementary abstract by R. Goguyer-Deschaumes, B. Clément et al.).

Conflicts of interests
Authors declare no conflict of interest.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00235

Final poster ID: P6-28

Title: Cytotoxic effects lead the onset of the gliadin-specific enteropathy in HLA-DQ8 tg mice.

Presenting author: Vera Rotondi Aufiero

Co-authors: Vera ROTONDI AUFIERO (1), Francesco MAURANO (1), Tasaku OGITA (2), Diomira LUONGO (1), Giuseppe MAZZARELLA (1), Soichi TANABE (2), Mauro ROSSI (1) - (1)Institute of Food Sciences-CNR, Italie, (2)Hiroshima University, Graduate School of Biosphere Science, Japon

ABSTRACT CONTENT

Objectives
We have shown that HLA-DQ8 tg mice, challenged with indomethacin (indo), a nonspecific cyclooxygenase inhibitor, and wheat gliadin developed villus blunting and increased crypt depth. Herein, we studied the kinetic of cytotoxic and innate immune effects associated with the enteropathy onset.

Methods
We intragastrically administered wheat gliadin (25 mg/kg dose) to DQ8 mice (6-8 wks-old) on days 0, 3, 5, and 7; indo (1.5 mg/100 ml) was given in the drinking water; mice were sacrificed on day 10. Cryostat sections of small intestine were stained with Mayer's hematoxylin to measure villus height and crypt depth by an ocular micrometer. Mucosal sections were also analysed by hypoxyprobe-1 and by anti-mouse tissue transglutaminase (tTG). Subtypes of dendritic cells in the lamina propria (LP) were detected by immunofluorescence microscopy. RNA was extracted from intestinal samples and analysed by RT-PCR.

Results
The indo+gliadin treatment specifically induced a rapid change of examined morphological parameters, detectable on day 3. Interestingly, intestinal IFN-g mRNA only increased on day 7. On day 10, treated mice showed enhanced expression of tTG along the LP underneath the epithelial line of both villi and crypts. At this time, we also found a marked hypoxic environment encompassing both enterocytes and LP cells. This was associated to high numbers of LP CD11c+CD103+, CD11b+CD11c+ and CD11b+CD103+ dendritic cells.

Conclusion
A gliadin-specific enteropathy resembling features of Celiac disease was induced in HLA-DQ8 mice. Our data suggested that cytotoxic effects preceded the inflammatory response at the onset of the enteropathy.

Conflicts of interests
none

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00256

Final poster ID: P6-29

Title: Further Development of a Novel in vivo Model for Celiac Disease in Mice with a Humanized Immune System

Presenting author: Manuel Encalada Ventura

Co-authors: Manuel ENCALADA VENTURA (1), Victor ZEVALLOS (1), Robert OSE (2), Iris BELLINGHAUSEN (2), Detlef SCHUPPAN (1) - (1)TIM, Allemagne, (2)Dermatology, Allemagne

ABSTRACT CONTENT

Objectives
We aimed to generate a CeD mouse model with a thoroughly humanized immune system to aid in mechanistic studies and in drug development.

Methods
We used immunodeficient NOD/SCID/γc-/- (NSG) mice as recipients for peripheral blood mononuclear cells (PBMC) from donors with active CeD (HLA-DQ2 and -DQ8+ donors). PBMC were prestimulated with transglutaminase 2 (TG2) treated pepsin-trypsin digested gliadin (PT-gliadin) and 200 U IFN-gamma and injected i.p. into the NSG mice (n= 3-4 per group). One week later, mice were fed either with a defined diet containing 25% of protein as gluten or with a gluten free diet (GFD) for 5-6 weeks. Mice that received no PBMC or PBMC without TG2-treated PT-gliadin served as controls. Body weight was monitored weekly. IHC and RT-PCR for human and murine CD45, CD3, IFNγ, IL-1β, IL-6, and TNF-α were performed on harvested small intestine (duodenum, jejunum and ileum) and spleens from the human PBMC-engrafted mice. Flow cytometry analysis was performed on murine spleen cell suspensions.

Results
Mice that received PBMC from active celiac donors and fed with the gluten-containing diet developed a significantly higher weight loss than the controls. This correlated with a significantly more severe inflammation score on mini-endoscopy. Histological assessment showed mild but significant villous atrophy and crypt hyperplasia in both duodenum and jejunum, coupled with a significant increase of both murine and human inflammatory cell infiltrates in the small intestine of mice that received PBMC, as determined by quantitative IHC and an increase in pro inflammatory cytokine expression.

Conclusion
1.- NOD/SCID/γc-/- (NSG) mice that received gluten sensitized T cells form active CeD donors develop a mild villous atrophy and crypt hyperplasia, with immune cell features characteristic of CeD;

2.- This model is currently refined towards a more prominent CeD phenotype, to allow more in-depth mechanistic and therapeutic studies;

3.- Tissue damage in this model is primarily related to the human immune response.

Conflicts of interests
Non

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00263

Final poster ID: P6-30

Title: Amylase Trypsin Inhibitors (ATIs): Analyses of their bioactivity and protein content in a large spectrum of wheat genotypes cultivated at 3 different locations

Presenting author: Valentina Curella

Co-authors: Valentina CURELLA (1), Manjusha NEERUKONDA (1), Ernesto BOCKAMP (1), Malte SIELAFF (2), Muhammad AFZAL (3), Stefan TENZER (2), Friedrich LONGIN (3), Detlef SCHUPPAN (1) - (1)Istitute of translational immunology University medical center Mainz, Allemagne, (2)Istitute for immunology University medical center Mainz, Allemagne, (3)State Plant Breeding Institute, University of Hohenheim, Allemagne

ABSTRACT CONTENT

Objectives
Wheat amylase-trypsin inhibitors (ATIs) are nutritional activators of innate immunity. They stimulate toll-like receptor 4 (TLR4) on intestinal monocytes, macrophages, and dendritic cells, promoting intestinal and extra-intestinal inflammation. We characterized the biological activity of ATIs and the quantity of the 8 predominant ATI-species in 180 different wheat genotypes, cultivated in 3 different location.

Methods
180 different wheat genotypes were cultivated under controlled conditions at 3 different locations in Germany. ATIs were quantitatively extracted. Potential lipopolysaccharide was depleted via Polymyxin B (PMB) affinity chromatography. Biological activity was determined using dual reporter TLR4 transfected HeLa cells and measured using dual luciferase assay.

Mass spectrometry analyses were performed with ATI target peptide concatamers as standard that permitted exact quantification of ATIs CM1, CM2, CM3, CM16, CM 17, 0,19, 0,28 0,53).

Results
ATI bioactivity showed a high variability (up to 6-fold difference), even among modern hexaploid wheats. Both genotype and location were strong determinants of bioactivity. Proteomic analysis reflected this variability of of ATIs bioactivity showing an up to 2-fold variation among the tetrameric ATI CM1,2,3,16,17, and an up to 4-fold variation among the dimeric ATI 0.19, 0.28, 0.53. However, there was no good correlation between bioactivity and the amount of a certain ATI-subtype.

Conclusion
ATI can be quantitatively extracted for wheat and processed foods; 2) a dual reporter TLR4 transfected HeLa cell line was established that permitted sensitive and reproducible measurement of ATI bioactivity; 3) LPS contamination may occur during the ATIs extraction process, but can be eliminated with PMB. 4) there is a high variability of ATI bioactivity and subspecies content depending on wheat genotypes and site of cultivation.

Conflicts of interests
I have no potential conflicts of interest to report

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00274

Final poster ID: P6-31

Title: The microbiome in celiac disease: toward studying patient-specific host-microbe interactions

Presenting author: Jelle Slager

Co-authors: Jelle SLAGER (1, 2), Renée MOERKENS (1), Joram MOOIWEER (1), Cisca WIJMENGA (1), Sebo WITHOFF (1) - (1)University Medical Center Groningen, Pays-Bas, (2)Netherlands Organ-on-Chip Initiative, Pays-Bas

ABSTRACT CONTENT

Objectives
Due to the multifactorial etiology of celiac disease (CeD), one of the biggest challenges in CeD research is to recapitulate this complexity in vitro. To move toward a representative in vitro model system, we will recreate the interface between the human microbiome and the host intestinal epithelial cells (IECs) on a microfluidic chip.

Methods
We will create the intestinal epithelial layer using IECs differentiated from induced pluripotent stem cells derived from patients and control individuals to capture their respective genetic backgrounds. In the context of the Celiac Disease Northern Netherlands cohort (CeDNN), fecal samples are collected from CeD patients and healthy controls and stored, both for metagenomic shotgun sequencing (MGS) and for cultivation. Besides taxonomic and functional profiling of the collected samples, we performed targeted analysis to detect whether the abundance of specific CeD-relevant genes correlated with disease status. As a partner in the Netherlands Organ-on-Chip Initiative, we will set up an intestine-on-chip model, in which we will assay the impact of selected bacterial species or metabolites on the human intestinal barrier.

Results
Comparing an MGS dataset from 43 CeD patients with the Lifelines DAG3 population cohort (n=7620), we could confirm previously reported taxonomical trends, including the increased abundance of Escherichia coli and the depletion of Bifidobacterium longum in CeD. Several other taxa and functional classes of genes (e.g. metabolic pathways) were found differentially abundant between CeD patients and controls in our pilot data.

Conclusion
We use full MGS to prioritize bacterial species and metabolites for future studies into the role of the microbiome in CeD. The availability of culturable fecal samples allows us to introduce, in an autologous fashion, the CeD microbiome, patient-derived bacterial strains, or microbial metabolites relevant to CeD into the intestine-on-chip system containing IECs derived from the same individual. This system constitutes an important step toward studying patient-specific host-microbe interactions in CeD.

Conflicts of interests
None.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00276

Final poster ID: P6-32

Title: Clustering based approach for population level identification of Celiac disease associated T-cell receptor β-chain CDR3 sequences

Presenting author: Päivi Saavalainen

Co-authors: Päivi SAAVALAINEN (1), Dawit A YOHANNES (1), Katri KAUKINEN (2), Kalle KURPPA (3), Dario GRECO (4) - (1)Research Programs Unit, Translational Immunology, University of Helsinki, Finlande, (2)Department of Internal Medicine, Tampere University Hospital and Faculty of Medicine and Life Sciences, University of Tampere, Finlande, (3)Center for Child Health Research, Tampere University Hospital, University of Tampere, Finlande, (4)BioMediTech Institute, University of Tampere, Finlande

ABSTRACT CONTENT

Objectives
Although we have recently demonstrated the utility of deep immune repertoire sequencing for detecting celiac disease (CD) associated T-cell receptor (TCR) CDR3β sequences from unsorted CD patient repertoires (Yohannes et al. 2017), the immense diversity of the immune repertoire has limited such investigations to mostly “public” CDR3 sequences. We aimed to develop a method that allows detection of CD associated public and private TCR CDR3s by comparing groups of unsorted immune repertoire samples.

Methods
Deep sequencing of PBMC TCR CDR3β was performed from CD patients before and after a 3-day gluten challenge (n=4). We developed a computational pipeline that allows population level repertoire comparison. The pipeline first clusters CDR3 sequences within each sample, then matches clusters across samples, and applies statistical differential abundance testing at the level of the identified matched clusters (sub-repertoires). CDR3 sequences belonging to sub-repertoires that show significant differential abundance are further filtered by permutation based testing (p-value < 0.05).

Results
We report a new methodology for the identification celiac disease associated TCR CDR3s by population level comparison of unsorted immune repertoire samples. Applying the method on our dataset identified significantly high numbers of previously known gluten reactive CDR3β sequences than would be expected by chance (Qiao et al. 2013, 2011; Han et al. 2013). The identified CDR3β sequences also showed agreement in TRBV-gene and positional amino acid usage patterns with previously known gluten reactive CDR3β sequences. Importantly, both private and public CD-associated were identified.

Conclusion
Immune sub-repertoires of similar immuno-genomic features, shared across unrelated individuals, encode common immunological information. These common immunological sub-repertoires can serve as viable units of population level immune repertoire comparison to identify CD-associated CDR3 sequences.

Conflicts of interests
The authors declare no conflict of interest.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00280

Final poster ID: P6-33

Title: Prediction of potential celiac disease related adverse immune reactions to novel proteins in food

Presenting author: Antonio Fernandez Dumont

Co-authors: Antonio FERNANDEZ DUMONT (1), F. Javier MORENO (2), Frits KONING (3) - (1)European Food Safety Authority, Italie, (2)Instituto de Investigación en Ciencias de la Alimentación, CIAL (CSIC-UAM), Espagne, (3)Leiden University Medical Centre, Pays-Bas

ABSTRACT CONTENT

Objectives
Before novel proteins in food can be placed on the market, a safety assessment is performed by food safety authorities relying on studies at the cutting edge of science. This is only possible if new scientific knowledge is rapidly transferred from academia into regulatory science which also requires regular updates.

Methods
The exact pathogenic mechanisms of immune adverse reactions to proteins in foods are insufficiently understood for most of the best characterised diseases (e.g. IgE-mediated allergy, food protein-induced entorocolitis, eosinophilic eosophagitis, proctocolitis). An exception to the limited knowledge is celiac disease for which the main food proteins involved have been described.

Results
Information available on the involvement of the immune system in celiac disease is founded under solid grounds where pro-inflammatory T cells targeted to gluten fragments bound to specific HLA-DQ2 or HLA-DQ8 molecules are well known. This information sets the basis for the development of a risk assessment strategy for novel proteins in food in a stepwise approach manner developed by the European Food Safety Authority (EFSA). Under such strategy, if knowledge on the novel protein under assessment is insufficient to support its safety, in silico and/or in vitro approaches are proposed to eliminate concerns on the capacity of a novel protein to trigger celiac disease.

Conclusion
The scientific strategy developed by EFSA will streamline the prediction capacity of adverse immune reactions to novel proteins in a risk assessment context. Two critical elements that require further considerations are the development of: i) additional considerations on position/nature of amino acids that are used to disregard concerns because a specific sequence fails to mimic immunogenic gluten-derived epitopes; and ii) inclusion criteria used to build up an appropriate database that is publicly available, curated regularly and designed for risk assessment purposes.

Conflicts of interests
The authors declare that they have no conflicts of interest.

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00289

Final poster ID: P6-34

Title: Evaluation Of Intestinal Damage After Gluten Introduction And Prior To Seroconversion In Children Developing Coeliac Disease Later In Life – Data From The PreventCD Cohort

Presenting author: Johanna Kreutz

Co-authors: Johanna KREUTZ (1), Caroline MEIJER (2), Renata AURICCHIO (3), Gemma CASTILLEJO (4), Paula CRESPO ESCOBAR (5), Judit GYIMESI (6), Corina HARTMAN (7), Sanja KOLACEK (8), Sibylle KOLETZKO (9), Ilma KORPONAY-SZABO (10), Eva MARTINEZ OJINAGA NODAL (11), Malgorzata PIESCIK-LECH (12), Isabel POLANCO (13), Carmen RIBES KONINCKX (5), Raanan SHAMIR (7), Hania SZAJEWSKA (12), Riccardo TRONCONE (3), Katharina WERKSTETTER (9), Luisa MEARIN (2), Anita VREUGDENHIL (1) - (1)Maastricht University Medical Centre, Department of Paediatrics and NUTRIM School of Nutrition and Translational Research in Metabolism, Pays-Bas, (2)Leiden University Medical Center, Dept. of Pediatrics, Leiden, Pays-Bas, (3)University “Federico II”, Department of Translational Medical Science, Section of Paediatrics and European Laboratory for Food-Induced Disease (Elfid), Italie, (4)Hospital Universitario Sant Joan de Reus, Pediatric Gastroenterology Unit, Espagne, (5)La Fe University Hospital, Department of Pediatric Gastroenterology and Hepatology, Espagne, (6)Heim Pál Children's Hospital, Hongrie, (7)Schneider children’s medical center of israel , institute of gastroenterology, nutrition and liver diseases, sackler faculty of medicine,tel aviv university, Israël, (8)Zagreb University Medical School, Referral Center Pediatric Gastroenterology and Nutrition, Croatie, (9)LMU - Ludwig Maximilian's University Munich Medical Center, Dr. von Hauner Children's Hospital, Allemagne, (10)University of Debrecen and Heim Pál Children's Hospital, Hongrie, (11)La Paz University Hospital, Dept. of Pediatric Gastroenterology and Nutrition - Madrid (Spain), Espagne, (12)The Medical University of Warsaw, Department of Paediatrics, Pologne, (13)La Paz University Hospital, Dept. of Pediatric Gastroenterology and Nutrition, Espagne

ABSTRACT CONTENT

Objectives
Intestinal mucosal damage is a hallmark of coeliac disease (CD) and is hypothesised to be important in CD aetiology. Circulating intestinal fatty acid binding protein (I-FABP) concentration is a marker for enterocyte damage in the small intestine. By measuring serum I-FABP, we evaluated whether mucosal damage is present before and after gluten introduction and prior to CD seroconversion.

Methods
The PreventCD project studies the influence of nutrition, environmental factors, immunology and genetics on CD development in European children at risk to develop CD based on a positive family history and HLA genotype. Subjects were followed up from birth with serial blood sampling. Fifty-seven children who developed CD (cases) were randomly selected from the PreventCD cohort and matched to 75 controls who did not develop CD, based on age, sex and HLA risk group. I-FABP concentrations were measured in samples before and after gluten introduction, all taken before CD seroconversion.

Results
I-FABP concentrations in samples obtained prior to gluten introduction did not differ between cases and controls (p=0.809).The control group showed a significant decrease of I-FABP concentration after gluten introduction (p=0.039), whereas levels did not decrease in the cases later developing CD (p=0.519). I-FABP concentrations in samples obtained between 6 and 11 months of age, following gluten introduction and prior to seroconversion, were significantly higher in cases (median=2230 pg/mL) compared to controls (median=1941 pg/mL) (p=0.01).

Conclusion
In this cohort of high-risk subjects, children who developed CD later in life showed higher I-FABP concentrations, a marker for enterocyte damage, in the months following gluten introduction. The findings suggest the presence of temporary

intestinal damage in the first year of life in children who develop CD. These divergent patterns of I-FABP concentrations warrant further investigation focusing on intestinal damage in CD prior to seroconversion.

Conflicts of interests

No conflict of interest to declare

POSTERS

THEME :
OMICS & PATHOGENESIS

Abstract #: ICDS00293

Final poster ID: P6-35

Title: Small intestinal transcriptional analysis outlines celiac disease patients heterogeneity

Presenting author: Valentina Discepolo

Co-authors: Valentina DISCEPOLO (1), Olivier TASTET (2), Ian LAWERENCE (1), Joaquin SANZ (1), Luis BARREIRO (1), Bana JABRI (1) - (1)University of Chicago Medicine, États-Unis, (2)University of Montreal, Canada

ABSTRACT CONTENT

Objectives
Celiac disease (CeD) is characterized by a small intestinal enteropathy with intraepithelial lymphocyte infiltration, crypts hyperplasia and villous atrophy. Despite a common histological picture, the pathways leading to tissue destruction vary across CeD patients as suggested by epidemiological, clinical and immunological data. In line with this hypothesis, we analyzed the duodenal transcriptional signature of active CeD individuals to investigate their heterogeneity and identify novel pathways involved in disease development.

Methods
Duodenal biopsies obtained from 62 non-celiac subjects (CTR) and 48 active CeD patients (ACD) undergoing upper gastrointestinal endoscopy were collected in RNA-later, processed for RNA isolation and cDNA library generation. RNA-sequencing was performed on HiSeq Illumina 4000. All patients were enrolled at the University of Chicago and the study protocol was IRB approved.

Results
A principal component analysis (PCA) of transcriptional data revealed a scattered distribution of ACD, as a group. Looking specifically at the top thousand most highly variable genes, three distinct clusters of ACD were identified using a Seurat approach (Satija et al. 2015). Interestingly, one of the groups included patients that clustered with CTR, while the other two included individuals that appeared to be clearly separated from CTR. Early age at diagnosis and a majority of M over F characterized, respectively, the other two groups. Furthermore, we were able to identify a “common core” of CeD-specific genes, including those with a similar expression pattern across all ACD, as well as cluster-specific pathways.

Conclusion
Despite a common histopathological picture, transcriptomic analysis revealed distinct clusters of ACD patients, mirroring both clinical differences and immunological heterogeneity. Patients’ grouping has key implications for future personalized medicine approach, in particular to design targeted preventive and therapeutic strategies.

Conflicts of interests
The authors have no conflict of interest to disclose

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00016

Final poster ID: P7-01

Title: Use of Cladribine for Ulcerative Jejunitis: A Single-Center Experience in North America

Presenting author: Amelie Therrien

Co-authors: Amelie THERRIEN (1), Lauren YANG (2), Sarah SHANNAHAN (2), Shakira YOOSUF (1), Jocelyn SILVESTER (3), Daniel LEFFLER (1), Rupa MUKHERJEE (1), Ciaran KELLY (1) - (1)Celiac Center, Beth Israel Deaconess Medical Center, États-Unis, (2)Division of Gastroenterology, Beth Israel Deaconess Medical Center, États-Unis, (3)Celiac Research Program, Harvard Medical School, États-Unis

ABSTRACT CONTENT

Objectives
Cladribine is an anti-neoplastic agent used in refractory celiac disease(RCD).Ulcerative jejunitis(UJ) is a distinct form of RCD.We report the clinical response and evolution of three UJ cases treated with cladribine.

Methods
Chart review from a US tertiary care center over 46 months.Cases had positive tTG-IgA, Marsh 3 lesions on biopsies and jejunal ulcerations on endoscopy. Cell surface markers were assessed by immunohistochemistry and flow cytometry, and clonal T-cell receptor gene rearrangements (TCR-GR) were identified by PCR.

Results
Three distinct presentations are reported(2 females, mean age 58 years). Case 1 had UJ at the time of celiac disease diagnosis; Case 2&3 developed UJ 1.5 and 17 years after diagnosis. Case1:recurrent small bowel obstructions. Case 2:severe malnutrition and diarrhea,unable to tolerate oral intake. Case 3:recurrent GI bleeds. They all had clonal TCR-GR, with Case 2 having 57% of sCD3-CD4-CD8-iCD3+cells. All three failed treatment with open capsule budesonide. Cladribine regimen was 0.1 mg/kg/day for 5 days. Six-month clinical improvement was seen in all cases (symptoms, BMI, albumin, number of hospitalized days) after cladribine therapy, however, Case 1&3 had recurrent GI bleeds and Case 2 had recurrent weight loss and persistence of Marsh 3b with RCD II phenotype. Case 3 received a second course of cladribine for recurrent bleeding. Adverse events included fever (n=2), C. difficile infection (n=1), shock from pyelonephritis (n=1) and worsening of anemia (n=2). Follow-up ranged from 7 to 27 months.

Conclusion
Cladribine was associated with initial clinical improvement in three cases with distinct clinical presentations of UJ who initially failed budesonide treatment. Recurrent GI bleeds may be expected. Despite initial improvement,one case with RCD II failed cladribine therapy. Further studies are needed on the use of cladribine in various UJ presentations.

Conflicts of interests
All outside the submitted work: Takeda (DL,JS,CK), Cour (JS, CK), Biomedal (JS), Glutenostics (JS, CK) Innovate, ImmunogenX, Aptalis (CK).

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00045

Final poster ID: P7-02

Title: A capsule endoscopy and double-balloon enteroscopy sequential approach for early detection of complications in celiac disease: results of a prospective study

Presenting author: Luca Elli

Co-authors: Luca ELLI (1), Francesca FERRETTI (1), Stefania ORLANDO (1), Maurizio VECCHI (2), Roberto PENAGINI (2), Gian Eugenio TONTINI (2) - (1)Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Center for the Prevention and Diagnosis of Celiac Disease, Gastroenterology and Endoscopy Unit, Italie, (2)Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Department of Pathophysiology and Transplantation, Gastroenterology and Endoscopy Unit, Italie

ABSTRACT CONTENT

Objectives
To evaluate the performance of capsule endoscopy (CE) and double-balloon enteroscopy (DBE) in complicated celiac disease (CCD).

Methods
All consecutive suspected CCD patients were prospectively included and underwent CE and/or DBE in case of: persistence of symtoms despite a gluten-free diet (GFD),increased anti-transglutaminase levels,lack of compliance to GFD and follow-up of CCD.Technical, clinical and biochemical parameters were collected.

Results
130 suspected CCD patients were included (97 females, mean age 49±16) undergoing 151 CE and 23 DBE.The diagnostic yield (DY) of CE was 46%: 69 cases of SB atrophy were identified. In relation to duodenal histology, CE sensitivity (Sn) was 63% and Specificity (Sp) 80%.The concordance between CE and DBE was substantial ($\kappa = 0.62$).The DY of DBE was 83% and histology confirmed endoscopic atrophy in all cases (Sn 100%, Sp 95%). Up to 40% of patients presented lesions involving the distal portion of SB, unreachable at traditional upper gastrointestinal endoscopy.Patients older than 50 years (at the CE examination or at the CD diagnosis) and a duration of disease lower then 5 years were at higher risk of positive CE (RR 1.6, 1.7 and 1.5 respectively, $p<0.05$). Twenty-five patients with premalignant/malignant lesions were identified (12 refractory CD (RCD) type 1, 7 RCD type 2, 6 enteropathy-associated T-cell lymphoma (EATL)),more frequently among symptomatic patients (RR 5.2, $p<0.05$).A 1-year mortality rate of 78% for EATL and 25% for RCD2 was assessed.

Conclusion
The “real CCD” is rare (0.8%) but affected by an extremely poor prognosis.The first years after diagnosis in older and symptomatic patients require greater attention.In this setting,CE must be the first-line approach to detect complications and identify patients deserving DBE for an effective sequential approach.

Conflicts of interests
Nothing to disclose.

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00046

Final poster ID: P7-03

Title: Small Bowel Adenocarcinoma as a complication of Celiac Disease: features of an old association in the new millennium

Presenting author: Giacomo Caio

Co-authors: Giacomo CAIO (1), Roberto DE GIORGIO (1), Francesco URSINI (1), Giorgio ZOLI (1), Umberto VOLTA (2) - (1)University of Ferrara, Italie, (2)University of Bologna, Italie

ABSTRACT CONTENT

Objectives
Small bowel adenocarcinoma (SBA) is a rare neoplasm which can occur in a sporadic form or can be associated with a number of predisposing conditions such as hereditary syndromes and immune-mediated intestinal disorders, e.g. celiac disease. The features of SBA in the context of coeliac disease remain only partly understood. This study was aimed to show the main clinical features, diagnostic procedures and management options of SBA cases detected in a large cohort of coeliac patients diagnosed in a single tertiary care center.

Methods
We retrospectively reviewed all the SBA cases detected in a cohort of 770 CD patients (599 females; F / M ratio: 3.5:1; median age at diagnosis 36 years, range 18-80 years), diagnosed at the Celiac Disease Referral Center of our University Hospital (Bologna, Italy) from January 1995 to December 2014.

Results
Five (0.65%) out of our 770 coeliac patients developed SBA. All of them were female with a mean age of 53 years (range 38-72 years). SBA, diagnosed at the same time of the CD diagnosis in three cases, was localized in the jejunum in four cases and in the duodenum in one case. The clinical presentation of SBA was characterized by intestinal sub-occlusion in two cases, while the predominant manifestation of the remaining three cases was iron deficiency anaemia, abdominal pain and acute intestinal obstruction, respectively. All the patients were referred to surgery, and three cases with advanced stage neoplasia were also treated with chemotherapy. The overall survival rate at 5 years was 80%.

Conclusion
Compared to other forms of SBA (sporadic, Crohn- and hereditary syndrome-related) SBA occurring in coeliac patients is characterized by a younger age of onset, a higher prevalence in female gender and a better overall survival.

Conflicts of interests
The Authors declare no conflict of interest.

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00058

Final poster ID: P7-04

Title: microRNA profiling in enteropathy associated T-cell lymphoma and refractory celiac disease

Presenting author: Luca Elli

Co-authors: Luca ELLI (1), Gabriella GAUDIOSO (1), Maria Antonella LAGINESTRA (2), Stefano PILERI (2), Stefano FERRERO (1), Silvano BOSARI (1), Antonio DI SABATINO (3), Alessandro VANOLI (3), Maurizio VECCHI (1), Leda RONCORONI (1), Vincenza LOMBARDO (1), Valentina VAIRA (1) - (1)Fondazione IRCCS Ca' Granda, Italie, (2)Sant'Orsola Malpighi Hospital, Italie, (3)Fondazione IRCCS Policlinico San Matteo, Italie

ABSTRACT CONTENT

Objectives
Peripheral T-cell lymphomas (PTCL) are orphan diseases and usually develop in the scenario of chronic inflammation as celiac disease (CD). Refractory celiac disease (RCD), especially type II, affects a small proportion of CD and has an increased risk of enteropathy associated T cell lymphoma (EATL). Our aim has been to profile microRNA contents in CD, RCD and EATL to obtain molecular biomarkers useful to classify and stratify CD patients according to their “neoplastic risk”

Methods
We collected a clinical series composed by 7 RCD, 24 EATL, 10 angioimmunoblasticTL, 10 Anaplastic large cell lymphoma, 21 PTCL. EATL and lymphocytic infiltrate of RCD II (RCD-TIL), were obtained by Laser MicroDissection from FFPE blocks.The expression profile of 301 miRNA was determined using TaqMan Array Microfluidic Cards (Thermo Fisher Scientific). Statistical analysis was performed using BRBArray Tools, GenePattern and R Software Packages

Results
Our data show that miRNA profiling distinguished EATLs from other PTCLs. EATL are characterized by a subset of miRNAs significantly up-or down-modulated compared to PTCLs. When RCD patients were considered in the analysis, our data showed that RCD II TILs are more similar to EATLs than to other PTCLs (by PCA analysis). Therefore these results suggest that unique miRNA signatures are conserved by RCD and EATL. On the other hand, our results show that specific oncosuppressor miRNA families are lost in EATL compared to RCD patients, such as the miR-200, let-7 and miR-192-215 families.

Conclusion
These data suggest that the identification of such signatures could trace the evolution of the inflammatory response of CD into a carcinogenetic process. The availability of accurate biomarkers could implement surveillance and early EATL diagnosis. CD patients' stratification according to their risk could address follow-up and screening program, pursuing a “personalized medicine”.

Conflicts of interests
None

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00086

Final poster ID: P7-05

Title: Seronegative villous atrophy of unknown origin encompasses enteropathies with distinct clinical and genetic features and natural history

Presenting author: Annalisa Schiepatti

Co-authors: Annalisa SCHIEPATTI (1), David S SANDERS (1), Annalisa DE SILVESTRI (2), John GOODWIN (3), Tim KEY (3), Lydia QUAYE (3), Alessandro VANOLI (4), Simon CROSS (5), Paolo GIUFFRIDA (6), Antonio DI SABATINO (6), Federico BIAGI (7) - (1)Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK, Royaume-Uni, (2)Clinical Epidemiology, IRCCS Policlinico San Matteo, Pavia, Italy, Italie, (3)Histocompatibility and Immunogenetics Laboratory, NHS Blood and Transplant, Sheffield, UK, Royaume-Uni, (4)Department of Pathology, IRCCS Policlinico San Matteo, University of Pavia, Italy, Italie, (5)Department of Pathology, Royal Hallamshire Hospital, Sheffield, UK, Royaume-Uni, (6)First Department of Internal Medicine, IRCCS Policlinico San Matteo, University of Pavia, Italy, Italie, (7)Gastroenterology Unit, Department of Internal Medicine, IRCCS Pavia, ICS Maugeri, University of Pavia, Italy, Italie

ABSTRACT CONTENT

Objectives
Seronegative villous atrophies of unknown origin (SNVA-UO) are rare and poorly defined. To retrospectively classify SNVA-UO patients attending two referral centres over 18 years and depict their clinical features, histology, HLA and natural history. To compare genetics and survival between SNVA-UO and patients affected by coeliac disease (CD) and complicated CD (CCD).

Methods
In SNVA-UO patients CD, CCD and all the other causes of SNVA were excluded. Persistence of villous atrophy (VA) and a combination of clinical findings and aberrant histological features raising the suspicion of a lymphoprolipherative condition were used to classify them, as follows. GROUP 1: SNVA with spontaneous recovery of VA. GROUP 2: persistent SNVA without lymphoproliferative features. GROUP 3: persistent SNVA with lymphoproliferative features. Baseline comparisons were made and survival estimated by means of Kaplan-Meier curves.

Results
76 SNVA-UO patients were enrolled. 50 were included in group 1 (26F, age at diagn. 49±18 years), 14 in group 2 (7F, 43±14), 12 in group 3 (5F, 52±17). Anaemia, hypoalbuminemia (<3.5g/dL) and pathological CT findings were more common in group 3 ($p<0.02$), dyspepsia in group 1 ($p<0.01$). Partial VA undistinguishable from CD and with spontaneous recovery within one year (median 10 months, IQR 5-14.5) was the hallmark of group 1 (5-years survival 95%). Group 2 was characterized by persistent subtotal/total VA with long-term survival (5-years survival 100%), high prevalence of HLA-DQB1*0301 and DQB1*06, thus setting it genetically aside from CD. Group 3 showed persistent subtotal/total VA with heterogeneous clinical and histological features, association with HLA DQB1*02 and DQB1*05, high risk of developing lymphoprolipherative complications and high mortality (5-years survival 26% vs 75% in CCD). Age at diagnosis and hypoalbuminemia predicted mortality in SNVA (multivariate analysis).

Conclusion
SNVA-UO is made by enteropathies with distinct clinical features, histology, genetics and prognosis. Clinical management should be tailored accordingly.

Conflicts of interests
None

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00120

Final poster ID: P7-06

Title: Single Cell Analysis of Refractory Celiac Disease Type II

Presenting author: Tessa Dieckman

Co-authors: Tessa DIECKMAN (1, 2), Yvonne KOOY-WINKELAAR (1), Gerd BOUMA (2), Frits KONING (1) - (1)Leiden University Medical Center, Pays-Bas, (2)Amsterdam UMC, location VUmc, Pays-Bas

ABSTRACT CONTENT

Objectives
The presence of a premalignant clonal expansion of aberrant intraepithelial lymphocytes (IEL's) is the hallmark of refractory celiac disease type II (RCDII). While previous studies have revealed that gain of function mutations in the JAK/STAT pathway and elevated cytokine levels are crucial to cell expansion, much is still unknown about the precursor and interpatient diversity of the aberrant IELs. Single-cell and imaging mass cytometry in combination with single-cell RNA-sequencing provides a unique opportunity to investigate complex cellular systems in unprecedented detail. In the current study we are using this approach to map the mucosal immune system of RCDII patients. We aim at assessing immunological heterogeneity between patients leading to patient stratification for prediction of disease progression and response to therapy.

Methods
For this study, blood and duodenal biopsies from healthy individuals, celiac disease and RCDII patients were collected. Single-cell suspensions were analyzed with a panel of 39 cellular markers by mass cytometry, designed to analyze heterogeneity within the human mucosal immune system. In addition, we conducted singe-cell RNA sequencing on CD45+ intestinal cells for characterization of gene expression patterns from duodenal biopsies of RCDII patients.

Results
High-dimensional data analysis of the mass cytometry data revealed patient-specific marker expression profiles of the Lin-CD7+ aberrant cells, results that were corroborated by the single cell RNA-seq analysis of RCDII samples. Moreover, we observed highly significant intra-patient differences in protein and RNA expression profiles of aberrant cells.

Conclusion
In summary, we describe inter- and intra-patient heterogeneity within Lin-CD7+ cells of RCDII patients. Current analyses focus on delineating the molecular pathways underlying these inter- and intra-patient differences to gain further insight into crucial events leading to disease progression and predict response to therapy.

Conflicts of interests
None

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00131

Final poster ID: P7-07

Title: Risk of Malignancy in Patients with Celiac Disease

Presenting author: Manal Mahmoudi

Co-authors: Manal MAHMOUDI, Imane BENELBARHDADI, Nawal LAGDALI, Camilia BERHILI, Amal CHAKKOR, Fatima-Zahra AJANA - (1)Medicine C Department Avicenne Hospital Mohamed V University, Maroc

ABSTRACT CONTENT

Objectives
We aimed to estimate the risk of malignancy in a cohort of 284 patients with celiac disease (CD) and to determine if a gluten-free diet is protective.

Methods
This is a retrospective study that report 17 cases of cancers associated with a cohort of 284 Moroccan adults with celiac disease followed by Medicine C Department at Avicenne Hospital, Mohamed V University, between June 1995 and June 2018. All our patients benefited from hospitalization, a biological, immunological, morphological and histological assessment.

Results
Of the 284 patients with MC, 17 (5.97%) had a complication of malignant neoplasia with Odds Ratio (OR) was 39 (95% confidence interval [CI] 30–64) and p value <0,0001. Recruiting 10 women's and 7 men's, with a sex ratio M/F was 0,70.

It was about 5 cases of non-Hodgkin's malignant lymphoma of the small intestine, a case of type 2 refractory sprue with intraepithelial lymphoma, 2 cases of small bowel adenocarcinoma and 1 case of neuroendocrine carcinoma of the jejunum associated with squamous cell carcinoma, 4 cases of gastric adenocarcinoma, one case of non-Hodgkin's follicular lymphoma, one case of pancreatic adenocarcinoma, one case of hepatocellular carcinoma and one case of breast cancer. The average age at diagnosis of CD in cancer patients was 37 +/- 25 years. MC was going back to childhood in 8/17 patients with poor gluten-free diet compliance or delayed diagnosis. The average age for the diagnosis of cancer was 38 +/- 17 years. The average time between the diagnosis of CM and the appearance of cancer was 8 years, the diagnosis of MC and cancer was posed simultaneously in 8 out of 17 patients (47%). In our cohort the risk factors for neoplasia found in cases of coeliac disease were gluten-free diet deviation (OR= 1,9 and p = 0,01) and diagnostic delay of celiac patients cancer-related(OR= 1,6 and p = 0,001).

Conclusion
Our study confirms an increased risk of malignancy in celiac disease. Most of this risk occurs before the diagnosis of celiac disease and might be reduced by earlier diagnosis and strict adherence to a gluten-free diet

Conflicts of interests
No conflicts of interests

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00161

Final poster ID: P7-08

Title: High Health Care Utilization in Non-Responsive Celiac Disease

Presenting author: Shakira Yoosuf

Co-authors: Shakira YOOSUF (1), Emma CLERX (2), Jocelyn SILVESTER (3, 4), Daniel LEFFLER (1, 5) - (1)Celiac Center, Beth Israel Deaconess Medical Center, États-Unis, (2)Harvard College, États-Unis, (3)Celiac Disease Program, Boston Children's Hospital, États-Unis, (4)University of Manitoba College of Medicine, Department of Pediatrics, Canada, (5)Takeda Pharmaceuticals, États-Unis

ABSTRACT CONTENT

Objectives
Non-responsive celiac disease (NRCD) occurs in up to 30% of celiac disease (CeD) patients and is of substantial clinical burden, however the effect of NRCD on health care utilization (HCU) and cost has not been well studied. This study assesses HCU in patients with NRCD compared with CeD responsive to the gluten-free diet (GFD).

Methods
Retrospective study based on a cohort of adult CeD patients in a tertiary care hospital, diagnosed with intestinal biopsy between the years 1995-2013. Cases were patients with NRCD (persistent/ recurrent, signs/ symptoms of CeD despite 1 year of GFD). Controls had GFD- responsive CeD and were matched 1:1 with cases on sex, age (±2.5 years) and year of diagnosis of CeD/NRCD (±2 years). Data was collected for 5 years starting from the year of diagnosis of CeD or 1 year prior to diagnosis of NRCD etiology.

Results
33 case-control pairs (aged 33-87 years, 27 females in each group), were assessed. Mean duration of GFD prior to cases being classified as NRCD was 3.51±2.87years. Over the 5 year period, the NRCD group had higher numbers of gastroenterology consults (5.67±4.36 vs. 2.97±3.39, $P<0.01$), esophagogastroduodenoscopies (3.1±1.49 vs.1.85±0.62, $P<0.01$) and celiac serology tests (4.30±3.38 vs. 1.67±2.37, $P<0.001$) compared to controls. However there was no significant difference in the number of colonoscopies. Number of endoscopic procedures and serology tests were highest in the year prior to identification of NRCD etiology.

Conclusion
NRCD is associated with significantly higher HCU than GFD-responsive CeD. This is important in estimating resource burden as the celiac population grows, and in assessing potential benefit of emerging treatments for NRCD. Larger number of subjects would be required to accurately estimate the effect of NRCD on the actual burden and costs of CeD.

Conflicts of interests
All outside the submitted work: Cour (JS), Biomedal (JS), Glutenostics (JS), Takeda (JS, DAL) pharmaceuticals.

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00162

Final poster ID: P7-09

Title: Non-coeliac villous atrophy in children: clinical and immunohistochemical features

Presenting author: Renata Auricchio

Co-authors: Renata AURICCHIO, Roberta MANDILE, Maria Immacolata SPAGNUOLO, Marina RUSSO, Deianira PEDOTO, Nicoletta PELLINO, Maria Antonia MAGLIO, Riccardo TRONCONE - (1)Department of Translational Medical Sciences, University of “Federico II, Italie

ABSTRACT CONTENT

Objectives
Small bowel villous atrophy (VA) is usually attributed to coeliac disease (CD), particularly in the presence of raised levels of serum CD-associated autoantibodies. However, VA is not pathognomonic of CD. Aim of this work was to report distribution, clinical and immunohistochemical features of non-coeliac VA in a pediatric population

Methods
From our database we collected retrospectively data from 65 patients' duodenal biopsies performed between 2010 and 2017. Marsh-Oberhuber grading was used. In 46 cases density of intraepithelial lymphocytes (IELs) expressing CD3 or gammadelta T cell receptor was assessed by immunohistochemistry, as well as density of lamina propria CD25+ cells. Intestinal deposits of anti tissue tranglutaminase (anti-TG2) were also investigated by double immunofluorescence.
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Results
Out of 1282 patients with VA, 65 patients had negative serum anti-TG2/EMA. In none of them, on the basis of clinical criteria, a diagnosis of seronegative CD was made. Clinical diagnosis were: IBD (22/65), GERD (12/65), food allergy (8/65), infections (8/65, of which 3 HIV infections) immune deficiency (3/65), short bowel syndrome (2/65) other (10/65). 43, 15 and 6 showed Marsh 3a, 3b and 3c lesion, respectively. The latter category included 2 patients with Crohn's disease, 2 patients with immunodeficiency, 1 with congenital diarrhea and 1 with methylmalonic acidemia. In 42/46 (91%) density of lamina propria CD25+ cells was above the cut-off (>5 cells mm2) indicating mucosal inflammation, but only in 14/47 (30%) there was an excess of intraepithelial lymphocytes (IELs) CD3+ and high density of gammadelta TCR+ IELs. In 11/46 (9 with a weak staining) a positive immunofluorescence indicated the presence of anti-TG2 mucosal antibodies.
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Conclusion
Although CD remains the most common cause of VA, a non-coeliac enteropathy is not rare representing approximately 5% of cases with VA. Most have a Marsh 3a lesion. Immunohistochemical analysis may be of help in excluding CD, while the finding of mucosal anti-TG2, particularly when the staining is weak, shows no absolute specificity for CD.

Conflicts of interests
No conflict of interest.

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00210

Final poster ID: P7-12

Title: Alemtuzumab as treatment option for RCD type II? Report of two cases.

Presenting author: Federica Branchi

Co-authors: Federica BRANCHI, Severin DAUM, Michael SCHUMANN - (1)Medical Department, Division of Gastroenterology, Infectiology and Rheumatology, Charité – Universitätsmedizin Berlin, Germany, Allemagne

ABSTRACT CONTENT

Objectives
In type II refractory celiac disease (RCD), a clonal proliferation of aberrant intestinal lymphocytes can lead to the development of Enteropathy-associated T-cell lymphoma (EATL).
Alemtuzumab is a monoclonal antibody directed against CD52, which is validated as second-line treatment for some types of T-cell lymphoma. Its role for RCD II still has to be established.

Methods
We report the case of two patients affected by RCD type-II that were treated with Alemtuzumab at our department.

Results
A 72-year-old male, diagnosed with celiac disease at the age of 52, reported relapse of severe malabsorption syndrome including diarrhea and weight loss. Histology revealed villous atrophy, T-cell receptor clonality was found and the flow cytometry revealed increased gamma-delta lymphocytes. A PET scan and a bone marrow aspirate were negative. After failure of treatment with R-CHOP and cladribin over the next two years (the first stopped for intolerance), subcutaneous alemtuzumab was started (initial dosage 10 mg, then 20 mg twice weekly), with both clinical improvement and reduction of aberrant lymphocytes (76% to 30%). Unfortunately, cytomegalovirus reactivation developed, requiring antiviral treatment which presumably was an additional cause for sustained pancytopenia. The patient deceased in a clinical constellation that included sepsis and severe autoimmune hemolysis.

A 78-year-old female with RCD type II known since 2012, was treated in 2014 with R-CHOP after ulcerative lesions were found in the colon with evidence of aberrant lymphocytes in the lamina propria. After 3 years remission, her conditions deteriorated and aberrant lymphocytes increased to 29%, without evidence of overt lymphoma. Treatment with five cycles alemtuzumab led to clinical improvement and stability at follow up. Neutropenia and cytomegalovirus reactivation were observed during treatment.

Conclusion
Alemtuzumab has effectivity in heavily treated RCD type II without overt EATL, however its use is burdened by severe side effects, especially infectious complications, that may affect the outcome.

Conflicts of interests
None

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00243

Final poster ID: P7-13

Title: Ruxolitinib as tailored treatment for severe enterocolitis caused by STAT3 gain of function mutation

Presenting author: Marianna Parlato

Co-authors: Marianna PARLATO (1), Fabienne CHARBIT-HENRION (2), Elie ABI NADER (3), Bernadette BEGUE (1), Nicolas GUEGAN (1), Julie BRUNEAU (4), Shérine KHATER (5), Elizabeth MACINTYRE (6), Capucine PICARD (7), Frederic RIEUX-LAUCAT (8), Lionel LE BOURHIS (9), Matthieu ALLEZ (10), Olivier GOULET (3), Christophe CELLIER (5), Olivier HERMINE (6), Nadine CERF-BENSUSSAN (11), Georgia MALAMUT (12) - (1)Inserm UMR1163, Intestinal Immunity Lab, Institut Imagine, France, (2)Inserm UMR1163, Intestinal Immunity, Institut Imagine, Paris, France; Université Paris Descartes Sorbonne Paris Cité; Assistance Publique des Hôpitaux de Paris (AP-HP), Pediatric Gastroenterology, Hôpital Necker-Enfants Malades, Paris, France, (3)Assistance Publique des Hôpitaux de Paris (AP-HP), Pediatric Gastroenterology, Hôpital Necker-Enfants Malades, Paris, France, (4)AP-HP, Pathology, Hôpital Necker Enfants Malades, France, (5)AP-HP, Gastroenterology Hôpital Européen Georges Pompidou, France, (6)AP-HP, Molecular Hematology, Hôpital Necker Enfants Malades, Paris, France, (7)AP-HP, Study Center of Primary Immunodeficiency, Hôpital Necker Enfants Malades, France, (8)Inserm UMR1163, Immunogenetics of Pediatric Autoimmune Diseases, Institut Imagine Paris, France, (9)Inserm UMR 1160, France, (10)AP-HP Gastroenterology Hôpital Saint Louis, Université Paris Diderot, France, (11)Inserm UMR1163, Intestinal Immunity Lab, Institut Imagine, Paris, France; Université Paris Descartes Sorbonne Paris Cité, France, (12)AP-HP, Gastroenterology, Hôpital Cochin Paris, France

ABSTRACT CONTENT

Objectives
Non celiac enteropathies with villous atrophy are rare but severe diseases often resistant to immunosuppressive treatment and can be caused by defects in single genes. Herein, our goal has been to identify the underlying gene defect in a 25-year-old woman with early onset enterocolitis in order to provide targeted therapy.

Methods
Whole exome sequencing was performed on DNA from the patient and both parents. Functional validation of the identified Signal transducer and activator of transcription 3 (STAT3) mutation was performed using luciferase reporter assay. STAT3-dependent transcriptional response was studied in vitro in B cells immortalized by Epstein Barr virus, treated or not by the JAK1/2 inhibitor ruxolitinib. Clinical symptoms, intestinal histology, intestinal T cell infiltration and mRNA expression of SOCS3, a STAT3-dependent target, and of cytokines were compared before and during oral treatment by ruxolitinib.

Results
A novel STAT3 gain of function (c.1201A>G; p.N401D) was identified in the patient with severe enterocolitis. Accordingly, patient's cells displayed increased cytokine-induced STAT3 transcriptional activity, which was reverted by ruxolitinib. Oral treatment of the patient with ruxolitinib reduced STAT3-dependent transcription in intestinal tissue and achieved rapid clinical remission. Complete histological recovery was observed after 7 months of monotherapy with ruxolitinib.

Conclusion
Ruxolitinib appears to be a therapeutic option for severe enterocolitis associated with STAT3 gain of function mutations.

Conflicts of interests
No conflicts of interest to declare.

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00244

Final poster ID: P7-14

Title: Germline de novo mutation in immune checkpoint regulator PTPN2 causes very early onset autoimmune enteropathy by aberrant activation of JAK/STAT pathway

Presenting author: Marianna Parlato

Co-authors: Marianna PARLATO (1), Qing NIANG (2), Fabienne CHARBIT-HENRION (3), Bernadette BÈGUE (1), Emmanuel MARTIN (4), Marco MAGGIONI (5), Rémi DUCLAUX-LORAS (1), Frederic RIEUX-LAUCAT (6), Sylvain LATOUR (4), Frank RUEMMELE (3), Fernando RODRIGUES-LIMA (7), Nadine CERF-BENSUSSAN (1) - (1)INSERM, UMR1163, Laboratory of Intestinal Immunity and Institut Imagine, France, (2)Université Paris Diderot, Sorbonne Paris Cité, Unité de Biologie Fonctionnelle et Adaptative, CNRS UMR 8251; Université Paris Diderot, Sorbonne Paris Cité, Unité de Biologie Fonctionnelle et Adaptative, CNRS UMR 8251, France, (3)Assistance Publique-Hôpitaux de Paris, Hôpital Necker-Enfants Malades, Department of Pediatric Gastroenterology, France, (4)INSERM, UMR1163, Laboratory of Lymphocyte Activation and Susceptibility to EBV infection and Institut Imagine, France, (5)Pathology, Fondazione IRCCS Ca' Granda-Ospedale Maggiore Policlinico, University of Milan, Italie, (6)INSERM, UMR1163, Immunogenetics of Paediatric Autoimmunity and Imagine Institute, France, (7)Université Paris Diderot, Sorbonne Paris Cité, Unité de Biologie Fonctionnelle et Adaptative, CNRS UMR 8251, France

ABSTRACT CONTENT

Objectives
Monogenic intestinal disorders represent naturally occurring experi- mental models to decipher the network of pathways regulating homeostasis in the gut. We investigated a girl, born from non-consanguineous parents, who had developed at the age of 3 months autoimmune enteropathy characterized by secretory diarrhoea, severe villous atrophy with prominent T cell infiltrates and serum antibodies against the 75 kD epithelial antigen harmonin.

Methods
Whole exome sequencing was performed on DNA from the patient and both parents. Functional validation of the identified PTPN2 mutation was performed by overexpressing WT or C216G in HEK293T cells expressing a luciferase reporter gene under the control of STAT3 transcriptional response elements (TRE) by luminescence or western blotting. JAK/STAT activation was evaluated in vitro in patient's B cells immortalized by Epstein Barr virus and in PTPN2 KO Jurkat cells.

Results
We identified a de novo PTPN2 loss of function mutation (c.646T>G; p.C216G) in a child with early and severe enterocolitis. Overexpression of wild-type PTPN2 alone led to a significant downregulation of STAT3 TRE activity over control following IL6 stimulation while the mutant form of PTPN2 did not repress the STAT3 reporter gene. Moreover, ectopic expression of WT-PTPN2 significantly decreased IL-6 induced STAT3 phosphorylation, while the C216G-PTPN2 mutant failed to do so. Accordingly, patient's cells and PTPN2 KO cells displayed increased cytokine-induced STAT3 phosphorylation.

Conclusion
Our study identifies human PTPN2 deficiency as a novel cause of autoimmune enteropathy and highlights the need of a tight regulation of the JAK STAT pathway to preserve intestinal homeostasis.

Conflicts of interests
No conflicts of interest to declare

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00246

Final poster ID: P7-15

Title: Ulcerative jejunitis in celiac disease, a CELAC network study.

Presenting author: Julie Bruneau

Co-authors: Julie BRUNEAU (1), Audrey TRUONG (2), Shérine KHATER (3), Morgane CHEMINANT (4), Nadine CERF-BENSUSSAN (5), Olivier HERMINE (4), Chritophe CELLIER (3), Thierry-Jo MOLINA (1) - (1)Pathology Department, Necker - Enfants Malades University Hopital, France, (2)Pathology Department, Necker - Enfants Malades University Hopital - Paris (France), France, (3)Gastroenterology Department, Georges Pompidou European University Hopital, France, (4)Hematology Department, Necker - Enfants Malades University Hopital, France, (5)Imagine Institute, INSERM 1163, Necker - Enfants Malades University Hopital, France

ABSTRACT CONTENT

Objectives
Ulcerative jejunitis (UJ) is a rare and underdiagnosed complication of celiac disease (CD) that produces multiples small bowel ulcerations. It occurs predominantly as part of type II refractory celiac disease (RCDII) but can also develop in RCDI patients. Rare cases of UJ can reveal enteropathy-associated T-cell lymphoma (EATL) in RCDII patients. However, UJ may also develop in RCDI patients with an unknown prognostic significance. Our study aims to describe in a large series of RCD I or RCD II patients, the frequency of UJ as well as the association with enteropathy associated T-cell lymphoma (EATL) on the UJ biopsy and/or resection.

Methods
The records of 111 patients enrolled in the CELAC registry until January 2019 and considered for the last follow-up as RCDI (n=42) or RCDII (n=69) were analyzed. UJ was confirmed clinically by the presence of multiple ulcerations by endoscopic explorations in all patients. All the UJ biopsies or resections were reviewed and classified as RCDI, RCDII with or without EATL. Presence of sheets of large tumor cells in the mucosa were required to diagnose EATL. Outcome of patients diagnosed with UJ were reported.

Results
Among the 111 RCD patients, 38 (36%) were diagnosed with UJ. Among 38 UJ patients, 8/38 (21%) were associated with RCDI (19% of total RCD1 patients), and 30/38 (79%) were associated with RCDII (44% of total RCD2 patients). Median age at UJ diagnosis was 52 years old (28-79) with a sex ratio of 1.11 (20F/18M). Biopsies and excision pieces demonstrated ulcerations in 34/48 (71%) and 12/12 (100%), respectively. EATL was diagnosed concomitantly in 17/38 (45%) UJ samples. EATL associated with UJ was present among 7/8 UJ-RCD1 patients, (88%) and 10/30 UJ-RCD2 (33%) patients. We did not observe any difference of survival between RCD II patients with or without UJ.

Conclusion
Our study confirmed that UJ in celiac disease arises mainly in RCD II but also in near 20% of cases of RCD I and the latter is usually one of the first event of transformation in EATL. However, UJ is a major prognosis finding and, in this case, aggressive treatment should be rapidly started.

Conflicts of interests
None

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00272

Final poster ID: P7-16

Title: Body Mass Index and associated clinical variables in patients with Non-Celiac Wheat Sensitivity

Presenting author: Antonio Carroccio

Co-authors: Antonio CARROCCIO (1), Pasquale MANSUETO (2), Maurizio SORESI (2), Francesco LA BLASCA (2), Francesca FAYER (2), Alberto D'ALCAMO (2) - (1)Department of Health Promotion Sciences, Maternal and Infant Care, Internal Medicine and Medical Specialties (PROMISE), University of Palermo, and Internal Medicine, Giovanni Paolo II Hospital, Sciacca (ASP Agrigento), Italy, Italie, (2)Department of Health Promotion Sciences, Maternal and Infant Care, Internal Medicine and Medical Specialties (PROMISE), University of Palermo, Italy, Italie

ABSTRACT CONTENT

Objectives
Non-Celiac Wheat Sensitivity (NCWS) is a still largely undefined condition, due to the lack of a diagnostic marker. Few data are available about the nutritional characteristics of NCWS patients at diagnosis. The objectoves of our study was to evaluate the proportion of NCWS patients who were underweight, normal weight, overweight or obese at diagnosis, and to search for possible correlations between their Body Mass Index (BMI) and other NCWS-related disease characteristics.

Methods
The clinical charts of 145 NCWS patients (125 F, 20 M, mean age 37.1+11.4 years), diagnosed between January 2012 and March 2018, were reviewed. As a comparison, 84 celiac (CD) patients (73 F, 11 M, mean age 39.8+13.9 years) were evaluated. All NCWS diagnoses were based on a double-blind placebo-controlled wheat challenge (DBPCWC) method.

Results
BMI distribution was similar in the NCWS (6.2% underweight and 15.2% obese subjects) and CD patients (6% underweight and 7.1% obese subjects). Underweight NCWS subjects were significantly younger and had a shorter clinical history than the overweight or obese ones. Unlike the other NCWS patients, none of them had a DQ2 and/or DQ8 haplotype. Overweight and obese NCWS patients were more frequently suffering from associated autoimmune diseases than the other BMI categories (P=0.05). Compared to the CD controls, NCWS patients showed a higher frequency of Irritable Bowel Syndrome (IBS)-like (P = 0.01) and extraintestinal symptoms (P = 0.03) and a longer clinical history (P = 0.04, whereas weight loss was more frequent in CD (P = 0.02).

Conclusion
NCWS patients showed a BMI distribution similar to CD patients. However, NCWS was found to be a heterogenous condition as regards BMI, and clinical characteristics differed between the underweight and overweight/obese patients.

The study was supported by the Italian Health Ministry, Grant PE-2016-02363692 “Non-celiac gluten sensitivity (NCGS): is the gluten the true culprit? A clinical and immunological study about the tolerability of different wheat grains in NCGS patients”

Conflicts of interests
The authors declare no conflicts of interests.

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00273

Final poster ID: P7-17

Title: Gynecologic troubles in patients suffering with Non-Celiac Wheat Sensitivity

Presenting author: Antonio Carroccio

Co-authors: Antonio CARROCCIO (1), Salvatore INCANDELA (2), Maurizio SORESI (1), Giuseppe INCANDELA (1), Francesco LA BLASCA (1), Alberto D'ALCAMO (1), Giuseppe FRISCIA (3), Ada Maria FLORNA (4) - (1)Department of Health Promotion Sciences, Maternal and Infant Care, Internal Medicine and Medical Specialties (PROMISE), University of Palermo, Palermo, 90129, Italy, Italie, (2)Unit of Gynecology, Giovanni Paolo II Hospital, Sciacca, Italy, Italie, (3)Unit of Clinical Pathology, Giovanni Paolo II Hospital, Sciacca, Italy, Italie, (4)Pathology Unit, Department of Scienze per la Promozione della Salute e Materno Infantile, University of Palermo, Palermo, Italy, Italie

ABSTRACT CONTENT

Objectives
The most frequent clinical presentation of non-celiac wheat sensitivity (NCWS) includes irritable bowel syndrome (IBS)-like manifestations, however many extra-intestinal manifestations have been attributed to NCWS. The objectives of our study were to evaluate the frequency of gynecologic diseases in patients with NCWS and to correlate their presence other clinical characteristics of NCWS.

Methods
68 NCWS women, diagnosed by double-blind placebo-controlled wheat challenge, were included. As controls, we choose age-matched women: 52 IBS patients, not related to NCWS, 56 patients with Celiac Disease (CD) and 71 Healthy controls (HC).

Results
59% of NCWS patients showed gynecologic symptoms, a higher frequency than HC (P=0.04), IBS controls (P=0.01), and CD controls (P=0.02), whereas no difference was observed between CD or IBS patients and HC. Menstrual cycle alterations, on the whole, were more frequent in NCWS patients than in HC (26.5% vs 11.3%; P <0.03); NCWS suffered from recurrent vaginitis (16%) and dyspareunia (6%) with a significant higher frequency than HC. 29% of NCWS suffered from recurrent cystitis, a frequency higher than in control groups (vs HC P=0.0001, vs IBS P=0.001, vs CD controls P=0.04). Most NCWS patients with recurrent vaginitis or cystitis had negative microbiologic examinations. The NCWS patients who showed a gynecologic symptom suffered from IBS with significantly higher frequency than the others (P=0.001). During the one-year follow-up, on wheat-free diet, 46% patients with menstrual disorders and 36% with recurrent vaginitis reported the symptoms resolution.

Conclusion
NCWS patients showed high frequency of gynecologic symptoms and recurrent cystitis. Recurrent vaginitis and cystitis, found in NCWS, were not of infectious origin.

Acknowledgements: The study was supported by the Italian Health Ministry, Grant PE-2016-02363692 “Non-celiac gluten sensitivity (NCGS): is the gluten the true culprit? A clinical and immunological study about the tolerability of different wheat grains in NCGS patients”.

Conflicts of interests
The authors declare no conflicts of interests.

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00278

Final poster ID: P7-18

Title: A c-Myc-miRNAs circuit is deregulated in refractory celiac disease type 2 and EATL

Presenting author: Valentina Vaira

Co-authors: Valentina VAIRA (1), Gabriella GAUDIOSO (1), Andrea TERRASI (1), Antonella LAGINESTRA (2), Stefano FERRERO (1), Silvano BOSARI (1), Antonio DI SABATINO (3), Alessandro VANOLI (3), Leda RONCORONI (4), Vincenza LOMBARDO (4), Maurizio VECCHI (4), Stefano PILERI (2), Luca ELLI (4) - (1)Division of Pathology, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Italie, (2)Institute of Hematology and Medical Oncology, S.Orsola-Malpinghi, Italie, (3)Dep. of Internal Medicine, San Matteo Hospital, Italie, (4)Division of Gastroenterology and Endoscopy, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Italie

ABSTRACT CONTENT

Objectives
Complication of celiac disease (CD) such as type 2-refractory CD (RCD2) or Enteropathy-Associated T-cell Lymphoma (EATL) are rare and poorly explored diseases. A deeper understanding of molecular pathogenesis could provide novels clues for patients' stratification and therapeutic targets. Therefore, we aimed to get insights into miRNA signatures of intestinal T-cell lymphomas (ITL), RCD and CD patients to provide a preliminar overview of molecular pathways involved in malignant transformation in RCD.

Methods
Patients with EATL (n=14) or monomorphic epitheliotropic ITL (MEITL; n=7) , CD (n=5), CD that retained (n=5) or not (n=5) villous atrophy despite the gluten-free diet, RCD type 1 (n=4) or 2 (n=5) were profiled for miRNAs content using a qPCR-based low-density array platform. Patients' outcome was available for 18 ITLs. Significant miRNAs and associated signaling were identified using statistical and bioinformatics analysis. A second series of RCD1 (n=5), RCD2 (n=8) and EATL aroused in CD patients (n=5) was used for protein targets validation by immunohistochemistry (IHC).

Results
Members of the c-MYC regulated miR17/92 cluster distinguish MEITL from EATL and stratifies EATL according to outcome. Using the random forest algorithm we identified a signature of 38 miRNAs that classify EATL, RCD2 or RCD1 and CD samples. Interestingly, some miRNAs'expression was shared by lymphomas and RCD2. Specifically, while the miR-200 and miR-192/215 families are progressively lost in RCD2 and EATL compared to RCD1 or CD, members of the oncogenic miRNA clusters miR-17/92 and C19MC are upregulated in RCD2 and EATL. Among predicted targets of these miRNAs were MDM2, SMAD3/4 and c-Myc signaling. By IHC, we verified that SMAD3, MDM2, and activated STAT3 are more expressed in RCD2 and EATL tissues respect to RCD1 whereas c-Myc is expressed mostly by EATL cases.

Conclusion
Our study provides a preliminary molecular caracterization of RCD and ITL. Moreover, our results suggest that the c-Myc, miR-17/92 and C19MC interplay could be a key player in neoplastic transformation of aberrant intra-epithelial T-cells

Conflicts of interests
None

POSTERS

THEME :
REFRACTORY CD, NON-CD ENTEROPATHIES & INTESTINAL LYMPHOMAS

Abstract #: ICDS00287

Final poster ID: P7-19

Title: Enteropathy associated T-Cell Lymphoma incidence in refractory celiac disease type II patients treated with corticosteroids and/or chemotherapy

Presenting author: Sherine Khater

Co-authors: Sherine KHATER (1), Ali AIDIBI (1), Enrique PEREZ CUADRADO-ROBLES (1), Thierry MOLINA (2), Julie BRUNEAU (2), David SIBON (3), Olivier HERMINE (3), Nadine CERF BENSUSSAN (4), Elizabeth MACINTYRE (3), Christophe CELLIER (1) - (1)Hôpital Européen Georges Pompidou, gastroenterology department, France, (2)Hôpital Necker, pathology department, France, (3)Hôpital Necker, hematology department, France, (4)Institut imagine, France

ABSTRACT CONTENT

Objectives
To date, there is no standard of care for refractory coeliac disease type II (RCD-II). Treatments include corticosteroids and chemotherapy with or without autologous hematopoietic stem cell transplantation. The effect of these treatments on the occurrence of enteropathy associated T-Cell lymphoma (EATL) is not known. The aim of this study is to evaluate long-term survival and risk of EATL development in RCD-II patients according to their treatment.

Methods
We conducted a monocentric retrospective study at Georges Pompidou Hospital in Paris from 1999 to 2019. We included all RCD-II patients followed in our center. A survival analysis by Kaplan-Meier curves using the log-rank test was performed. Median values were compared by U-Mann-Whitney, Kruskal Wallis and McNemar tests.

Results
We included 52 RCD-II patients (age: 50.3±13.2 years, 67.3% female). 34 patients (65.4%) were treated with corticosteroids (systemic and/or topical) alone, 10 (19.2%) received chemotherapy with or without corticosteroids (4 of them also had autologous stem cell transplantation), and 8 patients (15.4%) didn't receive any treatment (3 of them had small bowel resection). The incidence of lymphoma (n=14, 26.9%) during a median follow-up of 31.5 months (4-219) was 26.5% in the group treated with corticosteroids, 20% in the group treated with chemotherapy and 37.5% in patients who had no specific treatment (p=0.704). The survival analysis revealed no statistically significant difference in the cumulative incidence of lymphoma at 3 years (p=0.552). During follow-up, ten patients (19.2%) died from EATL.

Conclusion
This study shows that the incidence of EATL is lower than previously reported and there is no difference according to the treatment approach (corticosteroids with or without chemotherapy). There is a need for alternative effective treatment in this very serious disorder.

Conflicts of interests
No conflict of interests

LIST OF PRESENTING AUTHORS

Imad ABSAH - P1-24 (Poster)

Laura AIRAKSINEN - P2-25 (Poster)

Laura AIRAKSINEN - P2-24 (Poster)

M. Angie ALMOND - P4-19 (Poster)

Carin ANDRÉN ARONSSON - ICDS00013 (Oral Communication)

Verda ARSHAD - P2-23 (Poster)

F. Ramzi ASFOUR - P3-08 (Poster)

Muhammad ASHFAQ-KHAN - P3-34 (Poster)

Muhammad ASHFAQ-KHAN - P3-33 (Poster)

Renata AURICCHIO - P7-09 (Poster)

Renata AURICCHIO - ICDS00160 (Oral Communication)

Caitlin BARRETT - P5-17 (Poster)

Farnoush BARZEGAR - P4-25 (Poster)

Michael BATES - P1-51 (Poster)

Manoubia BENSMINA - P1-53 (Poster)

Manoubia BENSMINA - P2-33 (Poster)

Sadhna BHASIN LAL - P2-30 (Poster)

Sadhna BHASIN LAL - P2-29 (Poster)

Sadhna BHASIN LAL - P4-31 (Poster)

Joanna, Beata BIERLA - P1-13 (Poster)

Patricia BIERLY - P1-42 (Poster)

Adam BLEDSOE - P4-12 (Poster)

Federica BRANCHI - P7-12 (Poster)

Roeland BROEKEMA - P6-03 (Poster)

Efrat BROIDE - P2-28 (Poster)

Efrat BROIDE - P1-44 (Poster)

Julie BRUNEAU - P7-15 (Poster)

Svetlana BYKOVA - P5-26 (Poster)

Giacomo CAIO - P7-03 (Poster)

Alberto CAMINERO - P3-05 (Poster)

Danielle CARDOSO DA SILVA - P6-14 (Poster)

Antonio CARROCCIO - P7-17 (Poster)

Antonio CARROCCIO - P7-16 (Poster)

Daan CASTELIJN - P1-35 (Poster)

Linda CAVALETTI - P5-13 (Poster)

Angel CEBOLLA RAMIREZ - ICDS00166 (Oral Communication)

Juliana X Miranda CERQUEIRA - ICDS00030 (Oral Communication)

Mara CERQUEIRO BYBRANT - P1-06 (Poster)

Fabienne CHARBIT-HENRION - ICDS00236 (Oral Communication)

Richard CHARLESWORTH - P1-03 (Poster)

Kristina CHEN - P2-14 (Poster)

Richa CHIBBAR - P3-17 (Poster)

Benoît CLÉMENT - P6-27 (Poster)

Shayna COBURN - P4-15 (Poster)

Shayna COBURN - P4-14 (Poster)

Rosie COOPER - P4-37 (Poster)

Rosie COOPER - P4-36 (Poster)

Sascha CORDING - ICDS00226 (Oral Communication)

Andrea COSTANTINO - P1-09 (Poster)

Lea COSTES - P6-01 (Poster)

Helen CROCKER - P4-10 (Poster)

Dóra CSIGE - P6-21 (Poster)

Silvija CUKOVIC-CAVKA - P1-34 (Poster)

Bozena CUKROWSKA - P5-12 (Poster)

Valentina CURELLA - P6-30 (Poster)

PRASENJIT DAS - P5-11 (Poster)

Prasenjit DAS - ICDS00171 (Oral Communication)

Italo DE VITIS - P2-18 (Poster)

Giovanna DEL POZZO - P6-08 (Poster)

Deborah DELBUE - P6-18 (Poster)

Tessa DIECKMAN - P7-06 (Poster)

Ádám DIÓS - P5-08 (Poster)

Valentina DISCEPOLO - P5-33 (Poster)

Valentina DISCEPOLO - P6-35 (Poster)

Valentina DISCEPOLO - P2-34 (Poster)

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Remedios DOMÍGUEZ - P5-09 (Poster)

Ester DONAT - P5-15 (Poster)

Ester DONAT - P1-12 (Poster)

Valeriia DOTSENKO - P6-15 (Poster)

M. Fleur DU PRE - ICDS00198 (Oral Communication)

Cristina DUMITRIU - P1-43 (Poster)

Stine DYDENSBORG SANDER - P2-32 (Poster)

Jessica EDWARDS GEORGE - P1-40 (Poster)

Linn M. EGGESBØ - ICDS00159 (Oral Communication)

Rita ELEK - P5-06 (Poster)

Luca ELLI - P7-04 (Poster)

Luca ELLI - P7-02 (Poster)

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Tobias FREITAG - ICDS00062 (Oral Communication)

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Melinda HARDY - ICDS00097 (Oral Communication)

Minna HIETIKKO - P1-05 (Poster)

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Lene HØYDAHL - P6-20 (Poster)

S HUSBY - P1-45 (Poster)

Yvonne JEANES - P4-18 (Poster)

Katarina JOHANSSON - P4-02 (Poster)

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Ilma R KORPONAY-SZABÓ - ICDS00169 (Oral Communication)

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Ida LINDEMAN - ICDS00152 (Oral Communication)

Katri LINDFORS - ICDS00002 (Oral Communication)

Elena LIONETTI - P3-28 (Poster)

Elena LIONETTI - P3-21 (Poster)

Elena LIONETTI - ICDS00221 (Oral Communication)

Astrid MAATMAN - P6-26 (Poster)

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Manal MAHMOUDI - P1-25 (Poster)

Emilia MAJSIAK - P2-16 (Poster)

Emilia MAJSIAK - P2-15 (Poster)

Emilia MAJSIAK - P2-17 (Poster)

Govind MAKHARIA - P1-17 (Poster)

Govind MAKHARIA - ICDS00118 (Oral Communication)

Govind MAKHARIA - P4-22 (Poster)

Govind MAKHARIA - P1-07 (Poster)

Gianfranco MAMONE - P6-17 (Poster)

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Sonya MEYER - P4-07 (Poster)

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Chiara MONACHESI - P4-41 (Poster)

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Tyler MULLEN - P4-23 (Poster)

Manjusha NEERUKONDA - P3-31 (Poster)

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Marianna PARLATO - P7-13 (Poster)

Hugo A PENNY - ICDS00039 (Oral Communication)

Hugo A PENNY - P2-03 (Poster)

Hugo A PENNY - P2-02 (Poster)

Hugo A PENNY - P5-04 (Poster)

Hugo A PENNY - P4-04 (Poster)

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Dory SAMPLE - P5-23 (Poster)

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Annalisa SCHIEPATTI - P4-13 (Poster)

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Johannes VIRTA - P4-01 (Poster)

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Dana ZELNIK YOVEL - P4-30 (Poster)

Soukaina ZERTITI - P2-09 (Poster)

Soukaina ZERTITI - P1-26 (Poster)

Maria ZORRO - ICDS00027 (Oral Communication)

Stephanie ZÜHLKE - ICDS00067 (Oral Communication)