Autoimmune diseases, including allergy

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MOLECULAR DIAGNOSIS OF SENSITIZATION TO α-1,3-GALACTOSE AND OMEGA-5-GLIADIN: A CASE REPORT

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BACKGROUND-AIM
Galactose α-1,3-galactose (α-gal) is a carbohydrate present in no primate mammal cells. The primer sensitization to α-gal occurs as a consequence of ticks bite and is implicated in retarded allergic reactions to mammal meat and some drugs such as cetuximab.
Omega-5-gliadin is a protein found in gluten and is related with allergic episodes induced by exercise or other cofactors such as anti-inflammatory or alcohol consumption.
In both contexts, molecular diagnosis provides relevant information: they are both allergic reactions that occur retardedly or associated to cofactors, which makes it difficult to establish a cause. The case presented shows a sensitization to both allergens in the same patient.

METHODS
54 years old male remitted to the Allergy Unit because of several episodes of generalized rash with no associated cause. In the last visit, he refers to have consumed goat meat and alcohol a few hours before symptoms. A Prick Test is made with no concluding results. A blood sample is obtained in order to analyze total IgE (tIgE) and specific IgE (sIgE) for various suspicious allergens, which are determined in a InmunoCAP 250 Phadia-Thermo Fisher analyzer.

RESULTS
The results show an elevation of tIgE (1219 kUA/L [0-114]), sIgE omega-5-gliadin (37.7 kUA/L [<0.10]) and sIgE α-1,3-galactose (3.96 kUA/L [<0.1]). Reference intervals are shown in brackets. The results are confirmed in a later analysis in which sIgE for gluten and various types of mammal meat are also determined: omega-5-gliadin (33.2 kUA/L [<0.10]), gluten (4.05 kUA/L [<0.10]), wheat (1.10 kUA/L [<0.10]), α-1,3-galactose (3.96 kUA/L [<0.1]), pork (0.51 kUA/L [<0.10]), lamb (0.13 kUA/L [<0.10]), beef (1.09 kUA/L [<0.10]). In consequence, the patient is recommended to follow a diet free from gluten and mammal meat.

CONCLUSIONS
In the case exposed coexists the sensitization to two allergens for which molecular diagnosis is especially relevant, as clinical symptoms appear in a retarded way or only when they are associated to several cofactors. For this reason, identifying the cause may result difficult. These molecular techniques are a valuable tool for determining the trigger allergens and establishing a definitive diagnosis in order to provide patients with dietetical recommendations.
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ASSOCIATED AUTOIMMUNITY, IMMUNOLOGICAL STATUS AND GLYCEMIC CONTROL IN PATIENTS WITH TYPE 1 DIABETES MELLITUS OF EASTERN NEPAL

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BACKGROUND-AIM

Type 1 Diabetes Mellitus (T1DM) is an autoimmune disease that occurs as a result of insulitis. Many antibodies have been discovered with commonly five antibodies being frequently used. This study is aimed to determine the prevalence of autoantibodies namely glutamic acid decarboxylase-65 (GAD-65) and Insulin autoantibody (IAA) in Type 1 DM patients of eastern Nepal and correlate the autoantibodies and vitamin D levels with glycemic control.

METHODS

A hospital-based cross-sectional study was conducted among 54 patients diagnosed with T1DM attending the B.P. Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal. Convenient sampling was used to recruit the patients. Serum GAD-65 and IAA were estimated using chemiluminescence immunoassay (CLIA). Quantitative variables were expressed as a mean and standard deviation. Pearson's correlation was used to correlate the antibody levels with glycemic status. The level of significance was established as p< 0.05.

RESULTS

A total of fifty-four patients (36 Female and 18 male) patients were enrolled. The mean age of the patient was 22.44 ± 9.69 years. GAD-65 positivity was present in 46.29% (n= 25) of the patients and IAA was positive in 54% (n=29) of the patients. Mean Vitamin D level was 15.53 ± 6.78 ng/ml in T1DM patients. Lower Vitamin D was significantly associated with poor glycemic control. Also, the higher autoantibody titers of GAD-65 and IAA were present in Vitamin D deficient T1DM patients.

CONCLUSIONS

Our findings depict that there is a high prevalence of autoantibodies in T1DM patients of eastern Nepal (GAD-65= 46.29%; IAA= 54%). There can be the possibility of other organ-specific autoantibodies particularly thyroid and adrenal glands positivity in these patients as well. Hence, regular screening of the possible autoimmune disease in T1DM should be done for better patient care.
Autoimmune diseases, including allergy

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**THERMOACTINOMYCES VULGARIS EXPOSITION IS ASSOCIATED TO ASTHMA DEVELOPMENT IN PATIENTS FROM THE NORTH OF SPAIN**


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**BACKGROUND-AIM**

Thermoactinomyces vulgaris (Tv) is a gram-positive thermophile bacteria, related to bagasse disease and one of the most important antigens in farmer’s disease (a type of hypersensitive pneumonitis, HP). Although there is a huge amount of evidence describing the relation between HP and Tv, the association between this microorganism and asthma has not been studied in deep.

**METHODS**

Retrospective study including 31 patients diagnosed with extrinsic asthma (from mild to severe) and 25 healthy controls from the influence area of the University Hospital from Cruces. IgG antibodies against Tv were measured in patients and controls, using ImmunoCAP specific IgG Grm-23 test carried out in a Phadia 250 Laboratory System (Thermo Fisher Scientific, Uppsala, Sweden).

Average punctuation for IgG values in the two groups was compared using a T-test and the cut-off value was evaluated using ROC curve method.

**RESULTS**

IgG average values were 17.88 mgA/l (11.03-24.73) for asthma patients and 5.70 mgA/l (4.17-7.23) for control group. The comparison of IgG values between the two groups showed statistical significative differences (p=0.00274).

The obtained AUC value was 0.74, displaying optimal sensitivity-specificity balance at a 17.27 mgA/l cut-off value

**CONCLUSIONS**

We show that there is an association between environmental exposition to Tv and the development of extrinsic asthma in patients living in our hospital influence area. Moreover, a cut-off value of 17.3 mgA/l is suggested. More studies are required to obtain further insights in the role of Tv exposition in extrinsic asthma disease.
Autoimmune diseases, including allergy

SYNTHETIC MICRONEUROTROPHINS IN THE TREATMENT OF PSORIASIS

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BACKGROUND-AIM
Psoriasis is a chronic, inflammatory, autoimmune disease which pathogenesis remains unknown. Multiple genes, stress as well as environmental factors play a key role in triggering the disease. Psoriasis is characterized by alterations in the physiology of the skin and as a result, a wide range of immune cells, especially antigen presenting cells are accumulated and contribute to the initiation of the disease.

Clinical studies have shown an association of the nervous system with psoriasis through neurosteroids and neuropeptides. The neurosteroid dehydroepiandrosterone (DHEA) has been studied in a plethora of immune diseases including skin conditions. Although findings have shown that DHEA levels were low in patients with psoriasis, it has not been widely studied. Furthermore, the exogenous administration of DHEA is not beneficial because of its immediate metabolism into androgens and estrogens.

A synthetic analogue of DHEA, BNN27 has been found to have beneficial effects in in vivo and in vitro models of inflammation and immune diseases. In addition, BNN27 retains the characteristics of DHEA but it has delayed metabolism. Based on these findings, the scope of this study was to examine the role of the synthetic neurosteroid in psoriasis using an in vivo model of imiquimod-induced psoriasis in mice and in vitro using human keratinocytes cell cultures. Furthermore, we also aimed to find markers indicative of the outcome of the disease.

METHODS
For this purpose we used the imiquimod (IMQ)-induced psoriasis protocol in wild type mice and the HaCaT human keratinocytes, in vitro.

RESULTS
In vivo, histological analysis showed reduced inflammation and less neutrophil infiltration in the dermis and epidermis layer of BNN27-treated mice. In addition the populations of the dendritic cells (CD11c+), antigen presenting cells (MHC II+) and CD4+ and CD8+ cells were lower in BNN-treated animals. This reduction was accompanied by lower levels of proinflammatory cytokines such as IL-6 and IL-17 in the treated group. In vitro, BNN27 reduced the proliferation and the migration rate of the keratinocytes.

CONCLUSIONS
Our findings suggest that BNN27 may play an anti-inflammatory role in psoriasis in a dose-dependent manner. Furthermore, specific immune cell populations may be sufficient markers of the disease outcome. However, further study of cytokine and protein levels following treatment with BNN27 will be useful tools for the monitoring of the disease.
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RO60 AND RO52 DIAGNOSTIC PERFORMANCE OF ANA PLUS ENA SCREENINGS IN A MEDITERRANEAN COUNTRY WITH A HIGH PREVALENCE OF SJÖGREN'S SYNDROME.

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BACKGROUND-AIM

The prevalence of Sjögren’s syndrome in Mediterranean countries such as Turkey (0.21%) and Greece (0.23%) is higher than in countries as France (0.01%), Denmark (0.045%) or the United Kingdom (0.097%). Recently, a prevalence study promoted by the Spanish Society of Rheumatology has described a prevalence of Sjögren’s Syndrome in Spain of 0.33% (95% CI 0.11-0.40); primary Sjögren’s Syndrome 0.25% (95% CI 0.15-0.43).

With this in consideration, the objective of this study is to analyze diagnostic performance of two strategies for analyzing anti-cellular antibodies (ANA) and their anti-Ro60 and anti-Ro52 specificities in routine samples sent to a third level clinical laboratory to diagnose systemic autoimmune rheumatic disease (SARD).

METHODS

A total of 323 routine samples were screened for ANA by indirect immunofluorescence (IIF) using HEp-2® cells (Immunoconcepts, screening dilution 1:80). The same samples were analyzed by IIF and FEIA (EliA™ CTD Screen Thermo Fisher Scientific). When IIF ANA was positive (strategy one) or IIF or FEIA were positive (strategy two), Ro60 and Ro52 antibodies were analyzed by FEIA (EliA Ro 60 and EliA Ro52 from Thermo Fisher Scientific). Comparative statistic analyses were performed using the software SPSS Statistics v25.

RESULTS

Samples came from 147 non-autoimmune disease, 12 malignancies, 31 organ specific autoimmune disease and 133 systemic autoimmune rheumatic disease patients (39 Sjögren’s Syndrome and 38 Systemic Lupus Erythematosus). One hundred and seventy-five samples (54.2%) were positive by IIF ANA, 123 (38%) were positive by FEIA and 219 (67.8%) were positive by IIF or FEIA (Pearson’s chi-square test, p<0.01). In strategy one (ANA screening by IIF) 33 (18%) ANA positive samples were Ro60 and 43 (25%) Ro52 positives. In strategy two (ANA screening by IIF and FEIA) 61 (28%) Ro60 and 43 (20%) Ro52 were detected (Pearson’s chi-square test, p<0.01). Finally, diagnostic performance for samples positive for Ro60 or Ro52 and positive for SARD (n=93) showed that 36% of the samples positive for Ro52 and 41% of the samples positive for Ro60 could not be detected by IIF only.

CONCLUSIONS

The combined use of IIF with a screening test based on the use of a solid-phase fixed antigens, such as the EliATM CTD Screen, clearly improves sensitivity for the detection of ANA, Ro60 and Ro52 antibodies in countries where the prevalence of Sjögren’s syndrome is higher.
Autoimmune diseases, including allergy

SENSITIZATION PROFILE AND CROSS-REACTIVITY OF IMMUNOGLOBULIN E (IgE) TO HOUSE DUST MITES AND SHELLFISH

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BACKGROUND-AIM

The diagnosis and control of food allergy is complicated due to homologous, cross-reactive proteins in comestibles and aeroallergens. Tropomyosin (Tp) has been reported to be the most important cross-reacting allergen between house dust mites (HDM) and shellfish as a result of its high amino acid sequence homology (up to 90%). So, HDM Tp might be the primary sensitizer for shellfish allergy, being an invertebrate pan-allergen.

The aim of this study was to assess the prevalence of Tp sensitization from the North of Spain, using serum specific-IgE (sIgE), as well as examine the cross-reactivity. Finally, sIgE levels were studied according to age.

METHODS

The criteria for the inclusion of patients were medical requests for Tp sIgE over a period of 10 years (2010-2021). rDer p 10 (Dermatophagoides pteronyssinus -European HDM-) and rPen a 1 (Penaeus aztecus -marine penaeid shrimp-) Tp sIgE levels were detected by the CAP-fluorescent-enzyme immunoassays (ImmunoCAPTM, ThermoFisher). Values greater than 0.35 kUA/L were considered positive.

RESULTS

Regarding specific components, 17.7% (386/2183) of the patients who were tested for rDer p 10 were positive (mean, m=10.1 kUA/L), as were 20.1% (198/989) of those tested for rPen a 1 (m=18.6 kUA/L).

For patients who were tested for both components, 21% (129/614) were positive to both allergens and in all cases their Tp sIgE levels were similar (rDer p 10 m=37.5 kUA/L, rPen a 1 m=39.1 kUA/L). In addition, if these patients were divided into 3 groups according to age (1-15 years (A), 16-50 years (B) and >50 years (C)), the average Tp-sIgE level in all allergic subjects who were in groups A and B (young or adults) was higher than that in C (elderly): rDer p 10 (13.5 or 9.7 > 4.7 kUA/L); rPen a 1 (11.2 or 10.5 > 3.6 kUA/L).

CONCLUSIONS

Component-specific allergy diagnosis showed that most rDer p 10-positive patients were also rPen a 1-positive. These results suggest that Tp is a major cross-reactive allergen between mite and prawn IgE-mediated hypersensitivity. Therefore, evaluating recombinant allergens can improve our ability to identify clinically relevant cross-reactivity. Moreover, sIgE levels can be stratified by age and they decrease in older people.
Autoimmune diseases, including allergy

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COELIAC DISEASE IN WESTERN SAHARA: A STUDY OF GENETIC AND SEROLOGICAL MARKERS

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BACKGROUND-AIM

Coeliac disease (CD) is a multisystemic autoimmune-based disease triggered by the ingestion of gluten in genetically predisposed individuals. In previous studies, the highest prevalence in the world was found in Sahrawi children in refugee camps in Algeria (5.6%). Our aim is to study the prevalence of CD in the Sahrawi population of Tifariti (Western Sahara).

METHODS

Tests for tissue transglutaminase (IgA/IgG tTG) and IgA anti-gliadin antibodies (AGA) were performed using a rapid chromatographic test (CD1WB and CD2WB, Operon). All positive samples and some negative samples were reanalyzed in Spain. The anti-tTG IgA and IgG antibodies together with the anti-deamidated gliadin peptide antibodies (IgA and IgG DGP) were measured using multiplex immunoassay. The anti-endomysial antibodies (IgA and IgG-EMA) were determined using the indirect immunofluorescence technique. HLA-DQ haplotypes (DQ2 and DQ8) were typed using Luminex technology.

RESULTS

Blood samples were taken from a cohort of 394 subjects (52.79% women and 47.21% men, ranging in age from 0.7 to 95 years). Of these, 314 were adults (177 women and 137 men) and 80 were children (31 women and 49 men). 29 individuals tested positive in the rapid test, of which 23 were confirmed in Spain (5.83%). 13 women and 2 men were positive in the adult population. 8 children also tested positive, including five girls and three boys. Within the group of confirmed celiac we found 19 individuals positive for DQ2 (30.64%) and 4 positive for DQ8 (6.45%). Of the non-celiac individuals tested in Spain, 17 were positive for DQ2 (27.41%), 4 were positive for DQ8 (6.45%) and 18 were negative (29.3%) for DQ associated with coeliac disease.

CONCLUSIONS

This is the first study carried out in Western Sahara. The results obtained are very similar to previous studies in the Sahrawi population of the Algerian refugee camps. According to the serological tests, the seroprevalence of CM in our population was 5.83%, the highest in the world. We were unable to perform intestinal biopsies due to local difficulties.
Autoimmune diseases, including allergy

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PREVALENCE OF CROSS REACTIVE MOLECULAR ALLERGENS IN ALBANIAN ALLERGIC POPULATION

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BACKGROUND-AIM

Skin prick tests (SPT) and/or of specific serum IgE, utilizing allergen extracts are not able to specifically identify the exact molecular component responsible especially in the Mediterranean region, where many patients are polysensitized, making the precise prescription of allergen-specific immunotherapy (AIT) particularly challenging. Molecular allergology allows to identify the single molecular allergen responsible for the patient’s sensitization and such feature may be particularly useful in polysensitized patients, in patients sensitized to panallergens and in patients who live in areas where pollination cycles overlap. In this study we aim to evaluate the percentage of this cross-reactive allergens in our symptomatic allergic population.

METHODS

This is a retrospective descriptive study. We used data from 593 patients with allergic symptoms that were referred in our laboratory, for specific IgE testing during a 3 year period. We tested these patients’ samples with ALEX test (Macroarray multiplex test of extracts & molecular allergens). We calculated the prevalence of major cross reactive allergen families and compared them with the data already published.

RESULTS

The families taken into consideration were profilins, PR-10 like molecules, nsLTP, parvalbumins, tropomyosins, serum albumins, lipocalins, polcalcins. In our study 45/593 patients (7.6%) resulted positive for at least one profilin molecule, 69/593 (11.5%) for PR-10 family, 58/593 (9.8%) for nsLTP, 86/593 (14.5%) for beta parvalbumin, 2/593 (0.3%) for tropomyosin, 20/593 (3.4%) for serum albumin, 30/593 (5.1%) for lipocalin, and 17/593 (2.9%) for polcalcins.

CONCLUSIONS

The prevalence of serum IgE to panallergens in the population we studied, ranged from 0.3% to 14.5% of the patients. The new multiplex tests of molecular and allergen extracts give plenty of data and allowed us to create a molecular allergy profile for our patients. They must be taken in consideration when prescribing allergen specific immunotherapy (AIT): in patients presented with low sensitization to major allergens and/or sensitization to un-specific pan-allergens AIT may be not necessary or may fail.
Autoimmune diseases, including allergy

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RELATION BETWEEN SPECIFIC ANTIBODY TESTS FOR CELIAC DISEASE AND GRADE OF ENTEROPATHY OF INTESTINAL BIOPSY IN ADULTS


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BACKGROUND-AIM

The current gold standard for diagnosing celiac disease (CD) is based on intestinal biopsy. There are strict serological criteria that allow diagnosis without biopsy in children, but in adults this test is still mandatory.

The aim of this study was to determine whether specific antibody tests could replace intestinal biopsy in the diagnosis of adult CD.

METHODS

129 CD adult patients were studied (ages 17-87, 87 female). Antibodies against transglutaminase (IgA-TG2) were determined with EliA Celikey (ThermoFisher Scientific®). IgA-EMA testing was performed by indirect immunofluorescence (IFI AESKU®). Both tests are accredited by the UNE-EN-ISO 15189 standard of clinical laboratories.

All patients underwent enteroscopic biopsy and villous atrophy was classified according to the Marsh criteria.

Data were analyzed using statistical software R 3.3.5.

The study was approved by the Ethics Committee of Research of Galicia, Spain (Code 2019/098).

RESULTS

Results were divided in two groups according to the degree of villous atrophy: high-grade (Marsh II-III) (HGA) and low-grade (Marsh 0-I) (LGA).

When using the usual cut-off > 8 U/mL, 77 (59,7%) patient results were positive for IgA-TG2 and presented HGA, 11 (8,5%) patient results were positive for IgA-TG2 and presented LGA, 12 (9,3%) patient results were negative for IgA-TG2 and presented LGA and 29 (22,5%) patient results were negative for IgA-TG2 and presented a HGA. Proportion of patients with LGA among those with negative serology: 0,29.

When using a cut-off > 80 U/mL (*10 ULN), there were 37 (28,7%) patients positive for IgA-TG2 who presented HGA, 3 (2,3%) patients positive for IgA-TG2 who presented LGA, 20 (15,5%) patients negative for IgA-TG2 who presented LGA and 69 (53,5%) patients negative for IgA-TG2 who presented HGA. Proportion of patients with HGA among those with positive serology: 0,93. All positive IgA-TG2 results >80 U/mL were confirmed by a positive IgA-EMA (1:5 dilution).

CONCLUSIONS

• Our data suggest that IgA-TG2 values above 80 U/mL (*10 ULN) can be furtherly studied to rule in CD in adults without biopsy.
• Using the usual cut-off ≤ 8 U/mL there is a significant number of seronegative CD adult patients. This value should not be used to rule out CD disease in adults without biopsy.
Autoimmune diseases, including allergy

**PROZONE EFFECT IN AUTOIMMUNITY: THE CASE OF ISLET CELL ANTIBODIES**

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**BACKGROUND-AIM**

Islet cells antibodies (ICA), a marker for Type 1 diabetes, are tested by indirect immunofluorescence (IIF) using monkey pancreas. The sensitivity of this technique is known to be weak. The aim of this study was to compare the results of ICA with anti-GAD65kd using different dilutions.

**METHODS**

Data of anti-GAD65kd and ICA assays were collected for a fifteen months period in the CHU of Liège. 188 cases were enrolled. Anti-GAD65kd were performed by ELISA (anti-GAD (IgG) Euroimmun). ICA were tested by IFI on monkey pancreas slides (Menarini ICAb Primate Pancreas) at screening dilution 1:5, following manufacturer instructions but also at 1:20, 1:50 and/or 1:100 dilutions.

**RESULTS**

151 patients showed concordant negative results. Among those anti-GAD65kd positives results, 16 samples presented ICA at 1:5 dilution but 21 were negative at this screening dilution. We tested these sera at higher dilutions, 17 sera became positive at 1:100 dilution and already at 1:20 or 1:50 for some samples.

**CONCLUSIONS**

The sensitivity of ICA is known to be weak unfairly. Indeed, using higher screening dilution, proving a prozone effect, 81 % of false negative patients at 1:5 dilution were recovered. From here on, 1:100 screening dilution for ICA is recommended in our autoimmunity laboratory.
Autoimmune diseases, including allergy

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ANEMIA OF THE ELDERLY: LET’S ALWAYS THINK ABOUT CELIAC DISEASE

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BACKGROUND-AIM
A higher incidence of celiac disease (CD) is reported in recent studies, particularly among older people. Celiac disease can persist for many years before diagnosis, causing subtle or quite troubling symptoms and carrying several health complications until it is detected. Anemia is one of the clinical features most related to CD and may be the only symptom present at the time of diagnosis. CD anemia is multifactorial, so this systemic inflammation may also be a contributing factor in the etiology of anemia in elderly patients.

METHODS
42 patients > 60 years old with CD were studied. Serum determinations: antibodies against transglutaminase (TGA) by EliA Celikey (ThermoFisher Scientific®); endomysium antibody (EMA) by indirect immunofluorescence (IFI AESKU®); hemoglobin by Hemoglobin SLS (Sysmex XN-1000®); iron by colorimetry (Advia Chemistry XPT®); ferritin by immunoassay (Advia Centaur XP®). Confirmation of CD was performed by intestinal biopsy according to the Marsh criteria.

RESULTS
Between 2012 and 2020, 42 new patients (16% of all new diagnoses) > 60 years old were diagnosed with CD, 54% women (age range 60.5-92.6). Hematological alterations were the most frequent clinical presentation (64.8%), with iron deficiency anemia (57%) and 17% macrocytic / mixed anemia. The degree of anemia was significant: 32% had < 100 g / L of hemoglobin (WHO grade II-III-IV). Regarding biochemical parameters, 62% presented low iron levels and 48% low ferritin levels. Unlike in other age ranges, some anemic celiac patients are shown to have high levels of ferritin that may suggest systemic inflammation and anemia of chronic disease. The most frequent degree of atrophy was MARSH III A / B (56.1%). Gluten-free diet (GFD) led to clinical and serological improvement.

CONCLUSIONS
We believe that it is important to promote the identification of anemia as a possible cause of CD in the elderly population. These patients can remain silent for years, a fact that increases their morbidity and mortality. A simple laboratory test like TGA could reduce complications of CD, such as refractory CD or lymphoma, and improve patient’s quality of life.
Autoimmune diseases, including allergy

**MACROARRAY NANOTECHNOLOGY-BASED MULTIPLEX IMMUNOASSAY USED AS MOLECULAR ALLERGY EXPLORER TEST IN ASTERACEAE POLLEN-RELATED ORAL ALLERGY SYNDROME TO FRUITS AND VEGETABLES**

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**BACKGROUND - AIM**

Pollen-food syndromes and associations involving profilins are various, with different eliciting plant foods and aeroallergen sensitizations.

**METHODS**

We report the case of a 32-year-old male patient from Southern Romania with fall seasonal allergic rhinoconjunctivitis, positive skin prick tests to ragweed and mugwort pollen extracts and convincing history of oral allergy syndrome to raw fruits and vegetables (melon, grape, grapefruit, kiwifruit, celery, tomato) to which prick-prick skin tests were also positive. Molecular diagnosis was performed in this case with an in vitro allergy explorer test using IgE multiplex immunoassay with allergens coupled to nanoparticles and deposited in a systematic fashion onto a solid phase forming a macroscopic array, with lab protocol integrating powerful cross-reactive carbohydrate determinants inhibitor.

**RESULTS**

The specific recombinant molecular ragweed and mugwort biomarkers, pectate lyase rAmb a 1 and defensin rArt v 1, confirmed genuine IgE sensitization (23.64 kUA/L and 4.74 kUA/L, respectively) to the pollen of these Asteraceae weeds. Serum specific IgE to profilin biomarkers, rPhl p 12 (6.55 kUA/L), rBet v 2 (13.27 kUA/L), rOle e 2 (2.25 kUA/L), nPho d 2 (11.97 kUA/L), revealed IgE sensitization to plant profilins. Allergy to profilin-containing plant foods in this case is due to primary aeroallergen sensitization to weed pollen sources. Given their lability to digestion and thermal sensitivity, profilins usually trigger only oral allergy syndrome. IgE sensitizations to non-specific lipid-transfer proteins from fruits and vegetables which can elicit systemic reactions (peach rPru p 3, grape nVit v 1, kiwifruit nAct d 10, tomato nSola l 6, celery rApi g 2 and rApi g 6) were not detected (≤ 0.1 kUA/L). The presence of specific IgE to latex profilin Hev b 8 (14.84 kUA/L) is a marker of nonrelevant sensitization, serum specific IgE antibodies to other latex allergen components (rHev b 1, rHev b 3, rHev b 5, rHev b 11) being not found.

**CONCLUSIONS**

Precision allergy molecular diagnosis using a multiplex allergy explorer test is useful in clinical practice for detailed IgE sensitization profiling in individual cases presenting weed pollen-related oral allergy syndrome to fruits and vegetables.