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The Correlation Between Anti-Gliadin And Anti-Tissue Transglutaminase Autoantibodies With Gender In Iraq Celiac Disease Patients

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Abstract**: For finding or inquiring the efficiency of measuring the concentrations of IgG and IgA anti-gliadin autoantibodies (IgG and IgA AGA, respectively), IgA and IgG anti-transglutaminase (TGA), for gluten sensitivity diagnosis and study the relationship between those antibodies with age and gender of patients. The number of coeliac patients that enrolled in current study was 169. Concentrations of IgA, IgG for AGA as well as IgG, IgA for TgA was measured via enzyme-linked immunosorbent assay (ELISA). In the present study, the mean±SE of IgA antigliadin and IgA antitransglutaminase in age group 1-9 years was higher than 10-19 years without significance differences between them p>0.05, while the result show significant differences p<0.05 among age study groups in respect to IgG antiglidin and IgG transglutaminase since the mean of concentration in smaller ages was higher than older (10-19) years. In respect to gender, the females IgA antigliadin and tissue transglutaminase concentrations was higher than their concentrations in males with no significance differences detected between studied groups, while in other autoantibody tested, IgG antigladin and antitrasglutaminase concentrations there is significance differences between females and males with higher mean in females than males. According to the present study results, there are significant correlation between IgG antigliadin and anti-tissue transglutaminase with age and gender of celiac disease patients, since there concentration was higher in females younger than 10 years.

INTRODUCTION

Coeliac disease (CD) or gluten sensitive enteropathy is an autoimmune attack in intestine of people with specific HLA genotype [1]. Children prevalence was an early knowledge for clinical cases, but after years, a high number of pediatric ages were infected. Those babies were complain from malnutrition, un explainable abdominal pain, delaying growth and diarrhea [24]. Disease incidence reported in different ages that fact exclude idea that disease infect only children [25]. The clinical signs of patient is anemia, osteoporosis, in case of asymptomatic ones, diagnosis based on high-risk groups screening [26, 27].

Although the present gold standard test for diagnose is making tissue sections of small intestinal mucosa, biopsy from duodenum is an uncomfortable and expensive procedure [2, 3]. Therefore, several serologic tests have been developed and validated against biopsy specimens for the diagnosis of CD. The convenience of serological safe tests have dramatically changed the CD diagnosis [2, 4]. Over the past few decades, anti-gliadin Igs tests have been replaced by highly sensitive and specific IgA endomycium antibodies (EMA) and IgA-TTG [5, 6].

Among those, endomycial antibodies is regarded as more specific and sensitive test for CD diagnosis, because of test limitation from cost, quality and subjectivity lead to restriction application of this test as a screening and following up [7, 8, 9]. Thus, anti-TTG IgA has been

endorsed as step one in the diagnosis of CD [6, 10, 13]. However, previous studies have revealed that serologic tests, including IgA anti-TTG may not perform in addition, peer review research advised to be used for clinical setting [14, 19]. The purpose of current study is to verify the concentration of IgA, IgG-TTG and IgA and IgG AGA in a group of Iraqi celiac disease patients.

MATERIALS AND METHODS

About 169 celiac disease patients who attended at specialized center of endocrinology and diabetes/Baghdad (a referral hospital) from January to September 2017.

At our hospital, total IgA concentrations are consistently measured and recorded with the other result to confirm that negative result is not because of IgA deficiency that some people suffering of. Data including the age and sex of patients being tested were included. A patient request with more than one test was excluded. Patients with type I diabetic mellitus, heart failure, liver chronic disease, rheumatoid, skin disease were considered according to patient's medical records and excluded. Medical detailed history from positive serological tests were obtained to inquire if they had submit to gastroscopy and duodenal biopsies. Biopsies from distal duodenum were considered as positive CD cases when the tissue examination showed any degree of villous atrophy (Marsh III lesion).

Mucosal injury in mild degree, such as intraepithelial lymphocytosis only (Marsh I lesion) or in association with crypt hyperplasia (Marsh II lesion) were similarly categorized as being CD positive [13]. Who attended, for each patient, concentration of IgA & IgG antigliadin as well as IgA & IgG anti-tissue transglutaminase was determined by using ELISA kits from an AESKU company/Germany.

Statistical analysis

All statistical tests was achieved by using (SPSS) program version seventeen for windows (SPSS INC., Chicago IL, USA). Results were expressed as mean ± SE. ANOVA, t-test, the least significant difference (LSD0.05) was used to analyze the results between two groups. Statistically significant differences regarded when P value was ≤ 0.05.

RESULTS

Table 1. Relation of IgA & IgG of antigliadin with age groups

Age groups	anti-gliadin IgA	anti-gliadin IgG
	Mean ± SE	Mean ± SE
1-9 years	42.48494624± 9.57	60.72796± 9.55
10-19 years	31.48421053± 11.79	34.7± 5.84
P value	0.47	0.02
< 0.05	NS	S

Table 2. Relation of IgA & IgG of anti- tissue transglutaminase with age groups

Age groups	anti-TTG IgA	anti-TTG IgG
	Mean ± SE	Mean ± SE
1-9 years	64.26989247 ± 13.98	42.49892± 7.82

10-19 years	32.49736842 ± 11.9	18.64342 ± 4.96
P value	0.08	0.01
< 0.05	NS	S

Table 3. Relation of IgA & IgG of antigliadin with gender

Gender	**anti-gliadin IgA**	**anti-gliadin IgG**
	Mean ± SE	**Mean ± SE**
Female	46.706667 ± 13.08	66.08933 ±11.44
Male	30.22234 ± 8.42	35.40638 ± 5.21
P value	0.29	0.016
< 0.05	NS	S

Table 4. Relation of IgA & IgG of anti- tissue transglutaminase with gender

Gender	**anti-TTG IgA**	**anti-TTG IgG**
	Mean ± SE	**Mean ± SE**
Female	88.17333333± 18.75	49.84933±9.77
Male	19.50957447±6.55	17.34681± 3.6
P value	0.000830282	0.002405
< 0.05	NS	S

DISCUSSIONS

From many serological autoantibodies tests, anti-gliadin has been used for celiac disease screening. Many clinical researches showing that positive AGA may be the first and only diagnostic marker of gluten enteric sensitivity and celiac disease progression. Alternatively, since autoantibody AGA good sensitivity, which inverse the low specificity for celiac disease diagnosis, that's fact can be explained because of AGA presence in healthy control people. Furthermore, AGA is not only positive in coeliac, but in neuropathy disorders, and also in other autoimmune, psychiatric disorders.

Nowadays, AGA test have been announced as gluten sensitivity marker, taken place in case of autoimmune attack against wheat protein causing gastrointestinal symptoms. Biopsy required for CD diagnosis according to the European and North American societies for gastroenterology guidelines [14, 15].

However, because of the difficulty and expensive procedure required with jejunal biopsy and a high incidence of CD in the population over all, less aggressive processes are mandatory [16]. The autoantibodies screening test are frequently performed prior of taking duodenal biopsy. Over the period of the last ten years, significant enhancement of the serological tests has happened and a widespread availability of those tests kits has allowed every doctor to check CD (17).

Serological tests results for celiac disease exhibit differences between societies [21, 22]. This disagreement may be endorsed to a low calibration of methods used by diverse facilities. Discrepancies in anti-laminated gliadin sensitivity and specificity results are more than the alterations for anti-endomysium because of slighter disparities in indirect immunofluorescence (IIF) technique; nevertheless, manufacture variations in labelled

antibody, dilutions for serum, and human interfering when evaluating results positivity and negativity.

To avoid or get rid of previous interference, procedures depends on positive and negative controls using in test runs.

EMA and TTG autoantibodies of alpha and mu classes is currently the most recommended CD diagnosis even in case of having diet with gluten [5, 6, 17].

Mean differences between age studied groups can be explained by the fact that there is a penchant to decline clinical signs might be witnessed on older patients [27]. In adolescent and adults show restricted manifestations, such as more stool volume, or enteric gas due to lactose mal-absorption or high bacterial number. In general, constipation feeling could be the only symptom seen in adults.

More than one disease linked with coeliac in adults and children. Nevertheless, the existence of accompanying disorders looks to be an autoimmune mechanism which is more recorded in adults persons, for instance thyroiditis, typeIdiabetes, Sjögren's syndrome (SS) or dermatitis herpetiformis (DH) [28, 29].

Repetitive revisions and researches from Europe and America have revealed that >50% of CD adults suffering of high weight whereas fifteen percent of them are less than standard weight [30, 31]. Gaining weight detected in children as well but in low number compared to adults.

In the current work, the no significant differences of IgA-TTG was consistent with formerly described findings [32]. However these outcomes were steady with those little studies that conveyed less sensitivity of mentioned test clinically [33, 34].

AGA is not used for disease screening because of its specificity and sensitivity no more than eighty percent [35, 36].

In respect to 2nd generation of TTG-IgA, it is sensitivity over 94% and 97% specificity which are satisfactory.

Moreover, there are reports of false positive results in healthy individuals especially in immune mediated diabetes, and other rheumatoid and hepatic diseases. Yet TTG of alpha class Ig has persisted the best first choice [6, 10, 13].

Our data were higher than (19) who found AGA equal to 0.008± 0.014 for IgA and (0.038±0.051) for IgG.

The differences in study results could be partly due to the differences of laboratory test systems. Though, this does not due to obvious specificity transformation.

Differences in antibodies concentrations among population from different countries must be keep in mind in case of cut off value calculations.

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