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Seroprevalence of celiac disease among children in Baghdad, Iraq

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ABSTRACT

Celiac disease (CD) represents A unique disorders in which consumption of a food ingredient namely gluten-containing grains (wheat, rye, barley) in combination with genetic susceptibility is fundamental for the development of an a guilefully evolving autoimmune reaction influence the gut and other organs. The present study determines the celiac disease among suspected children. From special the laboratory for Pathogenesis Analyses in Baghdad 100 blood children samples was collected during the period from 1st March 2018 till the 31 th of July 2018, analyzed by two serological test which were Anti-tissue transglutaminase (tGT) antibodies and Anti-gliadin antibodies for the presence of serum Immunoglobulin A (IgA tGT), Immunoglobulin G (IgG tGT), Immunoglobulin A (IgA AGA), Immunoglobulin G (IgG AGA) were measured by Enzyme-linked Immunosorbent Assay (ELISA). In result obtained positive serological test Trasglutaminase (tGT) for IgA tGT was 5 (16.7 %), IgG tGT was12 (40.0 %), more than Antiglidin Antibodies IgA AGA was 3 (10.0 %), IgG AGA was 10 (33.3 %). the males was 18 (32.1 %) more than female between (6 year - 9 year) age group which represent 10 (37.0 %). The symptoms of celiac disease found with weight loss 26 (86.7 %), chronic diarrhea 21 (70.0 %), vomiting 19 (63.3 %). In this study, obtained positive serological test Trasglutaminase for (IgA, IgG tGT) Antibodies in male between age group (6 year - 9 year) and with the symptoms more found with weight loss, chronic diarrhea, vomiting.

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INTRODUCTION

Celiac disease (CD) represents A unique disorders in which consumption of a food ingredient namely gluten-containing grains (wheat, rye, barley) in combination with genetic susceptibility is fundamental for the development of an guilefully evolving autoimmune reaction influence the gut and other organs (Szajewska *et al.*, 2016). Over recent decades the prevalence of the disease in developed countries other than gluten increased the points to the role of one or more likely environmental triggers (Lionetti *et al.*, 2014). General population in most parts of the world affects approximately 1-3 % by CD which is a permanent state (Mustalahti *et al.*, 2010; Myléus *et al.*, 2009) Over time, due to global changes in the diet, an increasing descend of CD has been observed in areas that were previously considered CD-free (Catassi *et al.*, 2014). CD is now recognized as a systemic disease may affect persons of any races and any age and ethnic groups (Fasano and Catassi,

2012). The Pathogenesis of celiac disease lastly leading to celiac enteropathy due to gluten, enzymatically changes in intestinal, permeability, innate and adaptive immune responses to gluten peptides including self-antigens (transglutaminase), gluten HLA recognition (Jabri and Sollid, 2009; Schuppan *et al.*, 2009). Hyper plastic cryptae may lead to complete villous atrophy and reduced intestinal villous height, which is the result of duodenal mucosa with Tiggers an inflammatory state (Tonutti and Bizzaro, 2014). For the time being gluten-sensitive enteropathy represents an elevated number of intraepithelial lymphocytes with crypt hyperplasia to complete villous atrophy (Tosco *et al.*, 2011). And the disease is the most predominant in chronic inflammatory conditions for digestive system and is treatable with the exclusion of dietary gluten (Rubio–Tapia *et al.*, 2009). Clinical presentation depends on age, amount of gluten ingested in the diet and sensitive to gluten as well as unknown factors (Dewar and Ciclitira, 2005). The classical definition of CD included gastrointestinal manifestations (failure to grow, chronic diarrhea, vomiting, abdominal pain, bloating, weight loss, distention and constipation (Rewers, 2005). Typical classic symptoms of diarrhea and failure to thrive present less frequently in patients, often extraintestinal presentations are identified in both children and adults commonly (Reilly *et al.*, 2011). In children not have previously received a clinical diagnosis diseases can be identified by serology testing and used two serology test endomysium tissue transglutaminase autoantibody tests (Mäki *et al.*, 2003). The only treatment for disease was accepted is adherence to Gluten-Free Diet (GFD) strict which is the normalizes serology and heals small intestinal mucosa (Kurppa *et al.*, 2010). Treatment with GFD involves (a diet with no wheat, rye or barley proteins), the specifically manufactured for the patient with CD is a wide range of GFD wheat replace. Gluten threshold, which is the lowest amount give of gluten that causes damage to the celiac intestinal mucosa overtime between (10–50) mg per day (Catassi *et al.*, 2007).

MATERIALS AND METHODS

From the special laboratory for Pathogenesis Analyses in Baghdad 100 children s blood samples was collected during the period from 1st march 2018 to 31 th of July 2018. Sheet of questionnaire was used to collect data with regard to [ages from (1days -15 years), sex, symptoms (chronic diarrhea, vomiting, abdominal cramps, weight loss, and anemia)].

After sterilized of skin by using 70 % alcohol venous blood samples 5 ml was collected from each child by professional clinical laboratory technique and added in the normal tube to separate the serum and centrifugation at 3000 rpm for 5 minutes. All the serum samples were kept in laboratory until analysis frozen at – 20 º C. Each sample was analyzed by two serological test which were Anti-tissue transglutaminase (tGT) antibodies and Anti-gliadin antibodies for the presence of serum Immunoglobulin A transglutaminase antibodies (IgA tGT), Immunoglobulin G transglutaminase antibodies (IgG tGT), Immunoglobulin A anti-gliadin antibodies (IgA AGA), Immunoglobulin G anti-gliadin antibodies (IgG AGA) were measured by Enzyme-linked Immunosorbent Assay (ELISA) with the use Diesse Diagnostic manufacturers of commercial kit.

Statistical analysis

Used in order that analyze and assess the results they including:-

1. Descriptive statistics: statistical tables contain observed frequencies with their percentages.
2. Inferential statistics: The accept or reject show by used statistical hypotheses, 0.05 level of significance represent the Persons Chi-Square test ($\chi 2$).
3. P-value > 0.05 level of significance was considered statistically significant.
4. P-value > 0.025 in 2-sided.

RESULTS

In a Total of 100 of children sample we obtained positive serological test Trasglutaminase (tGT) for IgA tGT was 5 (16.7 %), IgG tGT was12 (40.0 %), more than Antiglidin Antibodies IgA AGA was 3 (10.0 %), IgG AGA was 10 (33.3 %). Show in Table 1.

Table 1: Distribution of celiac disease according to serological test

Serological Test positive	No.	%
Trasglutaminase (tGT)		
IgA tGT	5	16.7
IgG tGT	12	40.0
Antiglidin Antibodies		
IgA AGA	3	10.0
IgG AGA	10	33.3
Total	30	100.0

Table 2: Distribution of celiac disease according to the sex

Sex	Celiac Disease		Total	P-value
	Positive No. %	Negative No. %		
Male	18 (32.1 %)	38 (67.9 %)	56 (100.0)	Asymp. Sig
Female	12 (27.3 %)	32 (72.7 %)	44 (100.0)	2-sided 0.598

P-Value > 0.025 in 2-sided; Non-Significant

Table 3: Distribution of celiac disease according to the age group

Age Group	Celiac Disease		Total	P-Value
	Positive No. %	Negative No. %		
1 day - 3 Year	6 (28.6 %)	15 (71.4 %)	21 (100.0)	Asymp. Sig
3 Year- 6 Year	7 (43.8 %)	9 (56.2 %)	16 (100.0)	2-sided
6 Year- 9 Year	10 (37.0 %)	17 (63.0 %)	27 (100.0)	0.056
9 Year- 12 Year	7 (35.0 %)	13 (65.0 %)	20 (100.0)	
12 Year-15 Year	0 (00.0 %)	16 (100.0 %)	16 (100.0)	

P-Value > 0.025 in 2-sided; Non-Significant

Table 4: Distribution of celiac disease according to the symptoms

Symptoms	Celiac Disease		Total	P-Value
	Positive No. %	Negative No. %		
Chronic Diarrhea	21 (70.0 %)	9 (30.0 %)	30 (100.0)	Asymp. Sig
Vomiting	19 (63.3 %)	11 (36.7 %)	30 (100.0)	2-sided
Abdominal Cramps	17 (56.7 %)	13 (43.3 %)	30 (100.0)	0.053
Weight Loss	26 (86.7 %)	4 (13.3 %)	30 (100.0)	
Anemia	16 (53.3 %)	14 (46.7 %)	30 (100.0)	

P-Value > 0.025 in 2-sided; Non-Significant

DISCUSSION

In the present study diagnosed celiac disease serological markers for immunoglobulin A and G and anti-tissue transglutaminase antibodies (tTG) and anti-gliadin antibodies (AGA) Table 1 found that seropositive for IgA-tGT was 5 (16.7 %) and IgG-tGT was12 (40.0 %) this finding was agree with previous Iraqi study done by (Hameed, 2012) and the seropositive for IgA-AGA 3 (10.0 %), IgG-AGA was 10 (33.3 %) which agreement with (Hameed, 2012; Waheed and Kassim, 2017).

In AGA test the sensitivity and specificity of IgA was marginally more that IgG but IgG testing is particularly useful in the 1 % to 2 % of patient with CD who have IgA deficiency (Hadzise *et al.*, 2014). Other researchers reported that AGA was more commonly used (Giersiepen *et al.*, 2012).

Commonly Anti-gliadin antibodies test was considered more sensitive and less specific than anti-tTG antibodies (Rostom *et al.*, 2006). The distribution of celiac disease according to the sex in Table 2 show the result of males was 18 (32.1 %) more than female 12 (27.3 %) this agreement with (Dehghani and Asadi-Pooya, 2008). The p-value 0.598 in 2-sided represent non-significant result.

The Table 3 for distribution of age group show most seropositive between (6 year -9 year) age group which represent 10 (37.0 %) and the p-value 0.056 in 2-sided represent non-significant. The symptoms of celiac disease seropositive more found with weight loss 26 (86.7 %), chronic diarrhea 21 (70.0 %), vomiting 19 (63.3 %) respectively this agree with (Al-Qabandi *et al.*, 2014). With p-value 0.053 in 2-sided represent non-significant show in Table 4.

CONCLUSIONS

In this study, obtained positive serological test Trasglutaminase for (IgA, IgG tGT) Antibodies in male between age group (6 year - 9 year) and with the symptoms more found with weight loss, chronic diarrhea, vomiting.

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Conflict of interest

The authors declare that they have no conflict of interest for this study.

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