IJABR

International Journal of Advanced Biotechnology and Research (IJABR)
ISSN 0976-2612, Online ISSN 2278–599X,
Vol-9, Issue-4, 2018, pp373-377
http://www.bipublication.com

Research Article

An assessment of abnormal celiac serological marker in type-I diabetics without GIT symptoms

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Received: 23/11/2018 Accepted: 05/12/2018 Published: 07/12/2018

ABSTRACT

Objective: To assess the abnormal celiac serological marker in type-I diabetics without GIT symptoms

Material and methods:

This cross sectional study was conducted at Department of Pediatric Medicine, THQ Hospital, Taunsa from January 2017 to June 2017 over the months. Abnormal celiac serological markers was assessed in type-I diabetics without GIT symptoms.

Results: Total 87 patients were selected in present study. Mean age of the children was 11.43 ± 3.78 years. Out of 70 patients, total 17 (20%) patients found with abnormal celiac serological markers. Total 12 (13.79%) patients were found with family history of DM and abnormal celiac serological marker was seen in 5 (41.67%) patients. Total 75 (86.21%) patients found without family history of DM and abnormal celiac serological marker was seen in 12 (16%) patients. Association between abnormal celiac serological marker abnormal celiac serological marker in type-I diabetics without GIT symptoms and family history of DM was statistically significant with p value 0.05.

Conclusion: Results of this study showed a high percentage of abnormal celiac serological marker. Insignificant association of abnormal celiac serological marker with age and gender was detected. But significantly associated with family history of diabetes mellitus.

Key words: Celiac disease, diabetes mellitus, enteropathy, autoimmune diseases, serological marker

INTRODUCTION

Type-1 diabetes mellitus (T1DM) is a chronic autoimmune disorder with varying degrees of insulin deficiency resulting from an immune-mediated destruction of pancreatic β-cells, usually presenting in young individuals.[1] T1DM can be associated with other clinical, subclinical, or potential organ-specific autoimmune diseases. Celiac disease (CD) is an autoimmune enteropathy induced by gluten proteins present in wheat, barley, rye; and characterized by small intestinal lesions of variable severity.[2] In its classic form, CD appears with symptoms and signs of intestinal malabsorption. However, the disease may occur in a silent or latent form.[3] Co-existence of T1DM and CD was first suspected in 1954.[4] The same 'susceptibility genotypes' are involved in the etiopathogenesis of diabetes mellitus and CD. In both diseases, genetic susceptibility is associated with the HLA-DQ α1*0501, β1*0201 heterodimer, which preferentially presents gluten-

derived gliadin peptides on its antigen-presenting groove to stimulate intestinal mucosal T cells.[5] With the existing identical gene location in both diseases, it seems that CD is more frequent in patients with T1DM than in general population. Using different screening procedures for auto antibodies, the reported prevalence of CD in patients with T1DM ranged from 0.6–16.4%.[6] Among different types of serological tests for screening CD, such as anti-gliadin antibodies (AGAs) and antiendomysial IgA antibody (EMA), tissue transglutaminase antibodies (tTGA) has proved to be a very specific indicator to identify subjects with latent CD.[7] It is well known that clinical CD represents only the tip of the iceberg. So this study is planned to know the abnormal celiac serological marker (anti-tissue transglutaminase IgA) in T1DM.

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Pediatric Medicine, THQ Hospital, Taunsa from January 2017 to June 2017 over the months. Total 87 newly diagnosed patients of DM-I without GIT symptoms either male or female having age from 6-16 years were selected for this study.

All patients with type-I diabetes mellitus having gastrointestinal symptoms (loose motions with or without vomiting), parents/guardians unwilling to be included for the study, IgA deficient cases confirmed by measuring total serum IgA level were excluded from the study.

OPERATIONAL DEFINITION

Abnormal celiac serological marker:

Patients were labeled as abnormal celiac serological marker if anti-tissue transglutaminase IgA is ≥18u/ml.

Type I diabetes mellitus:

Fasting plasma glucose ≥126 mg/dL on more than one occasion with interval of more than 24 hours apart.

After selecting patients, history was taken and examination was done of each case. Five ml blood sample was taken from every patient and sent to laboratory. The quantitative determination of anti-tissue transglutaminase IgA was done by indirect chemiluminescence immunoassay. Findings were entered on pre-desinged proforma along with demographic profile of the patients.

Patients were labeled as abnormal celiac serological marker if anti-tissue transglutaminase IgA is ≥18u/ml

Data was entered on computer software SPSS version 16. The quantitative variables of the study i.e. age, was presented as mean and standard deviation. The frequency of abnormal celiac serological marker (anti-tissue transglutaminase IgA), gender, any family history of celiac disease were calculated.

Stratification was performed to control effect modifier like age, gender, any family history of celiac disease. The Chi square test was applied to see the effect of age, gender, any family history of celiac disease on outcome variable i.e abnormal celiac serological marker (anti-tissue transglutaminase IgA). P value <0.05 was taken as significant.

RESULTS

Mean age of the children was 11.43 ± 3.78 years. Out of 70 patients, total 17 (20%) patients found with abnormal celiac serological markers. (Fig. 1) Tow age groups 6-77 years and 12-16 years were made. Out of 51 (58.62%) patients of age group 6-11 years, abnormal celiac serological marker were seen in 10 (19.61%) patients. Total 36 (41.38%) patients belonged to age group 12-16 years and abnormal celiac serological marker were seen in 7 (19.44%) patients. But statistically insignificant association between age group abnormal celiac serological marker was seen with p value 1.00. (Table 1)

Male patients were 37 (42.53%) and female patients were 50 (57.47%). Abnormal celiac serological markers were found in 8 (21.62%) male patients and in 9 (18%) female patients. But association between gender and abnormal celiac

serological marker was statistically insignificant with p value 0.786. (Table 2)

Total 12 (13.79%) patients were found with family history of DM and abnormal celiac serological marker was seen in 5 (41.67%) patients. Total 75 (86.21%) patients found without family history of DM and abnormal celiac serological marker was seen in 12 (16%) patients. Association between abnormal celiac serological marker and family history of DM was statistically significant with p value 0.05. (Table 3)

Fig. 1: Frequency of abnormal celiac serological marker

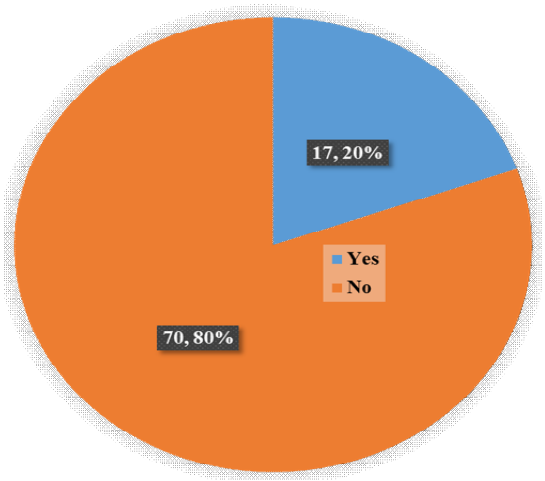

Table 1: Association of Abnormal Celiac Serological Marker with age

Age Group	Abnormal Celiac Serological Marker		Total (%)	P value
	Yes (%)	No (%)		
6-11	10 (19.61)	41 (80.39)	51 (58.62)	1.00
12-16	7 (19.44)	29 (80.56)	36 (41.38)	
Total	17 (20)	70 (80)	87	

Table 2: Association of Abnormal Celiac Serological Marker with gender

Gender	Abnormal Celiac Serological Marker		Total (%)	P value
	Yes (%)	No (%)		
Male	8 (21.62)	29 (78.38)	37 (42.53)	0.786
Female	9 (18)	41 (82)	50 (57.47)	
Total	17 (20)	70 (80)	87	

Table 3: Association of Abnormal Celiac Serological Marker with Family H/O DM

Family H/O DM	Abnormal Celiac Serological Marker		Total (%)	P value
	Yes (%)	No (%)		
Yes	5 (41.67)	7 (58.33)	12 (13.79)	0.052
No	12 (16)	63 (84)	75 (86.21)	

Total	17 (20)	70 (80)	87	

DISCUSSION

This study was aimed to assess the abnormal celiac serological marker (anti-tissue transglutaminase IgA) in newly diagnosed cases of type I diabetes mellitus without gastrointestinal tract symptoms.

In present study out of 87 patients, 17 (20%) patients found with abnormal celiac serological markers. The prevalence of CD in Libya and Algeria was 21.3% and 16.3% respectively.[8-9] In the Middle-East countries, positive serology tests for CD was detected in 20.9% of Saudi children with T1DM.[10] These findings are in agreement with our findings.

Honar et al reported abnormal serological markers in 14.4% type I diabetic patients. [11] Abduljabbar et al[12] reported frequency of abnormal celiac serological marker as 8.6% in type I diabetic children. Sharifi et al[13] found abnormal celiac serological marker in only 8% type I diabetics. In another study, out of 113 patients with type I DM 6.2% patients found with abnormal celiac serological marker. [14] About 12.3% Danish children were found with abnormal celiac serological marker.[15]

CONCLUSION

Results of this study showed a high percentage of abnormal celiac serological marker. Insignificant association of abnormal celiac serological marker with age and gender was detected. But significantly associated with family history of diabetes mellitus.

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