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Research Article

The Frequency of Celiac Disease in Siblings of Celiac Patients

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Abstract

Aim: The prevalence of celiac disease (CD) is estimated to be approximately 1% in the world. The prevalence of CD was found to be 2.6 - 11.9% in the first-degree relatives of celiac patients. In this study, we aimed to investigate the frequency of CD in siblings of celiac patients.

Material and Methods: This study was conducted between March 2017 and October 2018. This study included 77 siblings of 37 celiac patients. Eight of 37 celiac patients who did not have any complaints refused to participate the study. Tissue transglutaminase antibody IgA (tTG IgA) and total IgA tests were performed to all siblings.

Results: The mean age of 37 celiac patients was 9.5 ± 4.2 years, and the mean age of 77 siblings (39 girls) was 8.8 ± 5.3 years. 62 (80.5%) of them had no complaints. The mean level of tTG IgA was 9.8 ± 23.9 U/ml and the mean total IgA level was 116.0 ± 65.3 mg/dl. Four of them (5.2%) had positive tTG IgA antibody. Esophago-gastroduodenoscopy was performed in those siblings. The biopsy results of two siblings were compatible with Marsh 3 and those were diagnosed with CD. The biopsy result of one patient with no complaints was consistent with Marsh 2 and this patient was diagnosed with latent celiac disease. In the other patient, the biopsy result was Marsh 0 which was normal.

Conclusion: 3 of 77 (3.9%) siblings of celiac patients was diagnosed with celiac disease. The risk of CD in the siblings of celiac patients was approximately 8 times higher than in the general population. We recommend that serological screening tests for celiac disease should be performed even if the siblings of celiac patients are asymptomatic. Further studies with more siblings of celiac patients are needed.

Keywords: *Celiac Disease; Intestinal Biopsy; Siblings*

Introduction

Celiac disease is an immune-mediated systemic disease triggered by glüten intake in genetically susceptible individuals. The prevalence of celiac disease is estimated to be approximately 1% in the world [1]. The frequency of celiac disease varies according to the geographic region and genetic factors. In a study conducted in healthy school children in Turkey, the prevalence of celiac disease was reported to be 1/212 [2].

HLA-DQ2 positivity is found in 90 - 95% of celiac patients and HLA-DQ8 is positive in the rest. Those HLA types are available in 30 - 40% of the general population [1].

The European Society for Pediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) recommends screening tests for celiac disease in groups with increased risk of celiac disease such as first-degree relatives of celiac patients [1]. The prevalence of celiac disease in the first-degree relatives of celiac patients was reported to be 2.6-11.9% [3-12]. There is no possibility to develop celiac disease in the

absence of HLA-DQ2 and HLA-DQ8 and there is no need for further investigation [1]. The risk of developing celiac disease is approximately 10% in first-degree relatives of celiac patients with HLA-DQ2/DQ8 positivity [12-14]. However, there is no consensus on when and how often screening tests for celiac disease should be performed in first-degree relatives of celiac patients.

In the current study, we aimed to investigate the frequency of celiac disease in siblings of celiac patients.

Materials and Methods

The present study was conducted between March 2017 and October 2018. The study included 77 siblings of 37 celiac patients. Eight of the 37 celiac patients who did not have any complaints refused to participate in the study. Tissue transglutaminase antibody IgA and total IgA tests were performed to all siblings.

The siblings with previously diagnosed celiac disease and those associated with celiac disease such as type 1 diabetes mellitus, Down's syndrome, any autoimmune disease were excluded from the study. The analysis of HLA-DQ2/DQ8 genotypes could not be performed because it was too expensive. Esophago-gastroduodenoscopy was performed to siblings with positive tissue transglutaminase antibody. Four biopsies from the duodenum and at least two biopsies from the bulb was obtained. The histopathologic evaluation of biopsies was evaluated according to the Marsh classification [15].

Statistical analysis

Statistical analysis was performed using SPSS software version 17.0 (SPSS Inc, Chicago IL, USA). Frequency, percentage, and mean ± standard deviation (SD) were used as descriptive statistics.

Results

The mean age of 37 celiac patients was 9.5 ± 4.2 years and the mean age of 77 siblings (39 girls) was 8.8 ± 5.3 years. Of the 62 (80.5%) of the siblings included in the study had no any complaints, 9 of them had growth delay, 2 of them had constipation, 2 of them had abdominal pain, one of them had hepatosteatosis and other one had epilepsy. The mean level of tissue transglutaminase IgA antibody was 9.8 ± 23.9 U/ml and the mean level of total IgA was 116.0 ± 65.3 mg/dl.

The tissue transglutaminase antibody was found positive in 4 (5.2%) of the siblings. Esophago-gastroduodenoscopy was performed to those 4 siblings. The histopathological evaluation of biopsy results of two patients was compatble with Marsh 3 and then two (2.6%) patients were diagnosed with celiac disease by intestinal biopsy. One of the patients with celiac disease was asymptomatic and the other had growth delay. The biopsy result of third patient with no complaints was consistent with Marsh 2 and this patient was diagnosed with latent celiac disease. The fourth patient had no complaints, and the biopsy result was compatible with Marsh 0 (Table 1).

Patient	tTG IgA (U/ml)	Total IgA (mg/dl)	Pathology
1	56	131	Marsh 3b
2	175	52	Marsh 3a
3	69,9	115	Marsh 2
4	102	74	Marsh 0

Table 1: *The laboratory data of siblings of celiac patients with positive tissue transglutaminase antibody. tTG: Tissue Transglutaminase Antibody.*

Discussion

Since celiac disease is common in first-degree relatives of celiac patients due to the genetic predisposition, screening tests for celiac disease are recommended [16]. The prevalence of celiac disease was found to be 5.9% in siblings of celiac patients in our country [17].

In a systematic review and meta-analysis, the prevalence of celiac disease in siblings of celiac patients was found to be 8.9% [18]. In the current study, the prevalence of celiac disease was found to be 3.9% in the siblings of celiac patients. We found that the prevalence of celiac disease in the siblings of celiac patients was found lower than that of other studies, the reason for this may be due to the small number of siblings of celiac patients and celiac patients included in the study.

In an another study, it was reported that the prevalence of celiac disease in the siblings of celiac patients was 16 times higher than the general population [19]. As compatible with literature, we found that the prevalence of celiac disease in the siblings of celiac patients was 8.3 times higher than the general population.

It was reported that 30% of first-degree relatives of celiac patients refused to participate in a recent study [20]. In accordance with the literature, approximately 10% of our siblings refused to participate in the present study.

One of the limitations of our study is that the number of celiac patients and their siblings is small due to being a single-centered study. The another limitation is that 8 of the siblings of celiac patients refused to participate in the study. Therefore, the effect of our study may be weak.

Conclusion

As a result, 3/77 (3.9%) siblings of celiac patients was diagnosed by intestinal biopsy. According to the general population, the risk of celiac disease in the siblings of celiac patients was found approximately 8 times higher than in the general population. One of the siblings diagnosed with celiac disease was asymptomatic. Since the developmental risk of celiac disease is very high in the siblings of celiac patients compared to the general population, we recommend that serological screening tests for celiac disease should be performed even if the siblings are asymptomatic. Further studies with more siblings of celiac patients are needed.

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