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Coeliac in Patients with Gastrointestinal Symptoms: A Population-Based Study in Tehran

Mohammad Rostami-Nejad,[1] Zahra Nochi,[2] Mohammad Amin Pourhoseingholi,*[1] Kamran Rostami,[1] Shohreh Almasi,[1] Farahnaz Jabari,[1] Parvaneh Mohamadi,[1] Mona Rajaeefar,[1] Mahsa Khani-Yaghma,[1] Mohammad Reza Zali[1]

1. Research Center of Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2. Gastroenterologist, Faculty of Medicine, University of Birmingham, UK

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*Corresponding author at:
Department Research Center of Gastroenterology and Liver Diseases, Shaheed Beheshti University of Medical Sciences, Tehran, Iran
E-mail:
amin_phg@yahoo.com

Abstract

***Background*:** Determination of prevalence of celiac disease among patients with gastrointestinal symptoms was the main objective of this study. Other factors which cause digestive disorders in such patients were also studied.
***Materials and Methods*:** This cross sectional-descriptive study was conducted in Tehran province in 2006-2007; to conduct the study 5176 people were selected randomly. Out of them 670 patients with gastrointestinal symptoms were tested to determine the amount of IgA and tissue Transeglutaminase (tTg). The amount of IgA tTG was measured in individuals with IgA deficiency.
***Results*:** Out of 670 patients, 427 (63.37%) and 243 (36.37%) patients were women and men, respectively; their average age was 42.5. Anti-tTG test was diagnosed positive in 22 patients (17 women and 5 men) (3.3%). Eight patients showed IgA deficiency. The result of IgG tTG test was found positive in three patients out of the abovementioned 8 patients.
***Conclusion*:** This study shows a high dispersion of celiac among Iranian patients with the gastrointestinal symptoms (3%). Routine serologic tests are recommended for diagnosing the unknown cases of sensitivity to gluten.

Introduction

The recent information on non-classical form of Celiac Disease and the advanced screening tests show that the prevalence rate of the disease has been estimated less in most populations [1-3]. The ability to use serologic tests to diagnose celiac over two past decades and gaining some better awareness about the disease facilitated the diagnosis of unusual Celiac [1, 4-8]. Symptoms of Celiac are widespread and very diverse, so that it cannot be said that "People with typical celiac have been affected differently." There is no relationship between the prevalence of the disease and the amount of mucosal damages [9]. More than 200 signs and symptoms have been reported with regard to the sensitivity to wheat gluten, while occasionally the disease may does not show any symptom [10, 11]. Various terms such as latent, silent, secret, unusual are confusing, hence a better definition is necessary to cover the range of sensitivity to gluten.

The Increased percent of the contradict evidence with the results reported on the delayed diagnosis and simpler screening tests such as tissue Transglutaminase Ab (tTGA) [12, 13] justifies the routine screening of cases with higher risk [14-20]. Some preliminary reports show the effect of screening strategy in adults and children [21-23]. This study is dependent on the active role of physicians on primary cares in selection of people in conducting test for celiac disease. The objective of this study was to examine etiology of gastrointestinal disorders in a large group of patients with the gastrointestinal symptoms among residents of Tehran province and also identification of the apparent pattern of gastrointestinal tract from celiac disease in unusual basis. The unusual extra-intestinal symptoms have not been studied.

Materials and Methods

This cross-sectional study was conducted based on the designed population as of Oct. 2006 to Dec. 2007 in Firouzkouh, Damavand in northern Tehran in order to study epidemiology of gastrointestinal diseases such as celiac among population residing in Tehran, Iran [24-26]. Totally, 5176 people had been selected as cluster (each family as a cluster) and participated in the study. All people, who had at least one of the gastrointestinal symptoms, (included 670 people), referred to the Primary Care Centers and were studied comprehensively for the normal gastrointestinal pathology, before testing, written consent form had been provided for registering information in questionnaire. The methodology of the research had been confirmed by the Ethical Committee of Digestive and Gastrointestinal Diseases Research Center of Shahid Beheshti University of Medical Sciences.

OD related to ELISA for Tissue Transglutaminase (tTG) Antibody was compared in 670 patients with gastrointestinal symptoms with total IgA density. The

cases with IgA deficient performance was tested with IgG tTG.

In addition, all serologic tests were performed without knowledge of patients. However, tTG antibody and human "An" immunoglobulin were measured. IgA anti-tTG antibody was set by commercial kit (AESKULISA tTG), German made, with ELISA method. Total IgA criteria were set by Immunoturbidometric method. Sizes below serum 70 U/L were identified as IgA deficient performance. It should be noted that IgG tTG criteria in patients with IgA deficient performance were measured by ELISA method and commercial kit (Aeskulisaitg, Germany). Descriptive statistics was used to study results while χ^2 test and logistic regression, using SAS software, was used to find relationship between relevant factors.

Results

Six hundred seventy patients (13%) out of total 5176 people, who had referred to the Primary Care Centers with different reasons, were diagnosed with gastrointestinal symptoms. The most common symptoms observed among these 670 patients were as follows: Indigestion (208 people), bloat (190 people), abdominal pain (185 people), constipation (139 people), and weight loss (44 people), anal pain (41 people), nausea (36 people), diarrhea (23 people), difficulty is swallowing (23 people) respectively. Table 1 shows the distribution of gastrointestinal symptoms in the population, by sex.

In this study, in 290 patients one main reason was found which showed the development of the gastrointestinal symptoms among 290 patients and positive serologic for celiac disease was observed in 25.290 people with the average age of 42 years old (standard deviation (ANOVA) 19.98 and age limit of 14-81 years). Another infectious agent was found as main reason for other 265 patients. This infectious factor includes *Blastocystis hominis* in 30 cases (4.47%), *Giardia lamblia* in 41 cases (6.11%), *Entamoeba histolytica* and *Entamoeba dispar* in 11 cases (1.64%), *Cryptosporidium parvum* in three cases (0.44%), *Ascaris lumberiquids* and *Entrobious vermicolaris* each in two cases (0.3%) and Rota virus infection in 150 cases (22.38%).

No main factor was found for 380 patients (56.7%). 290 patients (77.3%) were diagnosed with functional symptoms such as constipation, diarrhea, and indigestion (Table 2). 44 patients (11.3%) out of 380 patients were found with irritable bowel syndrome due to the Rom III criteria. The remaining 44 people out of 380 peoples were found with their limited short-term symptoms who responded to the short-term treatment due to the disease symptoms.

With regard to positive tTG case, abdominal pain (10), indigestion (10), bloating (9) and constipation (7) were the most common symptoms while diarrhea was reported only in 2 patients among 25 cases. Statistically, relationship was not observed between positive serology and functional disorders of intestine. Anti-tTG Test was found positive in 22 cases (17 women and 5 men) of total 670 patients studied in this respect while 8 out of 670 patients were found with IgA deficient performance. IgG tTG turned positive IgA deficient performance in 3 out of 8 patients. No significant relationship was observed between prevalence of gastrointestinal symptoms and antibody positive tTG among patients suffering from celiac disease.

Table 1. Prevalence of gastrointestinal symptoms in studied population according to women and men

Symptoms	Male N (%)	Female N (%)	Total N (%)
Abdominal pain	43(6.4)	142(21.2)	185(27.6)
Constipation	29(4.3)	110(16.4)	139(20.7)
Diarrhea	10(1.5)	13(1.9)	23(3.4)
Bloating	46(6.8)	144(21.5)	190(28.3)
Dyspepsia	64(9.5)	144(21.5)	208(31)
Anal pain	1(0.14)	1(0.14)	2(0.3)
Nausea	3(0.44)	23(3.4)	26(3.9)
Weight Loss	21(3.1)	23(3.4)	44(6.6)
Dysphagia	6(0.89)	18(2.68)	24(3.58)

Table 2. Gastrointestinal symptoms in 380 patients with functional symptoms and 290 patients with gastrointestinal disorders

Symptoms	Digestive Disorders group N (%)	Functional Symptoms group N (%)
Bloating	80 (27/6)	110 (28/9)
Dyspepsia	93 (32/1)	115 (30/30)
Anal pain	1 (0/3)	1 (0/26)
Nausea	16 (4/2)	16 (4/2)
Weight Loss	14 (4/8)	30 (7/90)
Dysphagia	6 (2/1)	18 (4/7)
Abdominal pain	83 (28/6)	102 (26/8)
Constipation	54 (18/6)	85 (22/3)
Diarrhea	12 (4/1)	11 (2/9)

Discussion

The results of this study showed high dispersion level in celiac disease among Iranian patients with gastrointestinal symptoms. Celiac is the most important diagnosable disorder related to the food and is almost diagnosed with the delay and unusual or severe symptoms [27]. Serologic screening studies propose that this disease occurs among 1-2.5 percent of people in the world [28, 29]. Although serological tests have not the ability of diagnosing a subgroup of unusual patients with mild mucosal abnormalities [30-33], our study includes screening patients with nonspecific gastrointestinal symptoms with high risk of celiac disease in them. For example, some cases with indigestion and changes in abdominal habits, etc.

Generally speaking, malabsorption and growth failure in childhood will cause appearance of the disease but this disease appears in adults with nonspecific symptoms such as indigestion, abdominal habits discomfort [34-42].

In this study, indigestion was the most common symptoms and the results showed that remarkable number of patients with celiac disease have not clinical features or describable function of the disease [43, 7]; although this irregular emergence is less taken into consideration with constipation than the normal forms of the disease such as diarrhea, and mal-absorption.

In recent decades, it was suggested that knowledge of identification of disease symptoms may have relationship with a part of small intestine, which is involved structurally. Although Murray et al. and others specified clearly that these symptoms are not only irregular and unusual, but also it does not seem to have relationship with the rate of mucosal changes [44-46]. Similarly, antibodies sensitivity by the clinical manifestations is not affected without any difference between patients with normal and abnormal diseases [47].

Noticeably, Maki et al. have shown that gastrointestinal disorder symptoms are observed due to the sensitivity to gluten even at the microscopic stage of mucosal damages at the initial stage of celiac disease [48-50]. Rate of mucosal changes is not the main consequences; rather, consistency of mucosal abnormalities to the gluten sensitivity is taken into consideration [51-54]. There are lymphocytes, sensitized with gluten, in mucous which indicates main concept of sensitivity to the gluten without considering rate of mucosal damages [49, 50, 52, 55]. Unfortunately, there are facilities to consider daily changes of mucous even at the most advanced medical centers. In contrast, with due observance to the recent strategies limitations, we are of the opinion that mucosal abnormalities can be fruitful. In this study, applied and nonspecific intestinal disorders were observed in 380 people from 670 people. Admitting the presence of some unknown cases, sensitive to gluten, is not a difficult task in this group, because, we could not diagnose them due to the limitation of effective facilities [56].

The similar published results show that testing celiac disease in other patients with symptoms such as patients with IBS is economical in terms of costs (3-8%) [57-59]. The similar procedure found in patients with indigestion and other unusual symptoms in this study, confirms study of sensitivity to gluten n most patients with gastrointestinal symptoms. Although a negative result of antibody test is not created obstacle behind diagnosis of celiac disease, a positive result of EMA/tTGA is more dependent on the important changes of histology. Thus, despite limitations of serology [21, 22, 60] in diagnosis of celiac disease, it can be imagined that prevalence of celiac disease, not identified in patients with gastrointestinal symptoms, is much more than the number of celiac disease diagnosed in this study.

Using proposed strategy of Rashtak and Murray is considered as one of the optimized method for practicality of effect of tests [5, 61]. They proposed using HLA typing as a test with high sensitivity to rule out the disease [5]. Strategy of using serological tests, as a guide, may be fruitful in improvement of society health. In other words, trusting the serological tests may lose the patients with their negative serology test results [31, 60, 33].

At the end, it is recommended to forget prevalence of classic gastrointestinal symptoms and concentrate on the nonspecific characteristics of celiac disease as a quality related to the health in patients with celiac disease with unusual manifestations. Fulfilling a new diagnostic strategy based on recent evidences for unusual forms of celiac disease can be considered as a key step in diagnosis of latent forms of the disease in patients with celiac disease.

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Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

Conflict of Interest

The authors declare no conflict of interest.

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