Original article

Prevalence of celiac disease in irritable bowel syndrome patients: A single centre experience from a large teaching hospital of Lahore, Pakistan

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ABSTRACT

Background: Many studies have been conducted worldwide to evaluate the proportion of patients with Celiac disease (CD) in persons presenting with Irritable Bowel Syndrome (IBS), showing a positive association between the two diseases. However, reports from Pakistan remain scanty. This study aims to find out the prevalence of CD in patients presenting with IBS and to establish the correlation of both diseases.

Patients and methods: It was a descriptive cross-sectional study conducted at Combined Military Hospital, Lahore (CMHL) from January 2018 till March 2019. Consecutive, nonprobability sampling was used to include 210 patients of both genders with the age range of 15-65 years fulfilling ROME IV criteria and were not previously diagnosed as CD or CKD or CLD. Demographic data was noted. Serum Anti tTG levels and Duodenal Biopsy from the second part was assessed to diagnose CD. CD was labeled if the disease was present on both serological and Histopathological reports. Data were analyzed by using SPSS version 20. Descriptive statistics were calculated and a Chi-square test was used to compare the outcome variables with P-value $\leq$ 0.05 as significant.

Results: Of 210 enrolled patients, 113 (53, 8%) were male and 97 (46.2%) were female. The mean age of the patients was 28.40 ± 5.06 years. Eight patients (3.8%) were positive for Anti tTg and on histopathological findings suggestive of CD. Seven of 8 were less than 35 years old. Out of 8 positive patients, 6 (75%) were females. However, the p-value was found to be insignificant for age (0.549) and gender (0.096). On stratification with respect to duration of IBS, all 8 patients diagnosed with celiac disease were having symptoms of IBS for less than 12 months (100%) which was significant statistically (7.1% vs 0.0%; p=0.007).

Conclusion: The frequency of CD was 3.8% among IBS patients. Considering this percentage of CD in IBS patients s, a high index of suspicion for CD in IBS patients is required,

Keywords:

Irritable Bowel Syndrome (IBS), Celiac disease (CD), Serum anti tTG, Duodenal biopsy

INTRODUCTION

Irritable bowel Syndrome (IBS) is among the most common diseases of functional gastrointestinal (GI) disorders in which there are various groups of symptoms like abdominal pain or discomfort associated with altered bowel habits in the absence of an organic cause.[1,2] Prevalence estimates for this disorder have varied from 1-45% with up to 1 in 10 persons affected all over the world.[3] A study conducted in Karachi, Pakistan showed a disease prevalence of 3.5%.[4] As seen in population-based studies, younger populations under the age of 50 years have a higher prevalence of disease although Irritable Bowel Syndrome is often under-diagnosed in the elderly.[5] Women are the more affected gender, with an almost 2:1 ratio in North America.[6,7] Celiac disease (CD) is a chronic, multifactorial, immune-mediated pathology of the small bowel. The precipitating factor is the exposure to dietary gluten in genetically predisposed people with the presence of HLA histocompatibility antigen HLA -DQ2 and DQ8.[7-10] Celiac disease is called typical/classical when it presents with malabsorption and atypical/non classical when presents with anemia, fatigue, abdominal bloating or sexual problems and silent disease which is identified by serology only as it lacks symptoms and signs.[11,12] Since CD mimics some of the symptomatology of IBS, many of the patients of CD are missed and are treated under the umbrella of functional disorders. CD must be kept in the differential diagnosis of IBS. A lot of research has been done to find the frequency of CD in IBS patients worldwide and has found the prevalence of CD around 1% in Europe with variable percentages in different regions of the World.[13-18] Data on prevalence and correlation among two diseases is scarce in

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Pakistan. This study aims to determine the frequency of CD in IBS patients.

PATIENTS AND METHODS

The study was approved by the ethical review board of the institution and informed consent was taken from all the patients included in the study. It was a descriptive cross-sectional study conducted at Combined Military Hospital (CMH), Lahore from January 2018 till March 2019. Consecutive, nonprobability sampling was used to include 210 patients of both genders with an age range of 15-65 years. Both the male and female patients in the age range of 15-65 years, fulfilling ROME IV criteria[19] and previously neither diagnosed as CD nor suffering from Chronic liver or kidney disease were included in the study. Those patients having chronic diarrhea either with bloody stool or fever, age above 65 years, suffering from Chronic Kidney Disease (CKD) or Chronic Liver disease (CLD), and already diagnosed cases of CD were excluded from the study.

Serum Anti tTG level was sent to the laboratory and a small intestinal biopsy from the second part of the duodenum was collected to be reviewed by Histopathologist. The biopsies were re-assessed by a second pathologist. Celiac disease was labeled on basis of both serological (anti-tissue transglutaminase antibodies (anti tTG IgA) as positive) and histological (epithelial lymphocytes (>20/100 enterocytes) and flattened villi of the duodenum) findings. Collected data were analyzed using SPSS version 20. Descriptive statistics were calculated and Post Stratification Chi-square was used to compute the p-value.

Table1. Descriptive statistics of age, gender, and duration of IBS

Characteristics	Descriptive statistics
Mean age (years ± SD [range])	28.40 ± 5.06 (17-45)
Gender	
Male	113 (53.8%)
Female	97 (46.2%)
Duration of IBS (months + SD [range])	13.25±4.44 (3-27)

RESULTS

Of 210 enrolled patients, 113 (53.8%) were male and 97 (46.2%) were female. The mean age of the patients was 28.40 ± 5.06 years, of which the minimum age was 17 years and the maximum was 45years. The mean duration of irritable bowel syndrome was calculated to be 13.25±4.44 months, of which the lowest duration of symptoms was 3 months and the highest was 27months as shown in Table 1.

Serological testing (serum Anti tTG) was positive in 9% (19) of cases and histological findings were consistent with CD in 6.7% (14). Combined findings were seen in 8 patients, so the frequency of CD in IBS came out to be 3.8% as shown in Table 2.

Data was stratified for the effect modifier with respect to age group, gender, and duration of disease. A total of 195 patients with IBS were lying in the age groups (17-35 years) and among these, celiac disease was observed in 7 (3.6%) of the cases. Similarly, a total of 15 cases were present in the age group (36-45 years) years of which 1 (6.7%) was detected with the positivity of celiac disease. Out of these 08 positive cases, 06 (75%) were females. In a comparison of these two strata independently i.e. age and gender, the p-value was found to be insignificant (0.549 and 0.096 respectively).

Table 2. Frequency of celiac disease in IBS Patients

Findings	Serological findings		Histological findings		Combined findings (serological + histological)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Positive	19	9.0	14	6.7	8	3.8
Negative	191	91.0	196	93.3	202	96.2

Table 3. Post-stratification chi-square test

Variables	Celiac disease		p-value
	Positive	Negative	
Age groups (years)			
17-35	7 (3.6%)	188 (96.4%)	0.549
36-45	1 (6.7%)	14 (93.3%)	
Gender			
Male	2 (1.8%)	111 (98.2%)	0.096
Female	6 (6.2%)	91 (93.8%)	
Disease duration groups (months)			
1-12	8 (7.1%)	104 (92.9%)	0.007
13-30	0 (0%)	98 (100%)	

On stratification with respect to duration of irritable bowel syndromes symptoms, 112 / 210 (53.3%) cases belonged to1-12 months of duration and 98 / 210 (46.7%) were associated with 13-30 months of duration group. It was remarkably noticed that all 8 patients diagnosed with celiac disease were linked with the group of duration less than 12 months (100.0%). Data were compared in both groups and statistically, a significant difference was accomplished between both groups i.e. (7.1% vs0.0%; p= 0.007) as shown in Table 3.

DISCUSSION

There exists an overlap of symptoms and triggering points between IBS and CD. Due to this mimicry, the CD is often misdiagnosed as IBS and increases its morbidity.[20] The mean age in our study was 28.40 ± 5.06. Out of 210 patients enrolled, 53.8% were males and 46.2% were females. This was comparable to a study by Akhondi et al but was contrary to a study reported by Cash et al in which a large number of females (69.9%) was observed.[21,22] It may be because most soldiers live alone without families, making males the predominant population.

The mean duration of disease was 13.25 ± 4.44 months. Stratification of data and comparison of the groups formed revealed that there exists no relationship in age and gender groups, however, a significant association was found with the duration of the disease, with a significant p-value. This is well consistent with other studies.

Total 19 patients showed an abnormal level of anti tTG accounting for 9% positivity of celiac disease and 14 patients showed histopathological changes seen in celiac disease consistent with 6.7% positivity of the disease. 08 cases (3.8%) were positive both on serology and histopathology which is comparable with the study by Akhondi et al, where disease frequency was 3.2%. A recent meta-analysis from Iran shows a 6.13% prevalence of celiac disease in IBS patients.[23] Farther in the Arab world a rising prevalence is observed and Saudi Arabia is having 9.6% Celiac disease in IBS patients.[24] While our close neighbors India and Bangladesh have 6.1% and 9% prevalence respectively.[17-18] This much difference in different studies is probably due to ethnicity, dietary habits, availability of resources for diagnosis, and genetic make-up. However, further studies are the need of the hour to investigate the subject and acquire the original frequencies.

The real strength and uniqueness of this study is its larger population size and non-availability of such study in the area. The limitation of the study is false positive serological testing which was performed once and was not repeated after three months.

CONCLUSION

A sizable population of Irritable Bowel Syndrome was found to have celiac disease as well. It is therefore concluded that we should keep a high index of suspicion in IBS patients, especially if they show different symptomatology or show an inadequate response to treatment.

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