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ORIGINAL ARTICLE

Frequency of Celiac Disease in Microcytic Anemia Patients of Nowshera

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ABSTRACT

Background: Celiac disease a chronic gastrointestinal disorder is caused by an immune response to the gluten. Numerous studies have been conducted worldwide on the relationship between anemia and celiac disease.

Objective: To find out the frequency of celiac disease in microcytic anemia patients of Nowshera

Methodology: The current study was cross sectional carried out at the Gastroenterology department, Qazi Hussain Ahmad Medical Complex, Nowshera from October 2021 to October 2022. For serological diagnosis of the celiac disease, all the patients were tested for IgA and IgG tTG (anti-tissue transglutaminase). OesophagoGastroDuodenoscopy (OGD) was done for all the patients with raised level of IgA and IgG tTG (anti-tissue transglutaminase). All the analysis of collected data was done by employing IBM SPSS version 24.

Results: In this study a total of 300 patients with microcytic anemia were enrolled. There were 165 (55%) female participants while 135 (45%) patients were male. IgA and IgG tTG (anti-tissue transglutaminase) levels were raised in 15 (5%) patients amongst 300 patients with microcytic anemia. In duodenal biopsy of 15 patients with celiac disease, Marsh I was observed in 4 (33.33%) patients, Marsh II in 5 (41.67%) patients, Marsh III in 3 (25%) patients, while 3 (20%) cases showed normal histo-pathological findings. Thus the overall frequency of celiac disease amongst microcytic anemia patients was 15 (5%).

Conclusion: Our study concludes that celiac disease is more prevalent amongst the patients with microcytic anemia. The microcytic anemia can be considered as additional gastrointestinal manifestation of the celiac disease.

Keywords: Frequency; Celiac disease; Microcytic anemia

INTRODUCTION

Celiac disease is a chronic gastrointestinal disorder caused by an immune response to the gluten found in a variety of grains, including barley, wheat and rye [1, 2]. The condition is genetically transmitted, according to evidence [3, 4]. Histocompatibility leukocyte antigens (HLA) genes, particularly HLA-DQ2 and HLA-DQ8, play a significant role in the genetic transmission of celiac disease [5, 6]. According to research, genetic predisposition accounts for 95% of the causes of celiac disease [7].

Numerous studies have been conducted on Pakistani population to determine the frequency of celiac disease. A study carried out by Rashid & Khan reported that the prevalence of celiac disease ranged from 1-3% in the Pakistani population [8]. This number still understates the true frequency of disease in people of our country that has yet to be detected because of the inaccessibility of the people to the health-care system in light of insufficient health facilities in our country. People with celiac disease are treated by eliminating gluten from their diets and mandating a gluten-free diet [9]. In underdeveloped nations like Pakistan, where the incidence of iron-deficiency anemia, "a common form of microcytic anemia" is estimated to be as high as 50% in young people, is one of the leading cause of anemia [10]. One of the most prevalent celiac disease symptoms is anemia, which has received widespread attention [11]. Anemia caused by iron deficiency is often hypochromic and microcytic. Patients often have lower ferritin levels, higher overall binding capacity, and low serum iron levels [12, 13]. Iron deficiency in CD is largely caused by reduced iron absorption as a consequence of changes to the mucosal epithelium. Depending on the severity of villous atrophy, individuals with CD have also shown symptoms of occult gastrointestinal bleeding [14, 15]. Numerous studies have been conducted worldwide on the relationship between anemia and celiac disease. Unfortunately, this association has been generally disregarded because of the inadequate health resources of our country. This study was carried out to assess the frequency of celiac disease among those suffering from microcytic anemia in Nowshera district of Khyber Pakhtunkhwa.

MATERIALS AND METHODS

The current study was cross sectional carried out at the Gastroenterology department, Qazi Hussain Ahmad Medical Complex, Nowshera. The duration of study was one year from October 2021 to October 2022. The study approval was taken from the hospital ethical committee. The overall sample size based on calculator of WHO was 300 patients with microcytic anemia. The inclusion criteria for our study was all the patients of both the gender and all ages diagnosed for microcytic anemia on the basis of diagnostic tests and willing to participate in our study. The exclusion criteria for our study were all the patients with a history of blood loss like melena, hematuria, hematochezia, trauma, menometrorrhagia, hemoptysis, pregnancy, hypermenorrhea (periods ≥7 days), recurrent epistaxis, serious cardiac or respiratory disorders, gastric surgery and patients with hematologic and chronic problems. An informed consent was signed by all the patients of our study. All the data like name, age gender and other information related to medical history were recorded on a predesigned proforma. For serological diagnosis of the celiac disease, all the patients were tested for IgA and IgG tTG (anti-tissue transglutaminase). OesophagoGastroDuodenoscopy (OGD) was done for all the patients with raised level of IgA and IgG tTG (anti-tissue transglutaminase). All the analysis of collected data was done by employing IBM SPSS version 24. For variables such as gender and status of celiac disease, frequency and percentages were determined while for other variables like age and hemoglobin level and serum ferritin, means and standard deviation were calculated.

RESULTS

In the current a total of 300 patients with microcytic anemia were enrolled. There were 165 (55%) female participants while 135 (45%) patients were male. (Figure 1) The mean age of the patients with ±SD was 42 (±9.22) years. On the basis of age distribution, 30 (10%) patients were less than or 18 years old, 140 (46.67%) patients were 18-40 years old, 100 (33.33%) patients were 41-60 years old and 30(10%) patients were aged more than 60 years. (Figure 2). Based on serology, IgA and IgG tTG (anti-tissue

transglutaminase) was raised in 15 (5%) patients amongst 300 patients with microcytic anemia. Endoscopy was done for all the patients with raised IgA and IgG tTG (anti-tissue transglutaminase). Histopathological findings of 12 (80%) patients were consistent with celiac disease while 3 (20%) patients showed normal histopathological findings (Figure 3). Marsh I was observed in 4 (33.33%) patients, Marsh II in 5 (41.67%) patients while Marsh III was observed in 3 (25%) patients. (Figure 3) Thus the overall frequency of celiac disease is 5% (n=15) (Figure 4). The mean (SD) hemoglobin (g/dl) and Ferritin (µg/L) of the patients with celiac disease was 10.4 (4.12) g/dl and 7.5 (2.17) µg/L respectively.

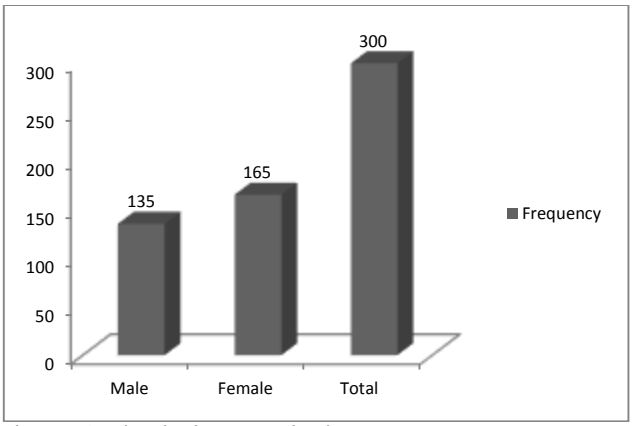

Figure 1: Gender wise frequency of patients

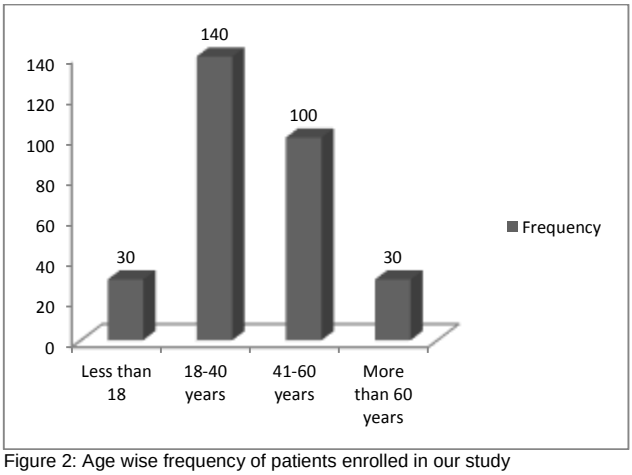

Figure 2: Age wise frequency of patients enrolled in our study

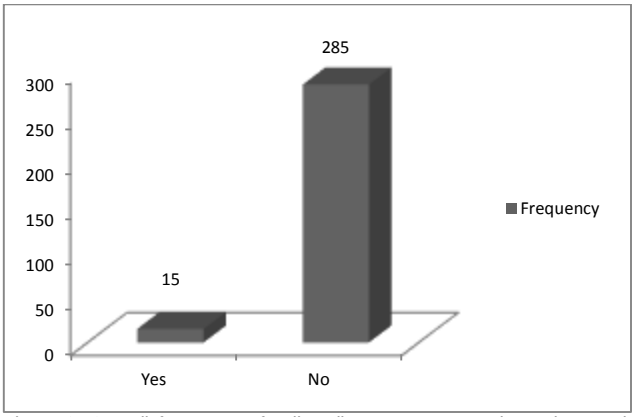

Figure 3: Overall frequency of celiac disease amongst microcytic anemia patients

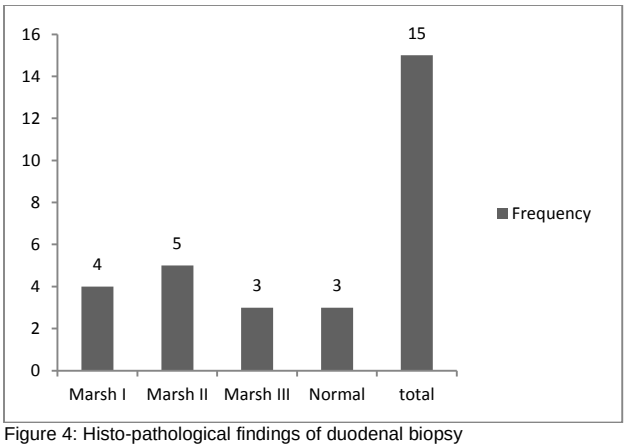

Figure 4: Histo-pathological findings of duodenal biopsy

DISCUSSION

The incidence of iron deficiency anemia in Pakistan has been linked to celiac disease, which is one of the main causes of this condition in developing nations [16]. Asymptomatic cases of celiac disease are currently the most prevalent type of the illness and are seven times more frequent than individuals with a clinical diagnosis due to advances in diagnostic techniques for its diagnosis [17]. In a current research, amongst the several clinical manifestations in routine practice during the five years before the confirmation of CD, anemia and diarrhea were shown to be the only independent predictors of an ultimate diagnosis of CD [18]. The number of people diagnosed with celiac disease who lack the typical symptoms but have IDA has increased dramatically in recent years [13, 19-22]. If no clear instance of IDA can be observed, the British Society of Gastroenterology guidelines recommend taking duodenal biopsies during endoscopy [23]. Studies including individuals referred for assessment of IDA and serologic testing and small-bowel biopsies have shown CD in 1.8% to 14.6% of participants [24, 25].

In this study a total of 300 patients with microcytic anemia were enrolled. There were 55% female participants while 45% patients were male. The mean age of the patients with ±SD was 42 (±9.22) years. On the basis of age distribution, 10% patients were less than or 18 years old, 46.67% patients were 18-40 years old, 33.33% patients were 41-60 years old and 10% patients were aged more than 60 years. Based on serology, IgA and IgG tTG (anti-tissue transglutaminase) was raised in 15 (5%) patients amongst 300 patients with microcytic anemia. Endoscopy was done for all the patients with raised IgA and IgG tTG (anti-tissue transglutaminase). Histopathological findings of 12 (80%) patients were consistent with celiac disease while 3 (20%) patients showed normal histopathological findings. Marsh I was observed in 4 (33.33%) patients, Marsh II in 5 (41.67%) patients while Marsh III was observed in 3 (25%) patients. Thus the overall frequency of celiac disease is 5% (n=15) The mean (SD) hemoglobin (g/dl) and Ferritin (µg/L) of the patients with celiac disease was 10.4 (4.12) g/dl and 7.5 (2.17) µg/L respectively.

A previous study was carried out on the anemic patients for the prevalence of celiac disease by Mohammad Hassan Emami et al. in Iran. They reported that the overall prevalence of celiac disease was 3.8% amongst the patients with iron deficiency anemia on the basis of duodenal biopsy. These results are in line with our findings. In their study, there were more females patients as compared to males which is in accordance with our findings [26]. A recent local study carried out by Muhammad Aasim et al. was also done on the patients iron deficiency anemia for the frequency of celiac disease. In their study, there were more female patients as compared to male patients. They reported the overall frequency of celiac disease as 3.35% based on duodenal biopsy which is almost similar with our findings [27]. Another study carried out in Iran reported 10% prevalence of celiac disease in patients with iron deficiency anemia which is not in accordance with our findings [28].

Another study done by Ayhan Hilmi et al. reported 8.33% prevalence of celiac disease in iron deficiency anemia patents which is also high than our findings (5%) [29]. This research attempts to close the gap in the existing literature among Pakistani citizens suffering with celiac disease and microcytic anemia, both of which were principally unknown to this community. Our study also aims to provide the groundwork for future studies that will aid in the identification and treatment of patients who appear with both illnesses at once, which may increase their risk of serious complications or even death.

CONCLUSION

Our study concludes that celiac disease is more prevalent amongst the patients with microcytic anemia even in cases when the anemia is not accompanied by any gastrointestinal symptoms. Therefore, celiac disease should be suspected in any adult patient who presents with microcytic anemia for which there is no obvious explanation.

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