

Prevalence of Asymptomatic Celiac Disease in low body weight Iraqis

***Tawfeeq F. AL-Auqbi M.B, Ch.B F.I.C.M.S/C.M **Salah Aldeen Abdulnabi M.B, Ch.B D.M C.A.B.M ***Subhi Farhan M.B, Ch.B D.M C.A.B.M**

Objectives: To assess the prevalence of celiac disease in asymptomatic low body weight Iraqis.

Method: 100 low body weights, asymptomatic and looking well, of 17-20 year old individuals whose body weight < 40 Kg, were chosen to be included in the study. Each one of the participants was examined physically, as well their nutritional status were assessed by measuring body weight, height, body mass index BMI, waist/hip W/H ratio, skin fold thickness and mid arm circumference MAC. Only 79 participants were accepted, to be prepared, for per oral upper GI endoscopy; mucosal biopsies were obtained from 54 participants, of them, for histopathological examination.

Results: Physical examination of the 100 participants revealed no obvious abnormality. Their nutritional assessment shown means \pm SD of body weight, height, BMI, W/H ratio, skin fold thickness and MAC were 37.86 ± 4.2 Kg, 154.6 ± 9.2 cm, 15.92 ± 2.03 kg/m², $0.806 \pm 0.07\%$, and 5.20 ± 2.07 mm and 19.84 ± 1.61 cm respectively. The 79 per oral endoscopic examinations revealed those 39 (49%) participants having normal duodenal mucosa, while the rest 40 (51%) participants having abnormal, nonspecific, gross appearance of duodenal mucosa. Histopathological examination of the 54 biopsies, reveals that 21 (38%) participants having normal histopathological examination of duodenal mucosa, While the rest 33 (62%) participant's biopsies revealed abnormal histopathological findings of celiac.

Conclusions: There was high prevalence of celiac disease among low body weight Iraqis.

ABSTRACT:

Key words:

celiac disease, asymptomatic, low body weight, prevalence, BMI, waist /hip ratio (W/H ratio), skin fold thickness, Mid-arm circumference (MAC), per oral upper GI endoscopy, duodenal mucosa histopathology, Iraqis.

Introduction:

Celiac disease is an autoimmune enteropathy characterized by chronic inflammation of the small intestinal mucosa and by presence of typical autoantibodies (1).

It develops in genetically predisposed individuals after mucosal contact with gluten and secondarily hitherto unknown triggering factors (1, 2, 3).

Only 30-40% of adults with the disease have symptoms of malnutrition (1), adult patients tend to remain asymptomatic or oligosymptomatic (3), the characteristic clinical picture are seen infrequently now in the medical practice (4). The prevalence in different countries ranges widely (5). Several European

*Dr.Tawfeeq F. AL-Auqbi, National Diabetes Center (NDC), AL-Mustansyria University, Baghdad.

**Dr. Salah Aldeen Abdulnabi, the Gastroenterology and Hepatology Teaching Hospital, Baghdad.

***Dr.Subhi Farhan, the Gastroenterology and Hepatology Teaching Hospital, Baghdad.

studies have recently revealed values between 1:152 to 1:300 in countries that include Ireland, the United Kingdom (5), 0.03-0.046% in Italian adolescents (6,7), 1.06% of Sardinian schoolchildren (8), 0.05% of Dutch (9) and 2% of Swedish infants (10). Previous figures from the United States suggested that the condition affected 1:6000; however, a recent study involving serologic screening of blood donors suggested that this figure is more likely to be 1:250 (5). In Iraq, the prevalence was found to be 1:400 among healthy blood donors, by serological screening (11). Although, celiac disease is a common disorder in many areas of the developing world, where agriculture started 10 000 years ago, but the highest frequency of celiac disease in the world has actually been reported among the Saharawi refugees, an inbred population of Barbar- Arabic origin (12). In 1997, Maki and Collin suggested the concept of the "celiac iceberg," the majority of cases going clinically undetected with silent, latent or potential disease (13). Silent celiac disease refers to those with marked severe mucosal damage but without any symptoms, both latent and potential celiac disease are characterized by normal small intestinal mucosa in an individual on a normal, gluten containing, diet. As opposed to potential celiac latent subjects sometimes in their life in the past or in the future have had morphologic mucosal changes responsive to gluten withdrawal; latent celiac patients are often symptomatic (14). While the term potential celiac disease has proposed for those subjects who do not have, and have never had, a morphologic mucosal abnormalities and yet have immunological abnormalities similar to those found in celiac patients (13, 14, 15). Celiac disease is often atypical or even silent on clinical ground, therefore, many cases remain undiagnosed and become exposed to the increased risk of autoimmune disease (3) and long term complications of celiac disease such as osteoporosis, infertility, intestinal lymphoma or carcinoma (3,16). Therefore, diagnosis of asymptomatic celiac disease, which is 10-20

time more evident than previously thought, may provide a diagnosis for patients with a variety of chronic unexplained symptoms (4) especially for those who are asymptomatic and unexplained low body weight individuals.

Objectives:

To assess the prevalence of celiac disease in asymptomatic low body weight Iraqis and focusing the light on the celiac disease as an etiological factor for the low body weight among the Iraqi individuals.

Method:

The study was carried out, 2002, in the Department of Medicine - Al-Rasheed teaching hospital. Hundred participants of low body weight, asymptomatic and looking well, were chosen to be included in the study. Their age were 17-20 years and body weight < 40 Kg, so they were considered unfit for the military recruitment. Each one of the participants was examined physically, to be sure that they were in good general condition, as well the nutritional status was assessed by measuring their body weight, height, body mass index BMI, waist/hip W/H ratio, skin fold thickness and mid arm circumference MAC (17,18). They were prepared for per oral upper GI endoscopy by using fiber optic gastroscopy (Q20 OLYMPUS). Only 79 participants were accepted to undergo the procedure of per oral upper GI endoscopy and 21 participants were refused. The finding of upper GI endoscopy was classified according to the duodenal mucosa gross appearance (19, 20). Mucosal biopsies were obtained, only, from 54 participants for histopathological examination and the results were classified according to Marsh's classification method of celiac disease (19, 20, 21).

Results:

Physical examination of the 100 participants revealed no obvious abnormality. Their nutritional assessment, anthropometric measurements, means \pm SD was shown in (table 1).

The 79 endoscopic examinations revealed that 39 participants (49%) showed normal gross appearance of duodenal mucosa; while the rest 40 participants (51%) showed abnormal gross appearance of duodenal mucosa. Nutritional, anthropometric measurements, means \pm SD of both groups were shown in (table 1). The differences between anthropometric means of the two groups, normal and abnormal endoscopic findings, were statistically not significant, t-test $P > 0.05$ (22).

Histopathological examination of the 54 biopsies, obtained from the endoscopically examined participants, revealed that 21 participants (38%) having normal histopathological examination of duodenal mucosa; while the rest 33 participants (62%) having abnormal histopathological findings of duodenal mucosa, their nutritional, anthropometric measurements, means \pm SD of both groups were shown in (table 1). The differences between anthropometric means of the two groups, normal and abnormal histopathologic findings, were statistically not significant, t-test $P > 0.05$ (22).

The 54 participants who were examined by upper GI endoscopy and histopathology shows that 14 participants (25.9%) had normal duodenal mucosa and 22 participants (40.7%) had abnormal duodenal mucosa. Also, there were 11 participants (20.3%) had normal appearance of the duodenal mucosa by endoscopy with abnormal histopathological findings; and 7 participants (12.9%) had abnormal appearance of the duodenal mucosa by endoscopy with normal histopathological findings. The differences between the two examinations, endoscopy and histopathology were statistically not significant, Mc Nemar's test $P > 0.05$ (22) (table 2). The positive predictive value for endoscopy and histopathology were 0.560 and 0.666 respectively while the negative predictive values were 0.750 and 0.666 respectively (24, 25) (table 2).

Discussion:

The nutritional status, of all participants, were evaluated by the WHO standards, anthropometric measurements, which is reliable for the Caucasians, Africans and Asians (17) and the CDC growth charts of the United States (27). All the participants were found to be severely malnourished when compared with the WHO standards (17); also they were founded as far below as even the 3rd percentile of stature for age, weight for age and BMI for age (17, 27).

Although, malnutrition is a common clinical feature of celiac disease but those examined by endoscopy showed that only 40 participants (51%) had nonspecific changes of duodenal mucosa gross appearance of celiac disease when they were on normal, gluten containing, diet; and only 33 participants (62%) of those examined histopathologically showed a pictures of celiac disease. While the remaining participants, 39 (49%) of those examined by endoscopy and 21 (38%) of those examined by biopsy histopathology, were labeled as normal because there were no suggestive evidence of celiac disease. Those labeled as normal participants might be either, normal healthy individuals with unexplained low body weight, or, they had latent or potential forms of celiac disease, at the time of examination; so endoscopic and histopathologic examinations couldn't detect these forms of celiac (12). The confirmation of celiac disease was established by one of the two following ways; either, by using serologic assays, IgG or IgA antibodies of gliadin and endomysium (3, 4), which were unfortunately not available, in Iraq, due to shortage of resources, or by using the classical way of obtaining three intestinal biopsies in three different situations, on gluten, off gluten and gluten challenge (4).

The differences between groups labeled as normal and celiacs were statistically examined three times among groups examined by endoscopy, histopathology and by both means, the results were found to be of no statistical

significance because, either there was no difference between the participants of all groups, or, the groups were homogeneous to the degree to be considered as similar, uniform, groups.

There was high prevalence of celiac disease among asymptomatic low body weight Iraqis. This study revealed that 51% of those examined by using the endoscopy shows nonspecific changes of duodenal mucosa of celiac, as well 62% of those examined by using the histopathological examination were proved to be celiacs. We suggest that these results would be higher if we use the, more sensitive and specific, serological assays in the diagnosis of celiac disease to discover the silent and potential celiacs.

The high prevalence of celiac disease among the unexplained low body weight adult individuals must draw the attention of physicians, during clinical practice, to consider celiac disease at the top of list of causes of low body weight and malnutrition in Iraq.

There is a real necessity for providing serologic assays, IgG and IgA antibodies of gliadin and endomysium, with confirmatory per oral endoscopy and intestinal biopsy for histopathological examination to establish the correct way in diagnosis of celiac disease in current clinical practice and screening for celiac disease in future.

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