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Research Article

Characteristics of Celiac Disease in Childhood of Eastern Algeria

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Abstract

Objective: To determine the symptoms, associated pathologies and features of Childhood Celiac Disease in the population of eastern Algeria.

Study: The retrospective study was conducted in Pediatric Specialized Hospital of Sidi Mabrouk - Constantine. This study was based on data of 100 patients.

Results: In this sample, we noted a diversity of signs and associated pathology, a variety of digestive symptoms represented mainly by abdominal pain (59%), chronic diarrhea (51%) and vomiting (48%). Extra-digestive symptoms represented mainly by palorous skin and mucosa, delayed status and weight and stagnation of the weight with the percentages: 69%, 53% and 51% respectively. In addition, we noted biological disorders and a series associated pathologies namely: anemia (29%) and mouth ulcers (6%).

Conclusion: Childhood Celiac Disease (CD) of eastern Algeria can be expressed by a variety of digestive symptoms and gastrointestinal disorders (GI) in addition to a series of associated conditions.

Key words: Infant Celiac Disease, Symptoms, Associated Conditions, Eastern Algeria

Introduction

Celiac disease is a chronic inflammatory autoimmune enteropathy (AIE), characterized by intestinal villous atrophy and inflammatory infiltration of the duodenum and jejunum, induced by prolamins (gluten) [1, 2].

The prevalence of the disease in the world is estimated at 1% in the general population and increases to 33% in populations "at risk" [3].

Celiac disease promotes the occurrence of many complications mainly malignant lesions [4]. The overall risk of death for a person with celiac disease is increased by 39% compared to the general population [5]. The only effective

treatment for this disease is a strict gluten-free diet for a life [6].

The last two decades, the face of celiac disease has changed significantly. Thus, it has gone from being a rare disease affecting mainly children in a classic clinical presentation to one of the most common chronic disease in the world that can be diagnosed at any age and includes mainly atypical expressions [7].

Completing the clinical picture, associated pathology and the peculiarities of this disease in infant and children in our population, we report the results of a retrospective study in the region of eastern Algeria.

Material and Methods

We performed a retrospective study in Pediatric Specialized Hospital of Sidi Mabrouk – Constantine, which is located in eastern of Algeria. This study was based on data of 100 patients with celiac disease who were identified

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using exploitation card. We applied, as criteria for inclusion of individuals with celiac disease, both sexes having less than 18 years. Exclusion criteria are respectively absence of celiac disease and subjects aged of 18 years and more. SPSS version 20 for Windows was used for descriptive statistics. Results were calculated as frequencies (%), means and standard deviations (SD).

We used Chi-square test to study correlations between histology grade and serological tests, respectively different manifestations of disease, in addition to the correlation between age and histology grade, respectively comorbidities. The criterion for statistical significance was $p < 0.05$.

Results and Discussions

The sample consists of 60 % females and revealed a female / male ratio of 1.5%. The median age of children was 5.2 ± 3.67 years (range, 1–16 years), with a body mass index of 15.52 ± 2.28 kg/m², 93% of the patients are underweight. The median age of the children at diagnosis was 3.50 ± 2.578 years with a minimum of 1 and a maximum of 13 years. 95 % of the

patients were breastfed for duration between 6 and 24 months. The average duration of breastfeeding was 9.37 ± 5.94 months. The median age of introduction of gluten in the diet was 4.10 ± 1.367 months. It was between 2 and 7 months. We observed consanguinity in 32% of cases and a presence of similar cases in the family in 42%.

We sought in this study all visceral, clinical or morphological manifestations and any pathology associated with celiac disease. Clinical pictures found namely digestive manifestations, extra-digestive alone or in association with other diseases. In a series of patients, we have not found asymptomatic forms. The most frequent gastrointestinal symptoms were abdominal pain (59%) and chronic diarrhea (51%). Patients suffering from vomiting represent 48% (Figure 1). Extra-intestinal symptoms are mainly represented by palorous skin and mucosa, delayed status and weight and stagnation of the weight with the percentages: 69%, 53% and 51% respectively. Another series of extra-intestinal symptoms found namely weight loss (42%) and asthenia (32%) (Figure 2).

Fig. 1. Distribution of Gastrointestinal Symptoms

Fig. 2. Distribution of Extra-digestive Symptoms

Our series is marked by the presence of certain pathologies associated with digestive or extra-digestive symptoms. There are represented mainly by anemia with a percentage of 29%, 6% of patients have mouth ulcers, dermatitis herpetiformis is presented by 3% of patients and other pathologies associated with celiac disease are found in (Figure 3).

The results show that celiac disease may be accompanied by disruption of biological tests found essentially in hypoferritinemia (Figure 4). In this sample of patients we find that anti-tissue transglutaminase and anti-endomysial antibody tests presented the highest sensitivity for untreated celiac disease (Figure 5).

Fig. 3. Distribution of Associated Conditions

Fig. 4. Disruption of Biological Tests

Fig. 5. Disruption of Positivity of Serological Tests

The results of biopsies demonstrated the diagnosis of CD was correct in 100% of children. We noted three histological grades; total villous atrophy (32%), subtotal villous atrophy (34%) and partial villous atrophy (34%). The gluten-free diet was prescribed in all patients, once the diagnosis is retained. Iron supplementation was prescribed for all patients with anemia, folic acid supplementation was prescribed for 6 patients, metronidazole has been prescribed as antiparasitic treatment in all patients presenting digestive disorders and paraffin oil was prescribed as a treatment for constipation. All patients had the gluten-free diet; the effect of the GFD was spectacular among 100 children with transit disorders, 96% of them found a normal transit to the first clinical control at the consultation from 3 month of the GFD. 53% of the children on all of those who had a delayed status and weight had an improvement in the first few months of the diet and 86 in 100 who had a behavioral disorder are

improved. 22% of patients showed histological repair and among 100 serological tests carried out: 22 revealed negative after 2 years under GFD. The other serological tests remained positive but at rates lower than 3 times.

Statistical analysis shows that there was no significant correlation between histology grade and serological tests. It was significantly correlated only with antiendomysial test ($p < 0.05$). The age was not significantly correlated with histology grade, but there is a significant correlation with Intestinal parasitosis, weight loss, malnutrition, mood disorders, pruritus, apathy, signs of dehydration and edema ($p < 0.05$). On the other hand, there was no significant correlation between histology grade and all symptoms.

Celiac disease was described traditionally as a state of malabsorption, with diarrhea and steatorrhea, appeared in childhood after the introduction of gluten into the diet. It is now

recognized that his presentation is much more diverse and the diagnosis of CD is based on clinical, serological and histological findings. Clinically, the picture is very variable [8]. It is not only an intestinal disease, but a multi-system disease as well [9, 10].

Clinical manifestations revealing this disease have changed in profile over the last 20 years. Today, the classic triad associating steatorrhea, abdominal meteorism and weight loss are not the main reason for consultation. The digestive signs are most often discreet or even absent. Isolated signs of malabsorption may be in the foreground and extra-digestive manifestations of the disease, atypical, may misdiagnose for several years. Often, digestive and extra-digestive signs are associated making diagnosis even more difficult [11,12].

Celiac disease can occur at any age, there are two frequency peaks: one during childhood, it is early before 5 months especially if the introduction of gluten is premature. Most often, it appears in infant between 6 months and 2 years, the period corresponding to the weaning of breast milk. In these cases, we speak about "infant forms". However, it can occur in children around 9 years old and we speak in this case of "child forms". It can even sometimes reach later, often in adulthood between 20 and 40 years-old and earlier in women than in men, and in this case we speak of "adult forms". The forms with late revelation, after 65 years, are however not exceptional [4, 13, 14, 15]. In our study, the median age of children at diagnosis was 3.50 ± 2.578 years.

Most studies on celiac disease report a predominance of female subjects compared to male [16]. This is comparable to our results of female to male ratio of 1.5.

The literature suggests the protective effect of breastfeeding on the development of celiac disease [17]. However, in this study 95 % of patients were breastfed for duration between 6 and 24 months. The average duration of breastfeeding was 9.37 ± 5.94 months.

The classic form of the disease is characterized by the most common typical symptoms like diarrhea with steatorrhea, weight loss, malnutrition, asthenia and abdominal pain in addition to symptoms of malabsorption [4]. This data is similar to our results. The most frequent gastrointestinal symptoms noted were abdominal pain (59%), chronic diarrhea (51%) and vomiting (48%). In addition, to a very variable extra-intestinal manifestations particularly palorous skin and mucosa (69%), delayed status (53%), weight and stagnation of the weight (51%) weight loss (42%) and asthenia (32%). These symptoms may

be secondary to mal absorption syndrome or independent of it.

The atypical form of celiac disease is the most common form, made of extra-digestive or digestive but non-specific symptoms [18].

Extra digestive symptoms related to malabsorption may be in the foreground, mainly bone pain, fractures, tetany and muscle cramps, hypocalcemia and / or hypomagnesemia,[19]. The disruptions of biological tests are iron deficiency "anemia", folate deficiency, vitamin B12 deficiency, vitamin K-dependent factors (II, VII, IX and X) deficiency, hypoalbuminemia, hypocalcemia, hypomagnesemia and zinc deficiency [20]. In this study we recorded that 29% of patients suffer from anemia, 6% have mouth ulcers and dermatitis herpetiformis is presented by 3% of patients, in addition to thyroiditis, type 1 diabetes and icterus.

Five conditions have been shown to be significantly associated with celiac disease: Insulin dependent diabetes mellitus (IDDM), thyroiditis with dysthyroidism, Selective immunoglobulin A (IgA) deficiency (SIgAD), dermatitis herpetiformis (DH), and Primary biliary cirrhosis (PBC) [19, 21]

Conclusions

Our results shows that celiac disease in children of eastern Algeria can be noticed through a variety of digestive symptoms mainly by chronic diarrhea and abdominal pain, and non gastrointestinal disorders which are mainly represented by palorous skin and mucosa, delayed status and weight, stagnation of weight in addition to a series of associated conditions.

A prospective large-scale and multicenter study should be carried out in the future to further validate our findings.

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