

Research Article

Epidemiological Survey of People with Celiac Disease in Sétif City, Algeria

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Celiac disease is a chronic inflammation of the mucosa of the small intestine, caused by the ingestion of gluten present in certain varieties of cereals (wheat, rye and barley). The aim of this work was to study the celiac disease and factors which can involved in its occurrence and development in Sétif city, Algeria. It was realized a direct and online questionnaire in which we interviewed about sixty people with celiac disease in Sétif city, Algeria. This survey includes patients aged 1 to 50 years. It is difficult to diagnose this disease, especially in adults who do not have family antecedents in advance. Through the results, celiac disease appears in women more than in men of different age groups, and its presence, especially in children, may indicate that it is affected by genetic factors. Clinical manifestations that appear after eating gluten include abdominal pain, bloating, severe diarrhea or constipation, severe weight loss, anemia, and lack of absorption of nutrients, especially vitamins, which can lead to several other diseases. Based on the results of this study, there is no definitive treatment for this pathology but a program aims to develop the means of early diagnosis and a health education can be set up. Health education helps people understand celiac disease. Early diagnosis allows early detection of disease and makes to follow a gluten-free diet before any complication.

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INTRODUCTION

Food is part of our life and our survival; it is an essential pillar of our health and economy. Food is a question of balance between reason and passion of a human being [1]. The human eats and drinks in response to his needs, but today, food has become a pleasure that man tries to perpetuate and diversify. However, the latter can in some cases become a risk factor for the start of a disease.

Food intolerance is a late reaction to a food, drink, food additive, or compound in a food that produces symptoms in one or more body systems, but it usually indicates a reaction other than food allergies [2]. The most common food intolerances are gluten and lactose intolerances.

Celiac disease, also known as gluten intolerance, is a multifactorial pathological model of immune and inflammatory dysfunction that requires multidisciplinary diagnosis due to multiple and varied manifestations [3].

This pathology corresponds to a chronic inflammation of the mucosa of the small intestine, caused by the ingestion of gliadin and similar proteins present in certain varieties of cereals (wheat, rye and barley). Celiac disease affects 1% of the general population and is relatively common in Western countries [4]. Celiac disease is very common in European countries with a spread that would be between 0.1 and 3.3% and also seems high in North Africa with 1.4% [5-7].

In Algeria, there were not a large number of studies relating to celiac disease. A prevalence of 1.09‰ in children under 15 in Oran is estimated [8]. It is estimated that at least 0.9% in the regions of Jijel, Batna, Khenchla, Guelma and Mila [9]. In Tébessa, the prevalence of the disease is 1.11% [10].

Celiac disease occurs in various forms. In adults, the classic form (10 to 20%) is characterized by a malabsorption syndrome associated with extra-digestive symptoms: deficiency syndrome, fertility disorders, musculoskeletal pain, cytolysis, etc. [11-13]. In children, it is responsible

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for a break in the height-weight curve classically observed when gluten is introduced, as well as behavioral disorders [14]. In 80% of cases, celiac disease does not present in its classic form: a distinction is made between symptomatic pauci forms, silent forms and seronegative forms [15]. Celiac disease is significantly underdiagnosed in both developed and developing countries. It is complex to precisely establish the number of people affected by celiac disease because 70 to 80% of cases still escape diagnosis [16].

Once the disease has been diagnosed, a strict gluten-free diet for life is currently the only possible therapeutic management. This diet is based on the total avoidance of all foods containing gluten from wheat, rye and barley as well as their derivatives [17]. The clinical and histological signs are regressive under a gluten-free diet when respected strictly and without delay.

The presence of gluten in several Algerian foods may cause problems in adherence to the gluten-free diet and can promote the marginalization of these patients in society. This difficulty is due to the use of gluten-free products that are expensive and not very available, and not very diversified with regard to the traditional diet [9]. According to these data on celiac disease and in view of the increase in the number of cases in recent years, the focus of our work was on epidemiological survey of people with this disease in the Sétif city in Algeria.

METHODS

Sétif City

Sétif city is located in eastern Algeria and in the high plateau region. It is delimited to the north by Bejaia and Jijel; to the east, by Mila; to the west, by the region of Bordj-Bou-Arréridj and to the south, by M'sila and Batna. The region of Sétif covers a total area of 6,549.64 km².

Description of the Survey

We performed a quantitative exploratory survey of 60 patients with celiac disease in some regions of Sétif, the study was made using a questionnaire adapted to the different objectives of the study.

Methodology

Data collection was carried out using a patient questionnaire. The variables studied are: Patient name, Residence, Age, Sex, Gastrointestinal symptoms, Extra-intestinal symptoms, Date of

first diagnosis, Family antecedents (concerning gluten intolerance and atopy in the family).

Procedure of the Survey

It is based on social media to find patients with celiac disease. After explaining to the participants the purpose and content of the realized work an assurance has been provided of the anonymity of the information collected and destined only for the purposes of scientific research. Each subject is questioned for 10 to 15 minutes by a direct and online conversation; each question is well explained to the subjects so that they understand the meaning.

Concerned Population

The concerned population by our study consists of all patients of both sexes consulting or followed for gluten intolerance who reside in certain regions of Sétif. We tried to take as many answers as possible.

Data Processing

Data entry and statistical processing were performed using Excel software (2010 version). The data was compared to each other and then represented in the form of graphs.

RESULTS

Distribution of Patients by Age

The age of the celiac patients surveyed varies from 1 year to 50 years. Fig. 1 shows that the most affected age group is 16 to 35 years old with a percentage of 51.66%. Children whose age varies from 1 to 15 years represent a low rate (16% and 20%).

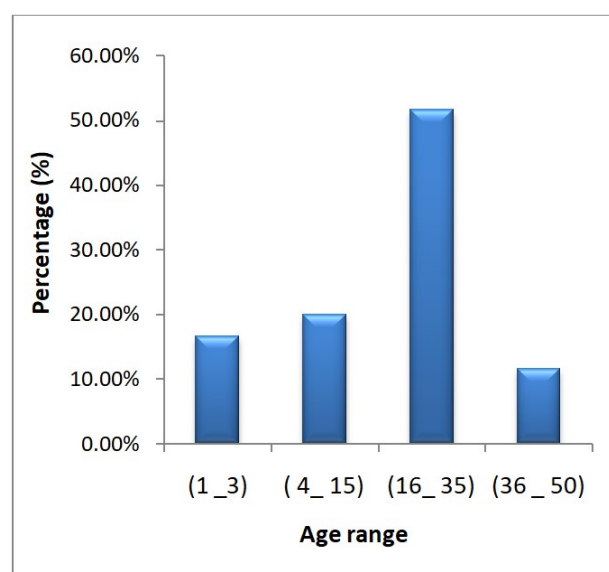


Figure 1: Distribution of patients with celiac disease according to age group.

Sex of Patient

The results show that the predominance is for female sex with 43 patients or 71.66% against male sex with 17 patients or 28.33% (Fig. 2).

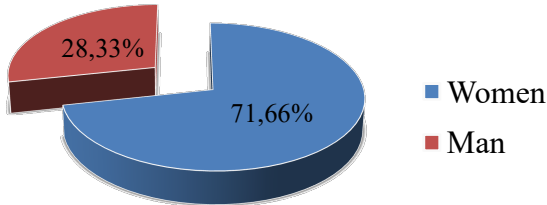


Figure 2: Distribution of patients with celiac disease according to the sex.

Family Antecedents of Patients

Our study indicates that almost 1/5 of patients present with a familial form (Fig. 3). According to the results, the predominance is for the non-familial form with a percentage of 85% against the familial form which is 15%.

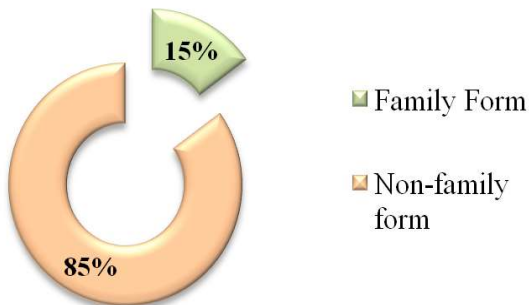


Figure 3: Family antecedents of patients interviewed.

Distribution of Patients According to Clinical Manifestations

Gastrointestinal Signs

The gastrointestinal signs of the patients surveyed are illustrated in Fig. 4. Our results show that almost 75% of patients have abdominal pain. Bloating is noticed in 31% of patients surveyed. 28.33% of cases present with diarrhea. It may be responsible for electrolyte disorders. Nausea and vomiting are found in 23.33% of patients and 15% of cases have constipation. However, the lack of absorption of

different nutrients is found in 5 cases or 8.33% of all our celiac patients.

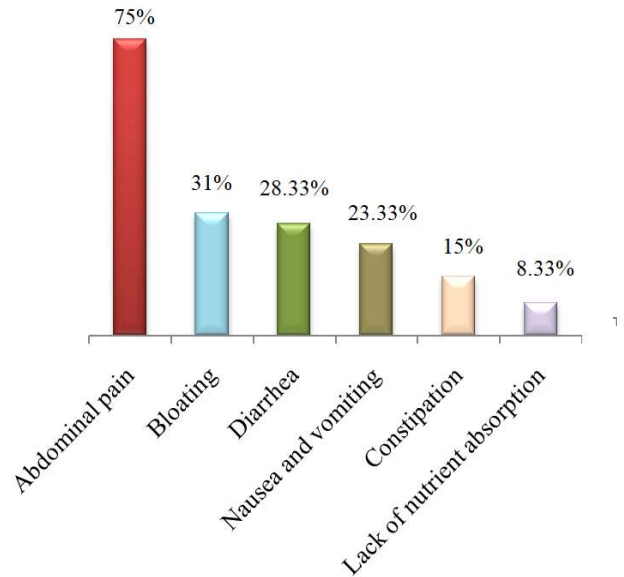


Figure 4: Distribution of celiac patients according to gastrointestinal signs.

Extra-intestinal Signs

Fig. 5 illustrates the different extra-intestinal signs obtained in our epidemiological investigation. According to these results, we note that anemia and weight loss are the most found extra-digestive signs in the patients surveyed with a 67% and 63.33% respectively. Iron deficiency is found in 16.66% of our patients. Fatigue in 15% of cases and depression in 10% of patients surveyed. Growth retardation, lack of appetite and skin sensitivity represents every one of them 8.33%. The 5% of cases have oral infections. A low rate is noted for hair loss and pale face (3.33%).

DISCUSSION

Gluten intolerance or celiac disease is a major public health problem. It is frequent in all age groups. Its classic clinical form of this disease in the most encountered, dominated by its digestive symptoms and severe growth retardation. Significant under nutrition is the prerogative especially of infants. The diagnostic of celiac disease is based on a range of clinical, biological and immunological test. Several factors are involved in the occurrence and development of this disease including environmental factors and genetic ground. This study is conducted on this type of disease which included 60 affected people between 1 and 50 years old.

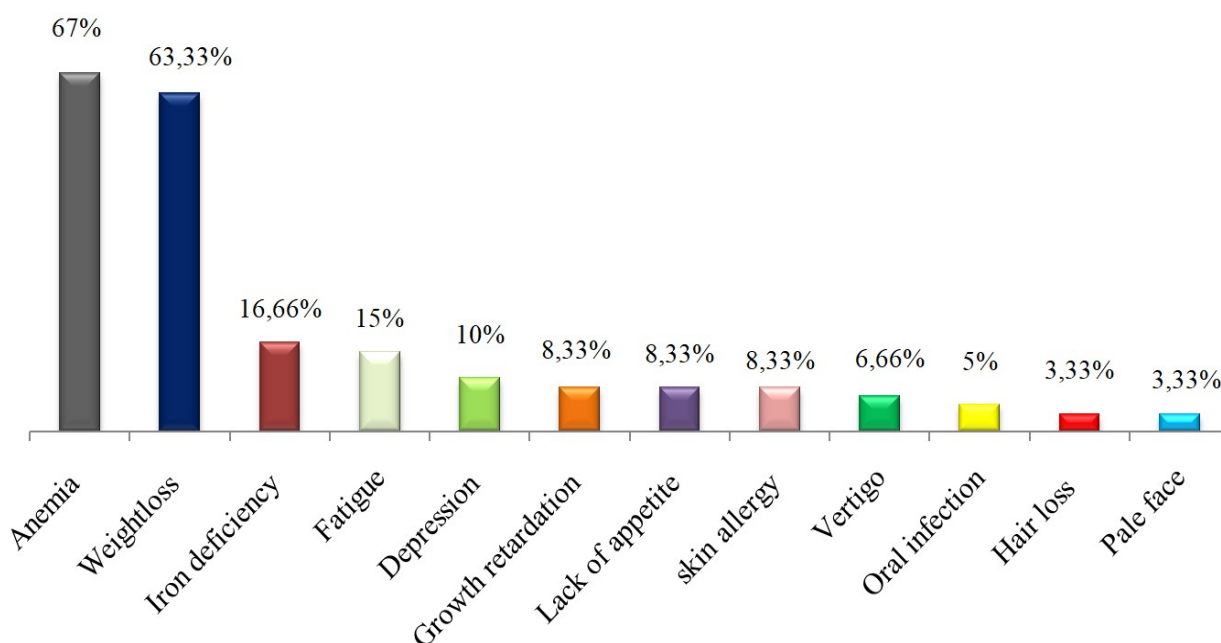


Figure 5: Distribution of patients according to extra-intestinal manifestations.

Our results show that the most affected are adults. This is confirmed by a recent study carried out by Jiang *et al.* (2018) [18]. This study is carried out on 283 patients suffering from celiac disease; this study allowed establishing the distribution of the pathology according to age and sex. This Chinese study shows that the majority of patients with the disease are adults aged 18 to 50 (about 40%) without distinction of sex. Moreover, it is now widely accepted that celiac disease is no longer a rare pediatric disease [19]. It is now classified among the frequent diseases that can affect all age groups, at least in Europe and the United States, which increases the heterogeneity of populations (age, ethnic origins, dietary habits varying from one population to the other) that can be studied and can complicate the interpretation of epidemiological data [10]. It is difficult to judge the prevalence of the pathology due in particular to the low availability of studies.

Celiac disease is dominated in women according to our study. These results are consistent with the studies performed by Elsuer *et al.* (2005) (60 cases, Turkey), Rostrom *et al.* (2006) and Tkoub (2008) [12, 20-21]. Similar to other autoimmune diseases, celiac disease appears more frequently in women with a female/male ratio of 2:1 and mainly affects Caucasians [22].

The presence of familial forms confirms that celiac disease may be due to a specific genetic ground. This is consistent with the theory according to which celiac disease manifests on a particular genetic background and the association of this disease with certain class II histocompatibility antigens; HLA DQ2 was confirmed. The study of Srivastava *et al.* (2010) [23], reported that 85% of patients with the disease have parents expressing the HLA DQ2 allele. Genetic studies allowed attesting that the risk of developing celiac disease is greater in children with a diagnosed parent [24]. Therefore, this type of disease occurs in genetically predisposed individuals. Indeed, its frequency is around 10% in first-degree relatives of a patient, that is 100 times more than in the general population, and the concordance rate for the disease reaches 70% in monozygotic twins. However, the number of genes involved is not clearly defined [25-26].

We have noted that the most frequent symptoms are: abdominal pain followed by bloating, diarrhea and vomiting. They differ depending on the people affected; they correspond to chronic damage to the small intestine. According to Gelu and Colombel (2000) [27], the most frequent signs are digestive signs with diarrhea and weight loss. In the study by Baudon (2001) [28], the most noted clinical manifestations are: diarrhea, abdominal bloating, while abdominal pain and

vomiting are rarer. These same signs are essentially represented in the Tunisian study published by Kallel *et al.* (2009) (114 cases, Tunisia) [29]. These most common manifestations coincide with the theory constitute the typical symptoms to the disease. Some people are asymptomatic, which increases the difficulty in recognizing the disease.

CONCLUSION

The present study showed that celiac disease affects all age groups and can be detected at any age. Diarrhea, abdominal pain and bloating and weight loss are the most common symptoms, are typical symptoms. In addition, several other symptoms were mentioned. There is no definitive treatment for this disease at present. To ensure a good improvement of the patients and to fight against the appearance of the complications of this disease, the respect of a gluten-free diet remains the only solution; a health education and the consultation of a dietician are also recommended.

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