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## EPIDEMIOLOGICAL ASPECTS OF CELIAC DISEASE IN CHILDREN IN THE REPUBLIC MOLDOVA

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### SUMMARY

**Keywords.** Celiac disease, prevalence, epidemiology.

**Introduction.** Last decades are characterized not only by increased morbidity indices of celiac disease in some countries, but also by change of the evolving nature of the disease with prevalence of atypical forms. Improving diagnostic criteria of celiac disease over the past three decades has led to increased global incidence of this disorder. There is still a lack of national data on epidemiological peculiarities of celiac disease in the Republic of Moldova. The purpose of this article was to perform a retro- and prospective study to assess the share of celiac disease among the pediatric population requiring specialized medical care.

**Material and methods.** The research was based on a retro- and prospective study that has included all patients with intestinal malabsorption, 835 children admitted to Gastroenterology Department, PMSI Institute of Mother and Child during 2010-2014. 62 children were confirmed to have celiac disease following history taking, clinical examination, serological examination (transglutaminase tTG IgA and IgG antibodies), endoscopic and histological exam.

**Results.** The study was based on research of 62 children with celiac disease, aged between 2 and 17 years, with a mean age of  $7.79 \pm 0.14$  years. Atypical form of the disease was determined in 61.29% (39 children), typical form # 32.5 (20 children), silent in 3.22% (2 children), latent 1.61% (1 child).

**Conclusion.** Celiac disease is a health problem affecting more and more pediatric population. To identify trends in the natural evolution of celiac disease and its impact on quality of life it is necessary to actively introduce new approaches to early diagnosis of this disease which would allow a correct and early therapeutic conduct to ensure harmonious development of the child.

**Background.** Celiac disease is a disorder of the small intestine caused by intolerance to gluten and related proteins in genetically susceptible people. It is a disorder whose prevalence has increased greatly in recent decades, globally estimated at 0.5% -1%.

### РЕЗЮМЕ

#### ЭПИДЕМИОЛОГИЧЕСКИЕ АСПЕКТЫ ГЛЮТЕНОВОЙ БОЛЕЗНИ У ДЕТЕЙ РЕСПУБЛИКИ МОЛДОВА

**Ключевые слова.** Глютеновая болезнь, преобладание, эпидемиология.

**Введение.** Последние десятилетия характеризуются не только ростом признаков заболевания глютеновой болезнью в некоторых странах, но также изменением эволюционного характера болезни, с преобладанием атипичных форм. Улучшения критериев по диагностике глютеновой болезни за последние 3 десятка лет, привели к росту возникновения данной патологии в мировом масштабе. В Республике Молдова еще нет данных на Национальном уровне об эпидемиологических особенностях глютеновой болезни. Целью данной статьи является проведение ретро и проспективного исследования, которое позволит оценить значимость глютеновой болезни среди детского населения, обращающегося к медицинским специалистам в данной области.

**Материалы и методы.** Работа была основана на ретро и проспективном исследовании, включающем всех пациентов с нарушением процессов всасывания в кишечнике, 835 детей, госпитализированных в отделение гастроэнтерологии ПМСУ Института Здоровья Матери и Ребенка в период с 2010-2014 г., среди которых, в результате анамнеза, клинического обследования, серологического, эндоскопического и гистологического обследования (антитела трансглутаминазы ТТГ IgA и IgG), 62 ребенка были диагностированы с глютеновой болезнью.

**Результаты.** Работа была основана на исследовании 62 детей с глютеновой болезнью, в возрасте от 2 до 17 лет, со средним возрастом  $7,79 \pm 0,14$  лет. Атипичная форма болезни была обнаружена у 61,29% (39 детей), типичная форма у 32,5 # (20 детей), бессимптомная у 3,22% (2 ребенка), латентная 1,61% (1 ребенок).

**Выводы.** Глютеновая болезнь является проблемой здоровья, которая все больше затрагивает детское население. Для обнаружения направлений естественной эволюции глютеновой болезни, а также ее влияния на качество жизни, необходимо активное введение новых разработок по раннему диагнозу данной болезни, что приведет к правильному и раннему терапевтическому подходу для обеспечения гармоничного развития ребенка.

**Introduction.** Epidemiological data on the prevalence of celiac disease over recent years have undergone significant changes. Until the '70s of last century, celiac disease was considered a rare disorder, but then it was obvious that the incidence of celiac disease is much higher than previously anticipated. Currently there is an increasing trend of prevalence, determined by improving screening and diagnostic techniques.

Initially it was thought that celiac disease affects only white Europeans, but epidemiological studies in Africa, Middle East, Asia and South America have ignored this theory. The global distribution of celiac disease appears to have been caused by the consumption of wheat by humans as well as migration flows.

The prevalence of celiac disease in North America and Europe proved to be similar in symptomatic patients and those outside the risk group. In the United States celiac disease affects 0.5% -1.0% of the general population [1]. In the United States there was conducted a study by Fasano et al [2] on a lot of 13,145 subjects, by detecting specific antibodies and biopsy specific to celiac disease and as a result the following was revealed: first-degree relatives (n = 4508) and second-degree relatives (n = 1275) with biopsy of confirmed celiac disease, symptomatic patients (n = 3236) and patients outside the risk group (n = 4126). Overall prevalence of celiac disease has been estimated at 1: 133 in people who are not in risk groups, while in the risk group, the determined prevalence of 1:22 in first-degree relatives, 1:39 in second-degree relatives and 1:56 in symptomatic patients [2].

In recent years several studies in Brazil have revealed a prevalence of 1:681 in healthy blood donors [3]. The global prevalence of celiac disease in Western Europe is nearly 1% (1:100) and may be higher in northern European countries, Scandinavia, Ireland, but the UK popula-

tion tended to show a higher prevalence of celiac disease of approximately 1.0%-1.5%, although there have been studies that showed a lower prevalence in these countries. The prevalence of celiac disease among children (n=3654, age range 7-16 years) in Finland was at least 1:99 based on serum antibody and small intestine disorders [4]. Prevalence of celiac disease in the general population in northern Spain was 1:389 [5], while in adolescents in Eastern Switzerland it was 1:132 (0.75%) [6].

The North African populations (including Morocco, Algeria, Tunisia, Libya and Egypt) were recently reported to have 0.28% - 5.6% of celiac disease incidence in the general population [7-9]. Prevalence of celiac disease in asymptomatic schoolchildren in Tunisia was estimated at approximately 1:157, which is close to European prevalence. The highest frequency of celiac disease worldwide is found in Oran (Algeria) - 16.4%, reported in patients with insulin-dependent diabetes [10]. A recent serological screening of 2500 healthy Tunisian blood donors [8] showed a prevalence in the general population similar to that of Europeans - 1:355.

The Saharawi population in North Africa, that are of Arab and Berberian origin, with a high degree of consanguinity and living as refugees in the Sahara (Algeria) have the highest prevalence of celiac disease of 5.6%, known in the world today [7, 11]. This high prevalence can be explained by both genetic and environmental factors as: changing eating habits in recent decades, reducing the duration of breastfeeding and increased consumption of gluten in early life, as part of the discontinuous diet provided by Western countries as humanitarian aid [12].

Australia and New Zealand are two countries that have the highest percentage of people of Caucasian origin, with a high prevalence of wheat consumption per capita of more than 150 kg [13]. Only two preva-

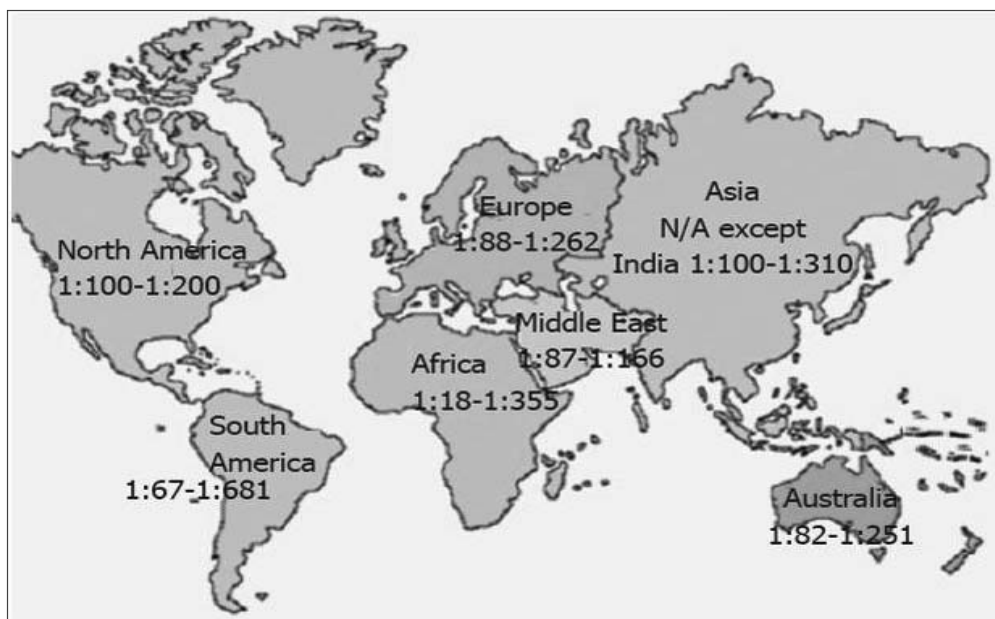


Fig 1. Prevalence of celiac disease worldwide, World J Gastroenterol. 2012 Nov 14; 18(42): 6036-6059.

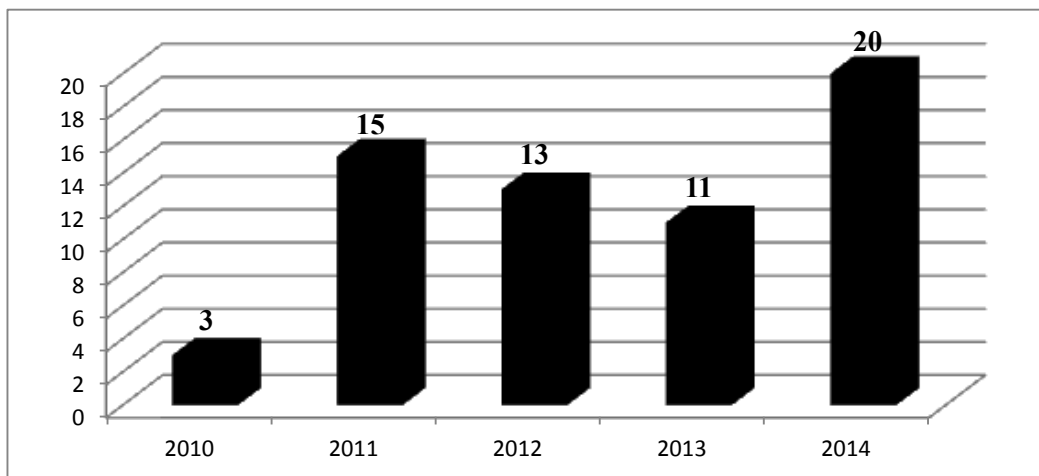


Fig. 2. Number of confirmed cases of celiac disease

lence studies have been conducted in these two countries. Out of a population of 1,064 random adults in Christchurch, New Zealand (96% Caucasian), celiac disease was confirmed histologically in all subjects with a positive serology, offering an overall prevalence of 1:82 (1.2%) [14].

A larger study on 3011 adults from a large Caucasian community in Western Australia, revealed an overall prevalence of celiac disease of 1: 251 (0.4%) of the whole population [15].

Prevalence of celiac disease in India is almost identical to that of the West Caucasian population [16]. In Punjab (northwest India), the frequency of celiac disease in schoolchildren was estimated at 0.3% [17]. This prevalence is probably underestimated.

The prevalence of celiac disease in children's first degree relatives in North India according to the European Society for Pediatric Gastroenterology and Nutrition is 4.4% (85% positive for HLA DQ2/DQ8), which is 14 times higher than in the overall population [18].

The prevalence of celiac disease in Middle East is similar to that of Europe. [19] In Iran, Israel and Saudi Arabia [20] per capita wheat consumption is more than 150 kg per year [21]. Prevalence of celiac disease in adult blood donors in Iran, Israel, Syria, Turkey and Anatolia is 1: 166 [22], 1:157 [23] 1:62 [24], 1:87 [25], 1:100 [26]. Similar prevalence rates were determined in children in Iran (1:165, 0.6%) [27], and children in Turkey (1:115, 0.9%) [28].

Celiac disease is virtually absent in the Far East (China, Japan, Korea, Malaysia, Philippines) [12], although there were reported isolated cases of celiac disease among immigrants from these countries [48, 49]. However, it is unclear whether this is due to genetic factors or lack of gluten-containing foods. Thus, there are still a lot of questions about the prevalence and characteristics of celiac disease in many regions of the world, requiring relevant multidisciplinary research.

The last decades are characterized not only by increased morbidity indices of celiac disease in some

countries, but also by change of the evolving nature of the disease, with the prevalence of atypical forms. Implementation of a system of screening for early detection of celiac disease in the overall population, paying special attention to children from risk groups, would avoid gaps in diagnosis and provide a high quality of life to patients and prevent complications with a reserved prognosis.

**Purpose of the study.** To analyze epidemiological data of celiac disease in the Republic of Moldova, including the pediatric population during 2010-2014, admitted to the Gastroenterology Department of the Institute of Mother and Child.

**Material and methods.** The research was based on a retro- and prospective study that has included all patients with intestinal malabsorption, 835 children admitted to Gastroenterology Department of the PMSI Institute of Mother and Child during 2010-2014. Of them, 62 children, as a result of history taking, clinical examination, serological examination (transglutaminase tTG IgA and IgG antibodies), endoscopic and histological examination, were confirmed to have celiac disease.

### Results

The study was based on research of 62 children with celiac disease, aged between 2 and 17 years with a mean age of  $7.79 \pm 0.14$  years. The atypical form of the disease was determined in 61.29% (39 children), typical form in 32.5 # (20 children), silent form in 3.22% (2 children) and latent form in 1.61% (1 child).

### Discussions

1. The share of celiac disease in the Republic of Moldova has been in continuous growth over the last years due to the implementation of specific serological tests and a detailed approach to each child.

2. A similarly significant increase in atypical forms was noted worldwide, leading to errors in diagnosis, which subsequently have a reserved prognosis on child's development.

3. Celiac disease is a health problem affecting more and more pediatric population. To identify the trends in the natural evolution of celiac disease and its impact

on quality of life, it is necessary to actively introduce new approaches to early diagnosis of this disease which would allow a correct and early therapeutic conduct, in order to ensure harmonious development of the child.

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