

## ULCERATIVE COLITIS AND CROHN DISEASE IN CHILDREN – AN EVOLVING PROBLEM IN ROMANIA

Cristina Becheanu<sup>1</sup>, Gabriela Lesanu<sup>1,2</sup>, Roxana Smadeanu<sup>1,2</sup>, Iulia Tincu<sup>1</sup>

<sup>1</sup>*Department of Gastroenterology, "Grigore Alexandrescu"*

*Emergency Children's Hospital, Bucharest*

<sup>2</sup>*"Carol Davila" University of Medicine and Pharmacy, Bucharest*

### ABSTRACT

**Objectives.** In the past few years we observed an increase in the number of patients with inflammatory bowel disease. We aimed to determine the epidemiology of this pathology among children in Romania over a 10 years period.

**Material and methods.** The survey was conducted in Pediatric Gastroenterology Departments in Bucharest. We selected patients being carried for inflammatory bowel disease in 2011. A similar study, performed 10 years ago in 2001, reported the same epidemiologic characteristics and comparative data were available.

**Results.** In 2001 we report 74 cases of inflammatory bowel disease, while there were 21 cases mentioned in 2001. We identified 35 cases of Crohn disease (47.29%) and 39 patients with ulcerative colitis (52.7%). The previous study reported 17 (81%) and 4 (19%), respectively. The mean age of onset of symptoms is 10.2 while in 2001 this was 13.2 years.

**Conclusions.** Inflammatory bowel disease has tripled in the last 10 years. Ulcerative colitis is still the most frequent form but we report a growing number of cases with Crohn disease.

**Keywords:** inflammatory bowel disease, epidemiology, age at onset

### INTRODUCTION

Inflammatory bowel disease (IBD) refers to a group of chronic bowel diseases, the most representative of which are ulcerative colitis (UC) and Crohn disease (CD).

Due to its long-term consequences, IBD makes an enormous impact on the life quality (1). The disease presents certain particularities when it occurs at pediatric ages. This disease affects the growth and development of the entire body, as well as sexual maturation (2). IBD expands over big time spans, thus entangling scholar absenteeism, which in its turn presupposes psychological consequences, such as reduced self-respect and social retraction. In the context of supervising the pediatric patient suffering from IBD, one cannot ignore the transition towards an adult service that sometimes may trigger disrespecting treatment.

The incidence of inflammatory bowel disease in general and of Crohn disease in particular has increased dramatically in the last two decades, both among adults (3) and among children (4), due to causes yet to be clarified. This trend has already been demonstrated in Western Europe and Canada, as well as in some ex-communist countries (the Czech Republic, Hungary and Croatia) (5,6).

The only data available for our country regarding IBD epidemiology are for adult population, where the incidence is reported as 0.97 per 100,000 inhabitants for UC and 0.5 per 100,000 adults for CD (7).

This retrospective study was aimed to identify the epidemiological characteristics of pediatric patients suffering from IBD, more specifically of those listed in the registers of Bucharest pediatric clinics. A similar research was realized 10 years

Corresponding author:

Iulia Tincu, MD, PhD, "Grigore Alexandrescu" Emergency Children's Hospital, 30-32 Iancu de Hunedoara Boulevard, Bucharest  
e-mail: if\_boian@yahoo.com

ago and it allowed a comparative analysis of the obtained data.

## MATERIAL AND METHODS

The study was carried out in the pediatric units in Bucharest, responsible for pediatric healthcare in population from South Romania (approximately 2.5 million children).

We enrolled pediatric patients treated for UC or CD in 2011.

Data have been collected from the electronic databases of the above-mentioned clinics; the patients' diagnosis was based on clinical presentation, radiological, endoscopic and histological considerations, according to Porto diagnosis criteria (8). We selected those cases for which the diagnosis was confirmed, namely ulcerative colitis and Crohn disease. Epidemiological facts were marked, using living environment, gender and mean age at the moment of diagnosis. Then, the results were compared with a similar study published in 2001 which evaluated the same epidemiologic aspects of pediatric patients with IBD find out in the 2001 registers.

The study has been approved by the Commission for Ethics of the "Grigore Alexandrescu" Emergency Children's Hospital.

Data processing was performed using SPSS program for scientific statistical calculations, produced by SPSS, and the Data Analysis module of MICROSOFT EXCEL 2007.

## RESULTS

Seventy four children were diagnosed with UC and CD during the study period, 39 (52.7%) had UC and 35 (47.29%) had CD. We excluded 4 cases of indeterminate colitis at the moment of presentation to the clinic and which, by the time we concluded our study, were still not included in any of the analyzed categories. The cases originate in South of Romania, where Bucharest is an academic center and the city with the greatest addressability.

Twenty seven percent of all cases (20 children) came from a rural environment and 73% (54 cases) from the urban environment. Gender distribution emphasizes the fact that 46% of the children suffering from inflammatory bowel disease are boys and 54% are girls (Table 1).

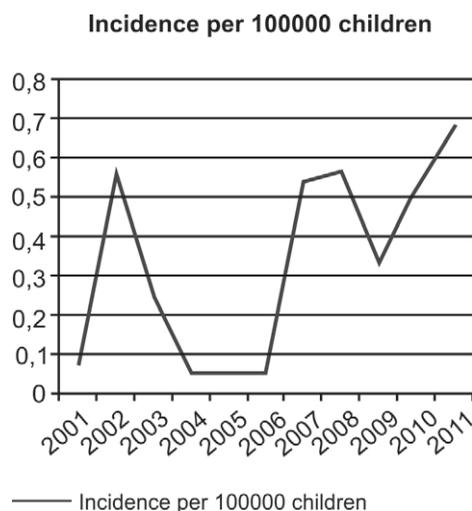
The mean age at the moment of both UC and CD diagnosis was 10.2 years. The average age for each type of disease and by gender is represented in Table 1.

**TABLE 1.** Epidemiological compared data

2011	UC N = 39 (52.7%)		CD N = 35 (47.29%)	
	boys	girls	boys	girls
Number of cases	20 (51.28%)	19 (48.71%)	15 (42.86%)	20 (57.14%)
Mean age of onset (y)	10.44 ± 4.9	11.29 ± 4.2	9.6 ± 4.1	10.56 ± 5.3
<b>2001</b>				
Number of cases	N = 17 (81%)		N = 4 (19%)	
Mean age of onset (y)	5-16 (11)		12-17 (15.2)	

Our data have been compared with the results of a similar research study realized in 2001 (Table 1).

The general pediatric population in this area is 2.413.978, as reported by the National Statistics Institute in January 2012. The estimated annual incidence is 0.288/105/year (+/- 0.25) for IBD, while the incidence for CU is 0.17/105/year (+/- 0.13) and for CD is 0.24/105/year (+/- 0.70) (Fig. 1).



**FIGURE 1.** Temporal trends in incidence rates (cases per 100,000 person-years) of ulcerative colitis and Crohn disease in selected areas

There is a peak for the mean age at the moment of the diagnosis considering that 71.6% of them are more than 10 years old and 14.9 % of the cases are children under 5 (Fig. 2).

## DISCUSSION

Our study reports epidemiologic data of pediatric patients diagnosed with inflammatory bowel disease listed in the registers of Bucharest-based pediatric clinics in 2011. The possibility of contrasting current results with the results of the above-mentioned 2001 study enabled us to draw one essential conclusion, i.e. the statistically significant

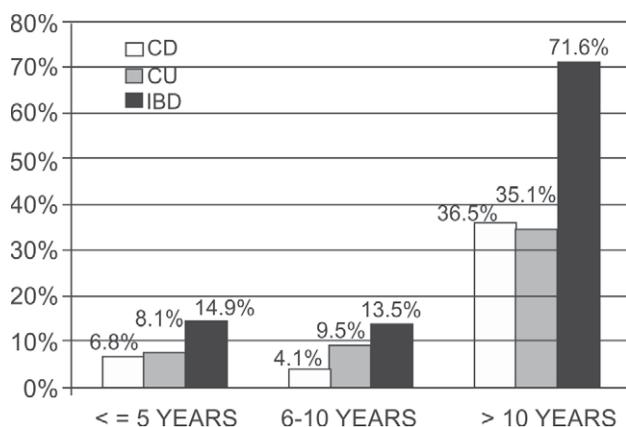


FIGURE 2. Distribution by age group

increase of diagnosed and treated cases of UC and CD in our country (21 in 2001/74 in 2011,  $p < 0.001$ ).

The incidence of IBD onset at pediatric ages seems to rise at a global level, due to reasons that remain not elucidated to date. This growth has been proven both in Western Europe, in countries such as France, in Northern Europe or in Canada, and in the ex-communist Eastern European countries, namely in the Czech republic, Croatia and Hungary (5). This upward trend is also confirmed by our study, despite not being able to count on statistics at national level. Globally, this rise is generated firstly by an increasing number of pediatric patients diagnosed with Crohn disease (9). In the case of the studied sample, we could not observe a highly statistically significant difference between the number of patients suffering from UC (52.7%) and the number of patients diagnosed with CD (47.3%). However, if we contrast these figures with those registered in 2001, the number of Crohn disease cases rose from 4 cases in 2001 to 35 occurrences in 2011, while the number of UC cases increased from 17 in 2001 to 39 currently. These data confirm that, practically in the Southern regions of our country, as well as at the global level, the tripling of the IBD cases owes to the higher incidence of Crohn disease cases, diagnosed in recent years.

Regarding the distribution of these cases according to the child's environment, rural or urban, we could not observe a clear motivation for the predominance of cases in the urban environment. Nevertheless, we could speculate that in rural areas the population is poorer as compared to the inhabitants of bigger industrialized urban regions (10). Moreover, in the latter, income per household is higher, and so is food hygiene, access to precooked foods and fast-food, as well as access to medical services (11). In our study, both environmental areas were equally implicated and we could not evaluate this parameter.

In the specialized literature, although more so in the studies dedicated to adults rather than in those observing children, studies confirm a higher incidence of IBD in richer North-European countries, as compared to poorer South-European countries, thus acknowledging this North-South gradient (12). Similarly, the literature acknowledges the rise in the number of IBD cases in South-European countries in recent years, a rise associated with the increase in the standard of living (13). We don't have data regarding pediatric IBD incidence in other regions of the country so we could not appreciate this issue.

As far as the distribution by gender is concerned, our study has not revealed statistically significant differences (G/B = 54%/46%). Data provided by the specialized literature show that the distribution of CD and UC among pediatric patients is in opposition with the data regarding adults, as one could notice the predominance of ulcerative colitis in girls and of CD in boys (14). This prevalence was not observed in our sample (48.71% of UC cases are girls and 42.86% of CD cases are boys).

The mean age at the moment of diagnosis was 10.2, which dropped as compared to the 2001 study, when the mean age was 13.2. The decreasing age at the moment of the diagnosis is a general trend, as we could see in the literature. A possible explanation for it is the rapid evolution of diagnostic methods (namely, the improvement of endoscopy techniques for younger patients, noninvasive screening techniques – fecal calprotectin, feritine), and secondly the standardization of child-disease diagnosis protocols.

The sample distribution by diagnosis year suggests the fact that most cases of inflammatory bowel disease were signaled in the interval 2007-2011. It is not certain if this increase owes to a similar perfecting of diagnostic techniques for pediatric population in our country, though they probably had an important role, or if we subscribe to the globally observed overall trend, namely an increasing incidence of inflammatory bowel diseases in children.

The most recent epidemiological data indicate a number of 2.2 million patients diagnosed with IBD in Europe and 1.4 million in America. Among these, 7-25% represent pediatric patients and 20% have been diagnosed before the age of 20 (15). Although the peak for the age of onset is located in the adolescence (16-20 years), 4% of the pediatric patients suffering from IBD are diagnosed with the disease before the age of 5 (16). The results of our study confirm the existence of the two peaks, name-

ly 14.9 % of the cases are patients aged under 5 and 71.6% of them are aged more than 10.

There are more cases of UC among patients between 0 to 5 years old while in patients over 10 years old there is a similar incidence of the UC and CD.

## CONCLUSIONS

The number of patients suffering from UC and CD has tripled in the last 10 years at the level of

Bucharest-based pediatric clinics. The diagnosis with the biggest incidence was ulcerative colitis. However, we must point out a statistically significant increase in the incidence of the Crohn disease. Although most cases are those of patients older than 10, an important percentage, 14.9%, of the cases were patients under 5 at the moment of diagnosis. Patients suffering from UC and CD mainly originate in an urban environment, while the classification by gender did not reveal any statistically significant data.

## REFERENCES

1. **Mukherjee S.** Understanding the impact of inflammatory bowel disease on parents and their children, National Association for Colitis and Chron's Disease Support Group Meeting, York, August 2002.
2. **Kelsen J., Baldassano R.N.** Inflammatory bowel disease: the difference between children and adults. *Inflamm Bowel Dis* 2009; 15(9):1438-1447.
3. **Kappelman M.D., Moore K.R., Allen J.K. et al.** Recent Trends in the Prevalence of Crohn's Disease and Ulcerative Colitis in a Commercially Insured US Population. *Dig Dis Sci* 2013; 58(2):519-525.
4. **Henderson P., Hansen R., Cameron F.L. et al.** Rising incidence of pediatric inflammatory bowel disease in Scotland. *Inflamm Bowel Dis* 2012; 18:999-1005.
5. **Benchimol E.I., Fortinsky K.J., Gozdyra P. et al.** Epidemiology of pediatric inflammatory bowel disease: a systematic review of international trends. *Inflamm Bowel Dis* 2011; 17(1):423-439
6. **Horvath A., Lakatos P., David G. et al.** Incidence and clinical phenotype of pediatric IBD in western Hungary, 1977-2008. *Am J Gastroenterol* 2012; 107:579-588
7. **Gheorghe C., Pascu O., Iacob R. et al.** Epidemiologic study of autoimmune inflammatory bowel disease in Romanian adults. *Romanian Journal of Gastroenterology* 2003; 12:57-59
8. IBD Working Group of the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN). Inflammatory Bowel Disease in Children and Adolescents: Recommendations for Diagnosis-The Porto Criteria. *Journal of Pediatric Gastroenterology & Nutrition* 2005; 41:1-7
9. **Jakobsen C., Wewer V., Urne F et al.** Incidence of ulcerative colitis and Crohn's disease in Danish children: Still rising or levelling out? *Journal of Crohn's and Colitis* 2008; 2:152-157
10. **Soon I.S., Molodecky N.A., Rabi D.M., Ghali W.A., Barkema H.W., Kaplan G.G.** The relationship between urban environment and the inflammatory bowel diseases: a systematic review and meta-analysis. *BMC Gastroenterol* 2012; 12(1):51
11. **Benchimol E.I., Fortinsky K.J., Gozdyra P., Van den Heuvel M., Van Limbergen J., Griffiths A.M.** Epidemiology of pediatric inflammatory bowel disease: a systematic review of international trends. *Inflamm Bowel Dis* 2011; 17(1):423-39
12. **Aldhous M.C., Armitage E.L., Drummond H.E et al.** Evidence of north-south gradient in incidence of juvenile onset IBD in Scotland. *Gut* 2003; 52:66
13. **Nerich V., Monnet E., Etienne O.A., et al.** Geographical variations of inflammatory bowel disease in France: a study based on national health insurance data. *Inflamm Bowel Dis* 2006; 12:218-26
14. **Baumgart DC (ed),** Crohn's Disease and Ulcerative Colitis: From Epidemiology and Immunobiology to a Rational Diagnostic and Therapeutic Approach, Springer Science Business Media, 2012
15. **Sawczenko A., Sandhu B.K.** Presenting features of inflammatory bowel disease in Great Britain and Ireland. *Arch Dis Child* 2003; 88:995-1000
16. **Shen Y.M., Wu J.F., Chen H.L. et al.** Characteristics and incidences of pediatric Crohn's disease in the decades before and after 2000. *Pediatr Neonatol* 2011; 52(6):317-20