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Alimentary Tract

Incidence rates and disease course of paediatric inflammatory bowel diseases in Western Hungary between 1977 and 2011

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ABSTRACT

Background: Limited data are available on paediatric inflammatory bowel diseases in Eastern Europe. Our aim was to analyse disease characteristics in the population-based Veszprem province database between 1977 and 2011.
Methods: 187 (10.5%, ulcerative colitis/Crohn's disease/undetermined colitis: 88/95/4) out of 1565 incident patients were diagnosed with a paediatric onset in this population-based prospective inception cohort.
Results: The incidence of Crohn's disease and ulcerative colitis increased from 0 and 0.7 in 1977–1981 to 7.2 and 5.2 in 2007–2011 per 100,000 person years. Ileocolonic location (45%) and inflammatory disease behaviour (61%) were most frequent in Crohn's disease, while azathioprine use was frequent (66%) and surgical resection rates were high (33% at 5 years) in cases with paediatric onset. In ulcerative colitis, 34% of patients were diagnosed with extensive disease, with high rates of disease extension (26% and 41% at 5 and 10 years), fulminant episodes (19.3%) and systemic steroid use (52.3%). The cumulative rate of colectomy was low (6.9%).
Conclusions: The incidence of paediatric inflammatory bowel diseases has rapidly increased in the last three decades in Western Hungary. Ileocolonic disease and a need for azathioprine were characteristic in paediatric Crohn's disease, while paediatric onset ulcerative colitis was characterised by extensive disease and disease extension, while the need for colectomy was low.

1. Introduction

Inflammatory bowel diseases (IBD), including Crohn's disease (CD) and ulcerative colitis (UC), are multifactorial, life-long disorders of the gastrointestinal tract.

In recent decades, there has been a significant increase in the incidence of both CD and UC worldwide, with increased incidence reported from developing countries [1]. The highest annual incidence of UC was 24.3 per 100,000 person-years in Europe, 6.3 per 100,000 person-years in Asia and the Middle East, and 19.2 per 100,000 person-years in North America. The peak onset in all geographic regions is in early adulthood.

Trends are less clear in the paediatric literature, with a wide range of incidence reported internationally over the last few decades [2]. Nevertheless, paediatric IBD rates in most countries have not been described, with incidence rates having been published by age group only. In addition, only 28 studies (20.1%) used statistical analysis to assess trends over time, while 77.8% reported statistically significant increases in paediatric IBD incidence. A recent study from the French EPIMAD group, revealed that incidence increased mainly in the 10- to 19-year-old patients subgroup, whereas the incidence in other patient groups remained relatively stable. In contrast, decreasing incidence was reported for UC [3]. The latter is a phenomenon unique to France. Similarly, reports from Scotland, and from Denmark and Finland, show an increased incidence of paediatric-onset IBD from 4.5 per 100,000

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person-years in 1990–1995 to 7.8 per 100,000 person-years in 2003–2008 [4] in Scotland and an increase from 5 per 100,000 person-years in 1998–2000 to 6.4 per 100,000 person-years in 2007–2009 in Denmark [5].

Whether a distinct disease course exists in paediatric- versus adult-onset IBD depends partly on how the age groups are defined. The Montreal classification [6] separated age groups into three categories (<17, 17–40, and >40 years at diagnosis), while the Paris modification divided the youngest age group into <10 years and 10–17 years at diagnosis [7]. Paediatric-onset IBD may have a more aggressive disease course. According to French data, paediatric-onset CD was characterised by the frequent occurrence of a severe phenotype, complicated disease, and a frequent need for immunosuppressants [8]. In addition, early immunosuppressive therapy in paediatric-onset patients was associated with a decreased need for surgery in France, Denmark [5] and Canada [9]; the same effect was also observed in adult patients [10]. In addition, paediatric-onset UC in France [11] was characterised by extensive disease location at diagnosis, a high rate of disease extension, and a high colectomy risk. This trend was, however, not universal. In a population-based cohort from New Zealand [12] and from this cohort [13], age at diagnosis was not predictive of the rate of progression from inflammatory to complicated disease phenotype.

Limited data are available in the literature on the incidence and disease course of IBD in the paediatric population of Eastern Europe. In 2001 and 2004, Kolek et al. [14,15] published the results of a prospective population-based study from Moravia. The incidence of CD increased from 0 to 2.7 per 100,000 person-years between 1999 and 2001. The incidence of UC increased from 0.68 to 1.84 per 100,000 person-years between 1990 and 1999. Nationwide prospective data on paediatric IBD epidemiology from Poland were published in 2009 [16]. The incidence of UC was higher than that of CD (1.3 and 0.8 per 100,000 person-years), with significant regional differences. Finally, nationwide paediatric registry data were published recently from Hungary, with a mean incidence for the observation period of 7.5 per 100,000 person-years for IBD between 2007 and 2009 [17].

Long-term IBD inception cohort s, which include both paediatric- and adult-onset incident patient data are rare, and heretofore non-existent in eastern Europe. In this cohort, paediatric-onset patients were evaluated together by paediatric and adult gastroenterologists; thus, patient evaluation and therapeutic strategy were uniform within the cohort. This study analysed the incidence and disease course of paediatric-onset IBD (<18 years of age at diagnosis) using data from a population-based Veszprem province database, which includes incident patients diagnosed between January 1, 1977 and December 31, 2011.

2. Patients and methods

2.1. Patients

In this population-based prospective (since 1985) epidemiology cohort, 187 incident patients were diagnosed with paediatric-onset IBD (<18 years of age at diagnosis) between January 1, 1977 and December 31, 2011. The clinical data of paediatric IBD patients are summarised in Table 1. During the inclusion period, a total of 1565 incident patients with IBD were included in this well-characterised inception cohort, diagnosed in the inclusion period (648 CD patients, 327 male (50.4%), age at diagnosis: 31.7 years, IQR: 17.6–45.8 years; 1058 UC patients, 551 males (52.1%), age at diagnosis: 38.6 years, IQR: 22.6–54.7 years). The patients included were followed until December 31, 2012 or until death. All included patients had at least one year of follow-up, patients diagnosed with indeterminate colitis were excluded from analysis. The ratio of urban to rural residence was relatively stable (55% urban).

Table 1
Clinical characteristics of paediatric patients with inflammatory bowel diseases.

	CD $n=95$	UC $n=88$
Males	63.2%	44.3%
Age at presentation (years)[a]	13 (11–16)	14 (11–17)
Follow-up (years)[a]	7 (3–14)	11 (5–18)
Familial IBD	18.9%	9.1%
Location at diagnosis		
L1	28.4%	–
L2	25.3%	
L3	46.3%	
L4 only	0%	
L4	6.3%	
Location at diagnosis	–	
Proctitis		27.3%
Left-sided		38.6%
Extensive		34.1%
Behaviour at diagnosis		
B1	61.1%	–
B2	15.8%	
B3	23.1%	
Perianal disease	31.2%	–
Arthritis	17.8%	10.2%
PSC	0	5.7%
Ocular	1.1%	2.3%
Cutaneous	7.4%	5.7%
Steroid use/steroid dependent	68.4%/12.3%	52.3%/10.9%
Azathioprine use	66.3%	9.3%
Anti-TNF use	10.5%	–
Resection/re-operation in CD	41.1%/23.5%	6.9%
Colectomy in UC		
Smoker at diagnosis	21.3%	10.1%

CD, Crohn's disease; UC, ulcerative colitis; IBD, inflammatory bowel disease; L1, ileal, L2, colon, L3, ileocolonic; L4, upper gastrointestinal; B1, inflammatory, B2, stenosing, B3, penetrating; PSC, primary sclerosing cholangitis, anti-TNF, anti tumour necrosis factor alpha.

[a] Median (IQR, interquartile range).

2.2. Methods

2.2.1. Data collection

Data were collected from seven general hospitals and gastroenterology outpatient units (internal medicine, surgery, paediatric and outpatient departments) from the Veszprem province. A more detailed description of the data collection and case assessment methods used, as well as the geographic and socioeconomic background of the province and the Veszprem Province IBD Group, was published in previous epidemiological studies by these authors [18]. The role of private practice in IBD is almost absent in the paediatric setting. Only patients who had had a diagnosis confirmed for more than one year were enrolled. Diagnoses (based on hospitalisation records, outpatient visits, endoscopic, radiological and histological evidence) from each hospital and outpatient unit were reviewed thoroughly by at least 2 expert gastroenterologists and a paediatric gastroenterologist in Veszprem, using the Lennard–Jones [19] or Porto criteria [20], as appropriate. Disease phenotype was determined according to the Montreal Classification [6], which includes age at onset, location and behaviour, with perianal and upper GI disease as additional modifiers. Stricturing and penetrating types of CD were clustered as complicated disease behaviour.

Every significant flare or new symptom was meticulously investigated by gastroenterologists, who employed proctosigmoidoscopy, colonoscopy, computed tomography (CT), small-bowel ultrasound and small bowel X-ray, as appropriate. Patients in clinical remission had regular follow-up visits (every 6 months) undergoing laboratory and imaging studies, including annual abdominal ultrasound. Endoscopy and CT scans were occasionally performed in patients in clinical remission. Upper GI symptoms were carefully evaluated. Only indisputable manifestations, such