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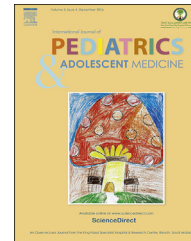


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Original Research Article

# Clinical presentation of inflammatory bowel disease in Saudi children (Single centre experience)



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## KEYWORDS

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**Abstract** *Background and Objectives:* Inflammatory bowel disease (IBD) includes Crohn's disease (CD), ulcerative colitis (UC), and indeterminate colitis (IC). IBD is a disorder characterized by chronic inflammation of the gastrointestinal tract with frequent relapse and remission courses. There is limited information regarding this disease in Saudi children, despite a rising worldwide incidence of IBD. We aim to study the clinical and demographic characteristics of Saudi children diagnosed with IBD at time of presentation, diagnosis, disease localization, and growth of pediatric IBD patients were compared with international data.

*Patients and methods:* In this retrospective study, charts of all children under the age of 14 years who were diagnosed with IBD and received follow-up at King Faisal Specialist Hospital and Research Centre (KFSHRC) from January 2001 to December 2011 were reviewed.

*Results:* Sixty-six children were diagnosed with IBD; 36 (54.5%) had Crohn's disease (CD), 27 (41%) had ulcerative colitis (UC), and 3 (4.5%) had indeterminate colitis (IC). A male predominance was demonstrated in both CD (61%) and UC (56.6%). The mean age at diagnosis was 9.3, 7.3, and 7.5 years in CD, UC and IC, respectively. A positive family history was found in 19.7% of all patients. The most common presenting symptoms were diarrhea (89.4%), rectal bleeding (75.8%), and abdominal pain (62%). The most common site affected in CD was the ileocolonic region (41.6%) while pancolitis was predominant in UC (74.1%).

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**Conclusions:** CD is the most prevalent form of IBD in Saudi children. Male predominance and a high rate of growth failure were documented in children with CD. Clinical presentation, family history, and disease localization are comparable to international data.

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## 1. Introduction

Inflammatory bowel disease (IBD) includes Crohn's disease (CD), ulcerative colitis (UC), and indeterminate colitis. These inflammatory conditions are induced by complex interactions between environmental, genetic, microbial, and immunoregulatory factors. Their exact etiology remains obscure.

Inflammatory bowel disease (IBD) is a disorder characterized by chronic inflammation of the gastrointestinal tract with frequent relapse and remission courses. The diagnosis and differentiation of Crohn's disease or ulcerative colitis is based on clinical, radiographic, endoscopic, and histological findings [1–3].

Observations of children with IBD often suggest a more severe course than those found in adults [4,5]. As the incidence of inflammatory bowel disease (IBD) is rising worldwide [6–9], the data concerning this disease in Saudi children is beginning to increase [10–16].

## 2. Patients and methods

In this retrospective study, the charts of all children under the age of 14 years who were diagnosed with IBD and received follow-up in our hospital (King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia) from January 2001 to December 2011 were reviewed. This study included 66 pediatric patients under 14 years of age at time

of diagnosis who were diagnosed with inflammatory bowel disease as confirmed by clinical, endoscopic, radiologic, and histopathological evaluation. Variables analyzed included patient demographics (age, gender, nationality, and region), clinical presentation, length of symptoms before diagnosis, growth, family history, and diagnostic findings include laboratory, radiological endoscopic, and histopathological findings. The data were analyzed and presented in a simple percentage format.

## 3. Results

Sixty-six patients were diagnosed with IBD from January 2001 to December 2011; 36 (54.5%) had CD, 27 (41%) had UC, and 3 (4.5%) had IC. Most of the patients included in the study were Saudi (94%) (see Table 1).

Of 66 IBD patients, 38 (57.6%) were male and 28 (42.4%) were female. The male-to-female ratio was 1.35. A male predominance was demonstrated in both CD (61%) and UC (56.6%).

The mean age at diagnosis (and range) was 8.1 y (0.25–14) for IBD as a whole and 9.3 y (0.25–14), 7.6 y (1.75–14) and 7.5 y (6–9.5) for CD, UC and IC, respectively. Most patients presented at age 6 years or older as follows: whole IBD 52 (78.8%), CD 31 (86.1%), UC 18 (66.7%), and IC 3 (100%). For children between the ages of 2 and less than 6, the frequency of UC was higher with 8 (29.6%) children diagnosed while CD was higher among under the age of 2

**Table 1** Demographic characteristics of inflammatory bowel diseases in Saudi children.

	CD	UC	IC	Total (%)
<b>Nationality</b>				
Saudi	33 (92%)	26 (96.3%)	3 (100%)	<b>62 (94%)</b>
Non-Saudi	3 (8%)	1 (3.7%)	0	<b>4 (6%)</b>
<b>Gender</b>				
Male	22 (61%)	15 (55.6%)	1 (33.3%)	<b>38 (57.6%)</b>
Female	14 (39%)	12 (44.6%)	2 (66.7%)	<b>28 (42.4%)</b>
<b>Age range (years)</b>				
<2	4 (11.1%)	1 (3.7%)		<b>5 (7.6%)</b>
2–<6	1 (2.8%)	8 (29.6%)		<b>9 (13.6%)</b>
>6	31 (86.1%)	18 (66.7%)	3 (100%)	<b>52 (78.8%)</b>
Age range (years)	(0.25–14)	(1.75–14)	(6–9.5)	<b>(0.25–14)</b>
Mean (years)	9.3	7.6	7.5	<b>8.1</b>
Interval between diagnosis and presentation	(1–36)	(6–12)		
Range (months)		(1–60)		
Mean (Months)	8.7	8.4		
Family history of IBD	5 (14%)	6 (22.2%)	2 (66.7%)	<b>13 (19.7%)</b>
Total	36 (54.5%)	27 (41%)	3 (4.5%)	<b>66 (100%)</b>

with 4 (11.1%) children diagnosed (Table 1). The mean of interval from the onset of symptoms to diagnosis was 9 months (1–60) for IBD, 8.7 months (1–36) for CD, 8.4 m (2–60) for UC, and 10 m (6–12) for IC.

A family history of IBD was found in 19.7% of children with IBD. This percentage was higher in UC patients; family history was found in 22.2% of patients with UC whereas in CD patients the family history was positive in 14%.

The most frequent presenting symptoms were diarrhea (89.4%), rectal bleeding (75.8%), and abdominal pain (62%). Diarrhea (89%) and abdominal pain (77.8%) were the most common symptoms in CD, whereas bloody diarrhea was the most frequent presenting symptom in UC (100%), see Table 2. Other symptoms were weight loss [weight less than 5%] (50%), growth failure [body mass index < -2SD] (37.9%), fever (33.3%), anorexia (21%), and arthritis (10.6%). Perianal disease in CD patients was observed as follows: anal fissure (33.3%), skin tags (22.2%), anal fistula (16.7%), anal abscess (11.1%), and anal ulcer (5.6%). Anal fissures and tags are the most common perianal disease in UC patients. Skin manifestations were found mainly in CD patients; these lesions include erythema nodosum (8.3%) and aphthous lesions (14%).

Laboratory findings revealed that anemia and high ESR were the most common findings; these were found in 51 patients (77.3%). Other findings were thrombocytosis in 46 patients (70%) and low albumen in 33 patients (50%) (see Fig. 1).

The anatomic location of CD involvement at disease presentation was categorized according to the 2005 Montreal classification. Isolated terminal ileum involvement (L1) was found in three patients (8.3%), and colon (L2) was involved in 13 patients (36%). Ileocolic (L3) was the most common site involved with 15 patients (41.6%). Small intestine involvement was recorded in 5 patients (13.9%) (see Table 3). In UC, pancolitis was the most common finding

accounting for 74.1% of cases followed by left side colitis at 22.2%. Rectosigmoid was the lowest with 3.7% of cases (see Table 3).

#### 4. Discussion

Inflammatory bowel disease starts during childhood in approximately 15%–25% of patients [17,18]. In our study, we collected data from 66 patients over a 10 year period with an average of 6–7 new cases per year. The incidence of CD (54.5%) in our study exceeds that of UC (41%). This is similar to what is reported in North America, Europe [19–24], and also in recent local nationwide studies [14,16]. In this study, male predominance was observed in both CD (61%) and UC (56.6%). This predominance is also evident in studies restricted to pediatric-onset CD, which document a male to female preponderance [22–24]. In our study, UC was higher among males, as it was in a nationwide study [14], while it was equal for both sexes in many other international studies. This result is in contrast to the results of similar studies conducted in nearby regions or other gulf areas where females predominate males in the incidence of UC [25,26].

Polito et al [27] reported that family history was higher in patients under 20 years old than in older age groups, which account for 30% of cases. In different studies presence of a family history varies between 11% and 29% [24,28–32]. This result was similar to our finding where a family history was reported in 19.7% of children with IBD. This percentage was higher in UC patients for whom the family history was found in 22.2% of patients.

The mean age at diagnosis for IBD was 8.1 y in our study which was younger than previously reported [22–24]. This

**Table 2** Clinical characteristics of inflammatory bowel diseases in Saudi children.

		CD	UC	IC	Total (%)
Common symptom	Fever	15 (41.7%)	5 (18.5%)	2 (66.7%)	22 (33.3%)
	Abdominal pain	28 (77.8%)	11 (40.7%)	2 (66.7%)	41 (62%)
	Diarrhea	32 (89%)	27 (100%)		59 (89.4%)
	Rectal bleeding	22 (61.1%)	27 (100%)	1 (33.3%)	50 (75.8%)
	Weight loss	25 (69.4%)	9 (33.3%)		34 (51.5%)
	Growth failure	17 (47%)	5 (18.5%)	3 (100%)	25 (37.9%)
	Nausea/vomiting	12 (33.3%)	2 (7.4%)		14 (22.1%)
Other symptoms	Fatigue	5 (14%)	3 (11.1%)		8 (12.1%)
	Aphthous lesions	5 (14%)	0		5 (7.6%)
	Constipation	0	2 (7.4%)		2 (3%)
	Hepatomegaly	2 (2.8%)	2 (7.4%)		4 (6.1%)
	Splenomegaly	0	1 (3.7%)		1 (1.5%)
Skin and joints	Arthritis Artalagia	6 (16.7%)	1 (3.7%)	2 (66.7%)	7 (10.6%)
	Total	8 (22%)	1 (3.7%)		9 (13.6%)
		14 (39%)	2 (7.4%)	2 (66.7%)	16 (24.2%)
Perianal disease	Erythema nodosum	3 (8.3%)	0		3 (4.5%)
	Anal fistula	6 (16.7%)	1 (3.7%)		7 (10.6%)
	Anal abscess	4 (11.1%)	1 (3.7%)		5 (7.8%)
	Anal ulcer	2 (5.6%)	0		2 (3%)
	Anal fissure	12 (33.3%)	3 (11.1%)		15 (22.7%)
	Tags	8 (22.2%)	4 (14.8%)		12 (18.2%)

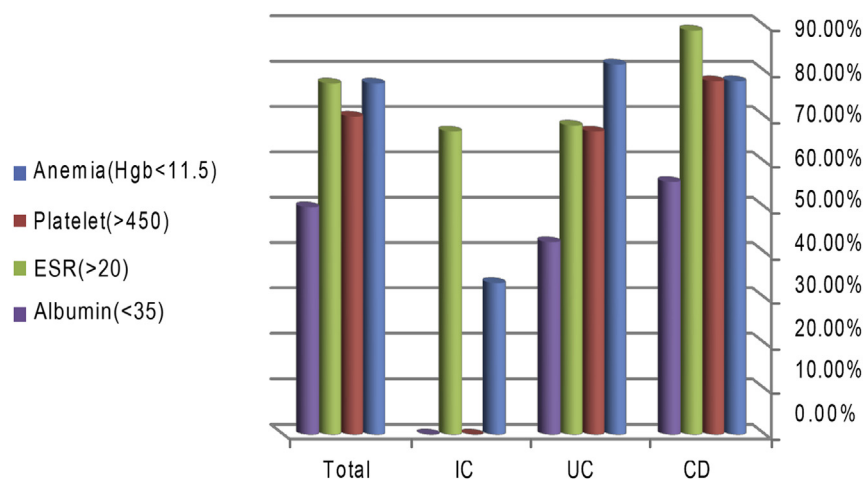


Figure 1 Laboratory findings in IBD patient.

Table 3 Site of affection in CD and UC.

CD	UC		
L1 (terminal ileum only)	8%	Pancolitis	74%
L2 (colon only)	36%	Left side colitis	22%
L3 (ileocolonic)	42%	Rectosigmoid	4%
L3 (small intestine)			

finding may be observed because the age limit in our study was 14 years, while it was 16 or 18 in other studies.

The most common presenting symptoms were abdominal pain in patients with CD, bloody diarrhea in patients with UC, and growth failure in patients with IC. Growth failure is less striking in UC compared to CD and IC. These findings were consistent with international IBD data. The classic presentation of CD in any age group consists of a group of symptoms, including abdominal pain, diarrhea, poor appetite, and weight loss. This presentation comprises the mode of presentation in nearly 80% of children and adolescents [29], as it was in our patients. This result is in contrast to the findings of a recent study in the UK, which showed that this presentation was only reported in 25% of CD cases [23].

The clinical presentation of UC is considerably more uniform than that of CD; bloody diarrhea is the almost universal hallmark. Impairment of linear growth is rarely present at diagnosis, partly because the presenting symptoms are more consistently obvious and therefore promptly investigated [29]. This was demonstrated in our study as well; while bloody diarrhea was the dominant presentation, growth failure was found only in 18% of our patients.

The anatomic location of CD involvement at disease presentation was categorized according to the 2005 Montreal classification. Classification of anatomic localization will help clinicians to guide medical management appropriately. In our study, ileocolic was the most commonly affected site, which is similar to international data in adult and pediatric cases. Small bowel involvement was found in 13.9% of cases, which is similar to the rate reported in several studies [31]. In UC, disease localization did not differ from other pediatric populations, as pancolitis was

the most common location, and rectosigmoid was the least common location.

## 5. Conclusions

Our data regarding both CD and UC are similar to international pediatric data. Although our center receives patients from different regions of Saudi Arabia, a national pediatric study is needed to provide more information and represent the actual spectrum of this disease.

## Conflict of interest

The authors have no conflict of interest to report.

## Ethical clearance

This study is entitled Pediatric Inflammatory Bowel Disease in Saudi Arabia with RAC # 2101090. It has been reviewed by Research Ethics Committee (Research Advisory Council, Office of Research Affairs) at KFSHRC Riyadh on 20 October 2012 and recommended the proposal for approval.

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