Epidemiological and Clinical Characteristics of Children Suffering from Inflammatory Bowel Diseases Attending Zagazig University Children Hospital

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ABSTRACT

Background: Inflammatory bowel disease (IBD) includes ulcerative colitis (UC) and Crohn's disease (CD). It is a chronic inflammatory disease that involves the gastrointestinal tract and results from a combination of genetic susceptibility, environmental exposure, and dysregulated responses to the intestinal microbiota.

Objective: To study the natural history, patterns, and clinical characteristics of inflammatory bowel diseases (IBD) in Sharkia Governorate.

Patients and Methods: The study was carried out in the Pediatric Hepatology and Gastroenterology Unit, at Zagazig University Hospital on a comprehensive sample of all children suffering from inflammatory bowel diseases that were included in the study (18 patients). We do retrospectively study all patients in whom the diagnosis of UC or CD was confirmed by clinical, laboratory, endoscopic, and histological examination in Zagazig university children hospital.

Results: There is a predominance of UC among IBD cases. positive consanguinity was more evident in children with IBD (44.4%). According to sex the percentage of females (55.6%), male (44.4%). Percentage chance of gastrointestinal symptoms among the studied cases is diarrhea (83.3 %), mucus or blood in the stool (83.3%), Abdominal pain (66.7%), vomiting (44.4%), loss of appetite (38.9%), Nausea (38.9 %), Rectal bleeding (27.8%) and anoperineal lesion (22.2%). The Endoscopic finding of Crohn's disease showed a percentage of L1 (distal 1/3 ileum ± limited cecal disease) in (33.3 %) and L2 (Colonic) in (66.7%).

Conclusion: UC was more common than the CD. IBD was more common in females. We believe that the present moment is critical in assessing the pattern of IBD spreading in Egypt, and the current status should be further studied by more exhaustive database and registry documentation of IBD patients and their characteristics.

Keywords: Inflammatory bowel diseases- Epidemiology-Clinical characteristics.

INTRODUCTION

Inflammatory bowel disease (IBD) includes UC and CD. It is a chronic inflammatory disease that involves the gastrointestinal tract and results from a combination of genetic susceptibility, environmental exposure, and dysregulated responses to intestinal microbiota [(1)]. IBD is a chronic disease that involves young patients. Also, its rapidly increasing incidence together with the better access and delivery of healthcare is resulting in an exponential growth in the prevalence of IBD [(2)].

Emerging data have suggested that the incidence of IBD is increasing globally in both developed and developing countries [(3)].

Crohn's disease and Ulcerative Colitis are both chronic inflammatory diseases of the gastrointestinal tract with periods of remission and exacerbation. CD is characterized by transmural inflammation and can be found anywhere in the gastrointestinal tract from mouth to anus, with a patchy inflammation process. Ulcerative colitis is an inflammatory disease limited to the colonic and rectal mucosa. The characteristic histology is mucosal and submucosal inflammation with goblet cell depletion, cryptitis, and crypt abscesses but no granulomas [(4)].

Inflammatory bowel disease occurs with a variable frequency in different parts of the world. It is a common observation that IBD is prevalent in industrialized countries as it is seen in Europe and the USA but much less common in the southern part of the globe. Twenty to twenty-five percent of CD and UC cases, respectively, present during childhood [(5)].

The current study was conducted to study the natural history, patterns, and clinical characteristics of inflammatory bowel diseases (IBD) in Sharkia Governorate.

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PATIENTS AND METHODS

(1) Technical design:

A) Site of the study: The study was carried out in the Pediatric Hepatology and Gastroenterology Unit, at Zagazig University Hospital.

B) Sample Size: A comprehensive sample of all children suffering from inflammatory bowel diseases that were included in the study (18 patients).

Inclusion criteria: Children aged less than 18 years with a confirmed diagnosis of IBD.

Exclusion criteria: Children with colitis other than IBD.

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(2) Operational Design:

A) Type of the study: We do retrospectively study of all patients in whom the diagnosis of UC or CD was confirmed by the clinical, laboratory, endoscopic, and histological examination in Zagazig university children hospital.

B) Steps of performance:

All patients were subjected to the following checklist:

1- Full history taking.
2- Full general examination.
3- Endoscopic examination of the gastrointestinal tract
4-Histological examination of the biopsies retrieved during gastrointestinal endoscope.

(3) Ethical consideration:

The study was carried out after obtaining parental consent and taking approval from the institutional review board (IRB) of the Faculty of Medicine Zagazig University.

Statistical Analysis

Statistical presentation and analysis of the present study was conducted with SPSS V.24. Data was expressed into two phases: Descriptive: Mean value and Standard Deviation [SD]: for quantitative data. Frequency and percentage for the qualitative data. Analytic: T-test: for comparison of two independent quantitative variables normally distributed. X^2 (Chi 2): for comparison between two independent qualitative variables normally distributed. The significant difference if P <0.05. Non-significant difference if P > 0.05.

RESULTS

Table 1 shows that regarding personal history of the studied cases the mean of age of onset of presenting symptoms (years) (7.61 ± 4.03), Weight (KG) (24.28 ± 11.57) and according to sex the percentage of female (55.6 %), male (44.4 %).

Table (1): Personal history of the studied cases

		Mean ± SD	
Age of onset of presenting symptoms (Years)		7.61 ± 4.03	
Weight (KG)		24.28 ± 11.57	
		No.	**%**
Sex	**Female**	10	55.6
	Male	8	44.4

Table 2 shows that regarding family history of the studied cases. No parent's similar conditions were found, regarding Consanguinity (44.4%) of the studied cases were consangous.

Table (2): Family history of the studied cases

		No.	%
Parents similar conditions	**No**	18	100.0
Consanguinity	**No**	10	55.6
	Yes	8	44.4

Table 3 shows that regarding the final diagnoses the percentage of Crohn s Disease (16.7 %) and Ulcerative colitis (83.3%).

Table (3): Final diagnoses among the studied cases

		No.	%
Diagnoses	**Crohn s Disease**	3	16.7
	Ulcerative colitis	15	83.3

Table 4 shows that regarding Gastrointestinal symptoms among the studied cases. Rectal bleeding (27.8 %), Diarrhea (83.3 %), mucus or blood in stool (83.3 %), abdominal pain (66.7 %), loss of appetite (38.9 %), Nausea (38.9 %), vomiting (44.4 %) and Anoperineal lesion (22.2%) **(Table 4).**

Table (4): Gastrointestinal symptoms among the studied cases

		No.	%
Rectal bleeding	**No**	13	72.2
	Yes	5	27.8
Diarrhea	**No**	3	16.7
	Yes	15	83.3
Mucus or blood in the stool	**No**	3	16.7
	Yes	15	83.3
Abdominal pain	**No**	6	33.3
	Yes	12	66.7
Loss of appetite	**No**	11	61.1
	Yes	7	38.9
Nausea	**No**	11	61.1
	Yes	7	38.9
Vomiting	**No**	10	55.6
	Yes	8	44.4
Anoperineal lesion	**No**	14	77.8
	Yes	4	22.2

Table 5 shows that regarding Extra intestinal manifestation of the studied cases. Uveities (16.7 %), Erythema Nodosm (22.2 %), Arthralgia (44.4 %), Liver involvement (5.6 %), Pallor (83.3 %), Fatigue (61.1 %).

Table (5): Extraintestinal manifestation of the studied cases

		No.	%
Uveities	**No**	15	83.3
	Yes	3	16.7
Erythema Nodosm	**No**	14	77.8
	Yes	4	22.2
Arthralgia	**No**	10	55.6
	Yes	8	44.4
Liver involvement	**No**	17	94.4
	Yes	1	5.6
Pallor	**No**	3	16.7
	Yes	15	83.3
Fatigue	**No**	7	38.9
	Yes	11	61.1

Table 6 shows that regarding Endoscopic finding of Crohn's disease according to Montenegro and Paris classification the percentage of L1 (33.3 %) and L2 (66.7%).

Table (6): Endoscopic finding of Crohn's disease according to Montenegro and Paris classification among the studied cases

		No.	%
The endoscopic finding of Crohn's disease	**L1 (distal 1/3 ileum ± limited cecal disease)**	1	33.3
	L2 (Colonic)	2	66.7

Table 7 shows that regarding Endoscopic finding of ulcerative colitis according to Paris classification the percentage of E1 (60 %), E3 (13.3 %), and E4 (26.7%).

Table (7): Endoscopic finding of ulcerative colitis according to Paris classification among the studied cases

		No.	%
The endoscopic finding of ulcerative colitis	**E1 (ulcerative proctitis)**	9	60.0
	E3(Extensive(hepatic flexure distally)	2	13.3
	E4(Pancolitis(proximal to hepatic flexure	4	26.7

There was no statistically significant difference between Crohn's disease and Ulcerative colitis regarding Sex, There were statistically significant decreases in Age of onset of presenting symptoms (years) and Weight (KG) among Crohn's disease than Ulcerative colitis **(Table 8).**

Table (8): Comparison between Crohn's disease and Ulcerative colitis patients regarding Personal history

			Crohn's disease	Ulcerative colitis	t.test	P. value
Age of onset of presenting symptoms (years)	**Mean ± SD**		5.67 ± 5.03	8.00 ± 3.89	-.911-	0.037
Weight(KG)	**Mean ± SD**		19.33 ± 14.74	25.27 ± 11.19	-.802-	0.043
Sex	**Female**	**No.**	2	8	X^2 0.180	0.671
		%	66.7%	53.3%		
	Male	**No.**	1	7		
		%	33.3%	46.7%		

DISCUSSION

The present study included a comprehensive sample of all children suffering from inflammatory bowel diseases (18 patients) confirmed the diagnosis with inflammatory bowel disease attended the Pediatric Hepatology and Gastroenterology Unit, at Zagazig University Hospital.

In the current study, out of 18 children diagnosed as IBD, 15 of them were diagnosed as ulcerative colitis (UC) and 3 of them diagnosed as Crohn's disease (CD). There is a predominance of ulcerative colitis (UC) among IBD cases.

This is consistent with **Esmat *et al.*** [6] who found that a total of 157 patients with established IBD were included in their study. Of these, 135 patients were diagnosed with UC (86% of the total), and 22 patients, with CD (14% of the total). They observed a ratio of 6:1 for UC to CD in their series. The incidence of IBD seems to be rising in Egypt. This increasing incidence is also supported by **Molodecky *et al.*** [7], who concluded that the incidence and prevalence of IBD have been increasing with time in different regions around the world, even in developing countries as they became more industrialized. The increased awareness of IBD and improvements in the necessary diagnostic tools, especially endoscopes, over the last 10 years in Egypt may be an additional factor affecting the increased frequency of IBD diagnoses.

This agrees with **El –Morsy *et al.*** [8] who found in Mansoura University that, out of 39 children diagnosed as IBD, 32 of them diagnosed as ulcerative colitis (UC) and 7 of them diagnosed as Crohn's disease (CD).

In harmony with the present study, **Hassan and Delmany** [9] studied found that, from 64 cases of IBD, 65.6% was UC and 34.4% was CD.

The studies showed that UC is more prevalent than CD in other countries. For example, a study done by **Shirazi *et al.*** [10] showed that of the total 200 patients, 183 patients (91.5%) were diagnosed with UC and 17 (8.5%) with CD. Another study in Iran showed a higher incidence of UC (98.08%) compared to 1.92% of CD [11].

Also**, Arantes *et al.*** [12] found 56.26% for UC and 43.74% for CD in Brazil.

Our results are following the findings of **Cakir *et al.*** [13] as they found that patients with UC were more than those with CD (70.9% vs. 22.8%) in their study.

In our study, the mean of age-onset at the presenting symptoms (years) was (7.61 ± 4.03). The mean age of children with UC and with CD were (8.00 ± 3.89 and 5.67 ± 5.03; respectively). There was a statistically significant decrease in the age of onset of presenting symptoms (years) among Crohn's disease than Ulcerative colitis.

This was lower than reported in a study conducted by **Naidoo *et al.*** [14] as they found that the mean age at diagnosis for their cohort of patients was 9.8 years. The younger age in our group at diagnosis may be related to increased awareness of symptoms of IBD.

In the present study, positive consanguinity was more evident in children with IBD (44.4%). There was no statistically significant difference between Crohn's disease and Ulcerative colitis regarding Parents' similar conditions and Consanguinity. We found no parents similar conditions among the studied cases.

This is in agreement with **Childers *et al.*** [15] who found patients with IBD tend to have a lower positive family history rate (0.0–3.4%).

This disagrees with **El-Morsy *et al.*** [8] who found that the positive consanguinity was more evident in children with UC Vs children with CD.

This was contrary to a Danish study included more than 8000 population revealing an exponentially increased risk in individuals with third-degree to first-degree relatives [16].

In the current study, according to sex the percentage of females (55.6 %), male (44.4 %). There was no statistically significant difference between Crohn's disease and Ulcerative colitis regarding Sex.

This is in agreement with **Esmat *et al.*** [6] who found that a slight increase in the female prevalence, denoting an increased number of affected females compared to other parts of the world.

Previous studies postulated that the gender difference in IBD was caused by multiple factors. A study conducted among Dutch IBD patients involving 2118 CD and 1269 UC concluded that gender differences were featured based on the age of disease onset, disease extent, and presence of extraintestinal manifestations [17].

Our results are in disagreement with the findings of **Hassan and Delmany** [9] who found that IBD was more in men. Males (59.5%) were more than females (40.5%).

In the present study, the male: female ratio was 1:1.14 for UC. Our results are in accordance with the findings of **Esmat *et al.*** [6] who found that the male: female ratio was 1:1.15 for UC.

This agrees with **El-Morsy *et al.*** [8] who found that 65.6% of children with UC were males

In the present study, 2 females had CD and only one male. In contrast, the results of a study from Kuwait concluded that CD is equally common in males and females [18].

This is in disagreement with, the results of a study from Tunisia, which showed a male predominance in CD [19].

In the present study, there was no statistically significant difference between Crohn's disease and Ulcerative colitis regarding sex.

Our results agree with the findings of **Hassan and Delmany** [9] who found that there was no statistically significant difference between Crohn's disease and Ulcerative colitis regarding sex.

This study showed that percentage chance of gastrointestinal symptoms among the studied cases is diarrhea (83.3 %), mucus or blood in the stool (83.3 %), Abdominal pain (66.7 %), vomiting (44.4 %), loss of appetite (38.9 %), Nausea (38.9 %), Rectal bleeding (27.8 %) and anoperineal lesion (22.2%).

A Saudi study in 2011 showed that; the commonest symptom was abdominal pain in 93% [20].

Inflammatory bowel disease is not a single organ disease but a systemic disease with many "extra-intestinal" features, between 25-30% of patients will exhibit some extraintestinal manifestations during their lifetimes [21].

In this context we found that; the positive extraintestinal manifestations were Uveitis (16.7 %), Erythema Nodusm (22.2 %), Arthralgia (44.4 %), Liver transaminitis (5.6 %), Pallor (83.3 %), Fatigue (61.1 %) with non-statistically significant differences between UC Vs children with CD.

Prideaux *et al.* [22] reported that 3.7–24% of patients with IBD in East Asia had extraintestinal manifestations (EIMs), and the prevalence was higher in India.

This study showed that the endoscopic findings of children with UC were E1 (ulcerative proctitis) in (60 %), E3 **(**Extensive) (hepatic flexure distally) in (13.3 %), and E4 (Pancolitis) proximal to hepatic flexure) in (26.7%) according to the Paris classification [23]**.**

Hassan and Delmany [9] found that regarding patients diagnosed with UC 36% of the disease was in the rectum (proctitis), 31% in rectosigmoid (proctosigmoiditis), 16% in the left side of the colon, and 17% extensive colitis.

Esmat *et al.* [6] noted in their series that the rectal form of UC represented approximately 30% of cases-not far from 40%which may indicate good recruitment of all cases of UC, including those with the early forms of the disease.

In our study, The Endoscopic finding of Crohn's disease showed a percentage of L1 (distal 1/3 ileum ± limited cecal disease) in (33.3 %) and L2 (Colonic) in (66.7%).

This is consistent with a study that included the South Asian pediatric population has found more extensive colonic disease than the general IBD population [14].

El–Morsy *et al.* [8] found that the endoscopic findings of children with CD were ileal in (28.6%), and ileocolonic in (57.1%). Area finding to our group.

Some studies reported that the colonic type was predominant in Western people. **Prideaux *et al.*** [22] demonstrated that the ileocolonic type was the most common type of CD in Asia (about 30–50%), followed by the ileal and colonic types.

Ng *et al.* [1] reported more equal distributions of the ileal, colonic, and ileocolonic types (31.7%, 24.4%, and 43.9%, respectively) and that the incidence of the upper GI type was 6%.

Chou *et al.* [24] identified that the most common phenotype was the ileal type, followed by the ileocolonic, colonic, and upper GI types. In contrast to this, a low incidence of colonic disease and a high incidence of ileocolonic disease that has been observed in a series of Kuwaiti children with IBD [25].

CONCLUSION

UC was more common than the CD. IBD was more common in females. We believe that the present moment is critical in assessing the pattern of IBD spreading in Egypt, and the current status should be further studied by more exhaustive database and registry documentation of IBD patients and their characteristics.

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