

Colonoscopic Finding in Children with Lower Gastrointestinal Complaints

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ABSTRACT

Background

Colonoscopy is used for both diagnostic as well as therapeutic purposes in patients with lower GI symptoms. The aim of this study was to assess the clinical manifestations and to determine the colonoscopic findings of children with lower GI symptoms attending a pediatric hospital in Tehran.

Materials and Methods

During a 5-year period (1996-2001), all children less than 16 years of age, who had undergone colonoscopy in the Gastroenterology Department of the Children's Hospital Medical Center in Tehran (Iran), were studied in respect to presenting symptoms, colonoscopic and pathologic findings, and the size, number and site of polyps if they were present.

Results

Among the 694 children (431 boys, 263 girls) less than 16 years of age who entered this study, 49.4%, who underwent colonoscopy, were aged between 1 and 5 years.

Hematochezia, rectal prolapse, diarrhea, constipation, abdominal pain, fever, growth retardation, Clubbing, history of ulcerative colitis and polyps were present in 93.2%, 5.9%, 2.7%, 0.6%, 3.7%, 2.6%, 1.4%, 0.6%, 1.4%, 0.7% of the patients, respectively. Polyps, nodular lymphoid hyperplasia (NLH), granularity ulceration (suggestive for ulcerative colitis), suggestive for crohn's disease, mucosal edema, fragility, ulcer, solitary rectal ulcer, cobblestone appearance, vascular disorders, fissure, fistula and anal tags were present in 34.6%, 16.7%, 15.1%, 0.9%, 1.9%, 0.6%, 2.4%, 3.7%, 0.4%, 0.6%, 3%, 0.6% of the patients, respectively; 23.1% of the children had normal colonoscopic findings.

Among the 240 cases found to have polyps on colonoscopy, 209, 18, 7, 4, 2 cases were reported as juvenile polyps, hamartoma, hyperplastic, lymphoid and necrotic in type, respectively. Of the 232 patients with polyps, 197 had a solitary polyp, 22 had 2 to 4 polyps, and 13 had more than 5 polyps. In respect to site, polyps were more frequent in the rectum, rectosigmoid region, left colon, diffuse, and right colon in decreasing order of occurrence.

Conclusions

Colonoscopy is performed more frequently in children with hematochezia and rectal prolapse. Polyps, NLH and ulcerative colitis were the most frequent findings in the colonoscopies performed.

Keywords: Children, Colonoscopy, Lower GI Complaint

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BACKGROUND

GI disorders frequently occur in children and they present with different clinical manifestations.

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Diagnosis is made through history taking, physical examination, per rectal examination and by using paraclinical tests for more accurate diagnosis. However, in many instances, definite diagnosis is not reached only by these methods but radiographic techniques and direct visualization and microscopic examination of the lesions help in diagnosis. In addition, in cases with intestinal polyps, colonoscopy plays a diagnostic as well as a therapeutic role and has been used worldwide for assessing lower gastrointestinal bleeding (LGIB) and other diseases of the colon for many years. Since the late 1970s when endoscopy was introduced, a big revolution has been made in the diagnosis and treatment of GI disorders in children, especially with flexible Endoscopy. Today, modern techniques allow endoscopy to be performed in all age groups, including newborns.(1, 2, 3), Of course, correct bowel evacuation and washing as well as the child's cooperation are required before colonoscopy.(2, 3), The indications for colonoscopy in children are: LGIB, chronic colitis, chronic diarrhea, suspicion of inflammatory bowel disorders (IBD), malignancies, or polyposis syndrome, dilation of colonic strictures and removal of foreign bodies. The most frequent reason for performing colonoscopy, however, is LGIB.(1)

Cases found by colonoscopy also include polyps, solitary rectal ulcers, infectious (bacterial, parasitic) or allergic colitis and IBD*.(2), Polyps are found in approximately 1% of school-aged children, of whom 90% are juvenile polyps. IBD has an incidence of 2-4/100000 cases and is mostly found in the 10 to 19-year-old age group.(1, 2)

MATERIALS AND METHODS

During a 5-year period (1996-2001) a total of 694 children (431 male; 263 female) aged below 16 years who attended the Children's Hospital Medical Center (Tehran, Iran) with LGI complaints and who had indication for

performance of colonoscopy, were enrolled in this case control study. After 48 hours of receiving a liquid diet, with or without bisacodyl suppository, and with at least one large bowel washing with 0.9% normal saline (5-10 ml/kg), the child was ready for colonoscopy. Before the procedure the child received IM injection of Pethidine (1mg/kg), Chlorpromazine (0.5 mg/kg), Promethazine (0.5 mg/kg) and IV injection of Midazolam (2 mg/kg) as required. Colonoscopy was performed with the Olympus Pediatric colonoscope. All colonoscopic findings were recorded and biopsy was taken from the lesions (polyps were removed by means of snares), placed in 10% formalin and sent to the pathology department of the same hospital. After hematoxylin and eosin staining, the pathologic report was given. Results were recorded in code sheets and entered into a computer information bank and analyzed by SPSS (version 10) with descriptive statistics test.

RESULTS

A total of 694 children (age range 4 months-16 years; male = 431, 62.1%, female = 263, 37.9%; male to female ratio = 1.7:1) were enrolled. The majority (n = 343, 49.9%) of the children were between one to five years of age (Table 1).

Table 1. Frequency distribution of patients according to age

Age (years)	Frequency (%)
<1	32 (4.9)
1-5	343 (49.4)
6-9	201 (29)
>10	118 (17)
Total	694 (100)

The chief complaints included hematochezia, rectal prolapse, diarrhea, constipation, abdominal pain, fever, growth retardation, clubbing, history of ulcerative colitis and polyposis (Table 2).

Colonoscopic findings included polyps, NLH, ulcerative colitis, solitary rectal ulcer, mucosal

* Inflammatory Bowel Disease

Table 2. Frequency distribution of patients according to complaints

Chief complaints	Frequency (%)
Hematochezia	647 (93.2)
Rectal prolapse	41 (5.9)
Abdominal pain	26 (3.7)
Diarrhea	19 (2.7)
Fever	18 (2.6)
Growth retardation	10 (1.4)
History of ulcerative colitis	10 (1.4)
Polyps	5 (0.7)
Constipation	4 (0.6)
Clubbing	4 (0.6)

edema, mucosal fragility, vascular disorders and cobble-stone appearance of the bowel wall. Colonoscopic reports were normal in 160 cases. The main Colonoscopic finding was polyps ($p < 0.01$) (Table 3). Of the 240 cases with polyps sent for histopathologic studies, 209 (87%) were

Table 3. Frequency of colonoscopic finding in the cases

Colonoscopic finding	Frequency (%)
Polyp	240 (34.6%)
nodular lymphoid hyperplasia	116 (16.7%)
Granularity, ulceration*	105 (15.1%)
Solitary rectal ulcer	26 (3.7%)
Fissure	21 (3%)
Ulcer	17 (2.4%)
Mucosal edema	13 (1.9%)
Aphtous lesion with skip area**	6 (0.9%)
Fragility	4 (0.6%)
Fistula and tag	4 (0.6%)
Vascular disorders	3 (0.4%)
Cobble stone appearance	3 (0.4%)
Normal	160 (23.1%)

* Suggestive for Ulcerative Colitis

** Suggestive for Crohn's disease

juvenile polyps, 18 hamartoma, 7 hyperplastic, 4 lymphoid, and 2 necrotic in type. 22 and 13 patients had 2-4 and more than 5 polyps (polyposis), respectively. Most (50.2%) polyps were between 1 to 2 cm in size and were mainly located in the rectum (69.1%), rectosigmoid (18.2%), left colon (6%), diffusely (4.7%) and right colon (2%). The majority of histopathologic reports indicated juvenile polyps, non-specific colitis, NLH* and ulcerative colitis (Table 4).

Table 4. Frequency of pathologic finding in the cases

Finding	Frequency (%)
Juvenile polyp	209 (30.1)
Non-Specific colitis	136 (19.6)
Nodular lymphoid hyperplasia	65 (9.4)
Ulcerative colitis	64 (19.6)
Solitary rectal ulcer	28 (4)
Hamartoma polyp	18 (2.6)
Crohn's disease	12 (1.7)
Allergic colitis	11 (1.6)
Hyperplastic polyp	7 (1)
Lymphoid polyp	4 (0.6)
Necrotic polyp	2 (0.3)
Normal	17 (2.4)

On colonoscopy, vascular disorders (4 cases), angiodysplasia of the ascending colon (1 case), rectal varices due to portal hypertension (1 case), mucosal hematoma of transverse colon due to blunt abdominal trauma (1 case), and petechia-pupura lesions (1 case) were seen in a patient with SLE**.

DISCUSSION

In this study, the male to female ratio was 1.7:1. Other studies state values between 2-3.5:1.(8, 9, 10), Most (49.4%) patients were within 1 to 5 years of age, while this was 4, 6, or even 8 years in other studies. The most common complaint was

* Nodular Lymphoid Hyperplasia

** Systemic Lupus Erythematosus

hematochezia (93.2%), rectal prolapse (5.9%) and diarrhea (2.7%). Further studies, especially those performed in Asian children, had approximately similar results. Podder and his colleagues in 1991-96 reported that hematochezia was a complaint in 98.7% of 236 children(5) and in Thapa's study in 1991, hematochezia was present in 83.3% of children under study(6) (n =72).

Different dietary regimens are recommended for preparation of the bowel. A liquid diet is given 24 to 48 hours prior to the procedure.(1, 2, 3), Our patients received the same regimen. In addition, Bisacodyl suppository was given to children more than 1 years of age, who had no contraindications.(1), In this study bowel cleansing was done two times, using 5-10 ml/kg, 0.9% normal saline. but, phosphate enema, with or without saline(1), polyethylene glycol(3), mannitol(4, 10), glycerin 25% 1-2 ml/kg are other alternatives.(15), Narcotics used in the present study include Pethidine 1 mg/kg IM, Chlorpromazine 0.5 mg/kg, Promethazine 0.5 mg/kg with or without Midazolam 0.2 mg/kg (IV). Other researchers have used Pentazocine and diazepam(6) (IV) or Pentazocine and Midazolam.(15), The most frequent colonoscopic finding in the present study was polyp, which is similar to that of other studies. In addition, the most common type of polyp was juvenile polyp and the most common site of involvement was the rectum. Solitary polyps were more frequent and most polyps were 1 to 2 cm in size. In the study performed by Podder and his colleagues, solitary polyps (76%), multiple polyps (16.5%) and juvenile polyps(5) (93%). In the study performed by Thapa and his colleagues on 72 children, bacteriuria (83.3%), and prolonged colitis (14%), were the most common presenting complaints. Of these patients, juvenile polyps (69.4%), ulcerative colitis (5.5%), non-specific colitis (4.2%), tuberculous lesions (2.7%), amebic colitis (1.3%) and allergic colitis (1.3%) were most frequent. Polyps were solitary, between 2 and 4, and more than 5 in number (polyposis) in 90%, 8% and 2% of cases, respectively.

In Bhargava's study, of the 240 patients with

LGIB, 77%, 23% and 4% had juvenile polyps, ulcerative and non-specific colitis and colonic varices, respectively. On the whole, 92% of lesions were located in the left colon, especially in the rectum and sigmoid.(7), In the present study, 93.3% of polyps were also located in the left colon, mostly in the rectum. In a study conducted on 144 Jordanian children, 134, 9 and 1 had solitary polyps, 2-7 polyps, and polyposis, respectively. Rectal polyps were present in 69.5% of cases(8), which is similar to the present study in respect to the number of polyps and only polyposis was more frequent in our study. In a study performed by Khvrana *et al*, in India, 85, 40, 3 and 20 had LGIB, polyps, solitary rectal ulcers, and non-specific colitis, respectively.(1), In Guitron's study, (1985-96), which was performed fifty 8 to 14-year-old children with polyps of the colon and GIB, 40 had solitary polyps. The polyps were located in the rectosigmoid region in 82% of cases and 80% were juvenile in type.(13)

CONCLUSION

Our study shows that the main reason for performing colonoscopy included hematochezia, rectal prolapse. In the present study the most frequent findings on colonoscopy were polyps, NLH and ulcerative colitis. Flexible colonoscopes are more accurate in diagnosing and treating LGI disorders in children. This study forms the foundation for further more advanced studies to be performed in the future.

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