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Role of Colonoscopy In Children And Adolescents With Lower Gastrointestinal Bleeding; A Single Centre Experience From Kashmir, Northernmost India

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Abstract

Lower gut bleeding is alarming sign for care giver. Finding etiology is of utmost importance for further management. Colonoscopy is investigation of choice to look for the etiology of lower gut bleeding. This is the first study from the northernmost India.

Aims And Objectives; this was a cross sectional study, conducted at department of pediatrics, GMC Srinagar. Aim was to describe the colonoscopic findings in 310 children presenting with hematochezia (53.5%), blood mixed with loose stools for more than 2 weeks(39.3%),melena(1.9%) or occult blood in stools(0.3%) from June 2017 to June 2022. Age range was 1-18 years. Mean age was 5.12 years. Age group of 1-6 years constituted 73.5 %. Most common colonoscopic /histological findings were recto sigmoid polyps n=104(33.5%), anal fissure n=47(15.1%), lymphoid nodular hyperplasia n=38 (12.2%),trichuris dysentery syndrome n=30(9.7%), cow's milk protein allergy n=27(8.7%), nonspecific colitis n=18(5.8%), solitary rectal ulcer syndrome n=14(4.5%), inflammatory bowel disease n=6 (1.9%),intestinal tuberculosis n=3(0.9%), dieulafoys lesion in duodenum n=1(0.3%) and blue bleb nevus rubber syndrome n=1(0.3%). Twenty-one patients had normal colonoscopy. Colonoscopy yield was 93.3 %.

Conclusion; colonoscopy is the most useful tool for evaluating the lower gastrointestinal bleeding and for therapeutic procedure as well. Yield of colonoscopy is 93.3%. Recto sigmoid polyps are the most common cause followed by anal fissure, lymphoid nodular hyperplasia ,trichuris trichiura and cow's milk protein allergy from the Kashmir,the northernmost India.

Keywords: NIL.

Introduction

Lower gastrointestinal (GI) bleeding is the bleeding from gastrointestinal tract distal to the ligament of Treitz and is usually suspected when patient presents with passage of bright red blood or blood clots per rectum (1). The reported incidence in children in various Western literature is about 20 in 100,000 per year (2). Lower GI bleed is one of the common complaints for which a child is referred to pediatric specialist (3). The clinical presentation may vary and can present as hematochezia, blood with diarrhoea, malena and/or chronic anemia. Some associated clinical features may be present and include pain abdomen, constipation, diarrhoea, weight loss, fever, passage of mucus, and abdominal mass.

Colonoscopy has been regarded as the procedure of choice for investigating the etiology of lower gastrointestinal(GI) bleeding (4).

Not every cause of lower GI bleeding need extensive investigations but investigation is important to rule

out life threatening conditions and to prevent repeated visits to health care facilities, in case of a benign cause. Therefore, determining the cause of bleeding is important for appropriate management of the affected children. No such study has been undertaken from this northernmost part of India. Here we describe the colonoscopic findings in children with lower GI bleeding.

Material And Methods

This was a cross sectional study, all the patients who had undergone colonoscopy for lower GI bleed from June 2017 to June 2022 were reviewed ,at Post Graduate Department of Pediatrics and Neonatology, GB Pant General Hospital, an Associated Hospital of Government Medical College, Srinagar.The aim was to describe the colonoscopic findings in children with lower GI bleed. The study was approved by the institutional ethical committee. Informed consent was taken from the parents or guardian.

Inclusion criteria include patients from 1 year to 17 years of age presenting with lower Gastrointestinal Bleeding. Children less than one year, those with acute dysentery, intussusception and those not consented were excluded. Lower gastrointestinal bleeding was defined as passage of fresh blood in stools, or more than 2 weeks passage of loose mucoid stools with blood in it or malena/stool occult blood positive with normal upper gut endoscopy. All the patients presenting with lower GI bleeding received initial assessment and resuscitation, followed by detailed history and physical examination. After stabilization of the patients, base line investigations were done in all the patients including complete hemogram, coagulation profile, blood grouping and typing. Colonoscopy was done for diagnostic evaluation after proper bowel preparation using PEG solution with dose 4000ml/1.73 m^2 given over one day in >4 years age group or over two days in patients less than 4 years of age ,with liquid only diet during preparation [4,5] Patients were kept nil per oral 6 hours prior to procedure. Fujinon Model:EC-530LP pediatric colonoscope was used. Procedure was done under sedation using intravenous midazolam and ketamine in the dose of 0.1 mg/kg and 2 mg/kg respectively and repeated when needed. Monitoring was done through vital measurements and pulse oximeter [4]. Multiple mucosal biopsies were taken in patients with features of inflammation. Endoscopic management was done where feasible and indicated like polypectomy or argon plasma photocoagulation.

Results

The age of the patients involved in the present study ranged from 1-18 years with mean age of 5.12 years. Most of the patients belonged to the age group of 1-6 years (73.5%).

In our study group, 151(49%) patients were males and 159(51%) patients were females. The two sexes were almost equally affected. The patients baseline characteristics are given in table1. Most common clinical presentation was haematochezia.

The colonoscopic and histopathological findings are presented in table 2 and 3.

Table 1: Patient characteristics

Total no. of patients	N = 310
Age	Age group 1-17 years Mean age 5.12 years
Sex	Males 151 (49%) Females 159 (51%)
Clinical presentation	Haematochezia (53.5%) Blood mixed with loose stools (39.3%) Malena with normal upper GI endoscopy (1.9%) Occult blood in stools (0.3%) Blue blebs on skin (0.3%)

Associated features	Abdominal pain (24%) Constipation (16.4%) Weight loss (4.1%) Fever (1.6%)

Table 2: Colonoscopy findings

Colonoscopic findings	Number of patients
Polyp	104(33.5)
Ulceration/hyperaemia	87(28%)
Mucosal nodules	38(12.2%)
Anal fissure	47(15.1%)
Trichuris trichuira	30(9.7%)
Blue blebs(blue bleb nevus rubber syndrome)	1(0.3%)
Normal findings	21(6.7%)

Table3: Histopathological diagnosis

Histopathological finding	No of patients
Juvenile polyp	101
Hamartomatous /neurogangliomatous Poyps	1
Villous adenoma	1
SRUS polyp	1
Lymphonodular hyperplasia	38
Ulcerative colitis	4
Crohns disease	2
Tubercular granuloma	3
Non specific colitis	18
Solitary rectal ulcer	14
Cow milk protein allergy	27

Figure 1. (a)rectal polyp with snare in place (b) trichuris trichiura in left colon, live worms (c) narrowing, loss of vascularity,cobblestone appearance in crohns disease (d) tuberculosis in ileocecal region (e) bleb in blue rubber bleb nevus syndrome.

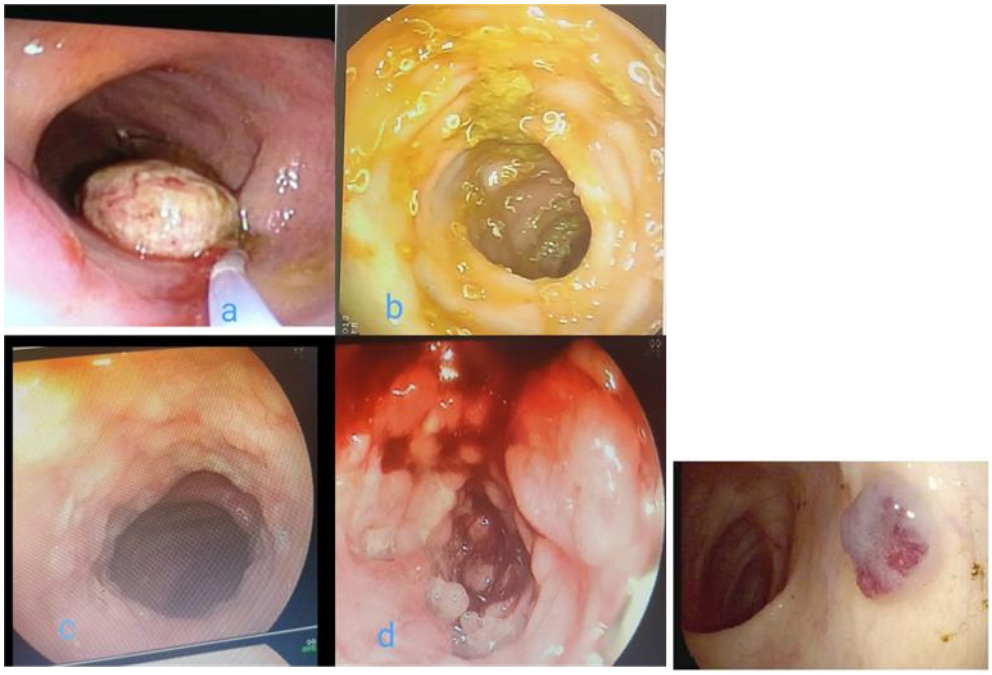

Table 4. etiology of lower gastrointestinal bleeding in our patients

Causes of lower GI bleed	No of patients (n=310)	Percentage
Polyps	104`	33.5%
Anal fissure	47	15.1%
Lymphonodular hyperplasia	38	12.2%
Trichuris dysentry syndrome	30	9.7%
Cow milk protein allergy	27	8.7%
Nonspecific colitis	18	5.8%
Solitary rectal ulcer syndrome	14	4.5%
Inflammatory bowel disease	6	1.9%
Meckel's diverticulum	6	1.9
Intestinal tuberculosis	3	0.9%
Dieulafoy lesion of duodenum	1	0.3%
Blue bleb nevus rubber	1	0.3%

syndrome		
Meckel's diverticulum	6	1.9%

Discussion

Lower gastrointestinal bleeding often makes the guardian of the child very anxious. Most of times the causes of Lower GI Bleeding are benign and proper management of the patients and determining the cause decreases repeated visits to health care facilities.

In our study the most common (n=104,33.5%) colonoscopic finding was rectosigmoid polyps. The reported prevalence of polyps in children undergoing colonoscopy for various indications varies from 4% to 17% in western countries (6). Most of the polyps were solitary in 84 patients (81 %)and 20 patients (19 %) had multiple. In 91 patients (87%) polyps were located in recto sigmoid region. In an Indian study by Poddar et al 85% are located in recto sigmoid(6). 0ne patient of juvenile polyposis syndrome had polyps in duodenum, ileum and whole colon and a patient had hamartomatous/neurogangliomatous polyps of large gut, stomach and duodenum diagnosed by histopathology and immunohistochemistry staining. The histopathological diagnosis was juvenile polyp in 101 (97%), which is consistent with study by Poddar et al(6) and Deeb MM et al(7).One polyp each of villous adenoma, hamartomatous and SRUS were detected on histology .Polyps are most common cause of rectal bleeding in children as shown in studies studies from India,Pakistan and Iran (4).Anal fissure was the second most common cause of lower GI bleed n=47(15.1%) in our study.A study from central India attributed anal fissure in 21% cases(8). An anal fissure does not rule out the proximal cause of bleeding and many patients had history of dysnergic defecation that is why colonoscopy was done in such patients. The second most colonoscopy finding was lymphoid nodular hyperplasia (LNH)in 38patients (12. 2%).It is a benign condition reflecting the non-specific response to different stimuli and occurs diffusely throughout the gastrointestinal tract. In a study by Zahmatkashan et al, LNH was a cause of lower gastrointestinal bleeding in 15.2 % of the pediatric patients (9).Trchuira trichuris was responsible for 9.7% of lower gastrointestinal bleeding .Trichura dysentery syndrome presents as pain abdomen, bleeding per rectum ,anaemia with or without growth retardation (10,11). Kashmir is highly endemic region for trichiura trichuris with pediatric prevalence of 27.9%(12).The cow milk protein allergy is mixed allergic response to cow's milk and presents as irritability, vomiting, pain abdomen, bleeding per rectum and anaemia. It is the most common food protein allergy in infants and children (13). The colonoscopy shows apthous ulcers, lymphonodular hyperplasia. The diagnosis was based on recto sigmoid biopsy demonstrating focal eosinophilic cryptitis (>6eosophils/hpf of more than two crypts) or eosinophilic proctitis with response to cow's milk protein exclusion (14).Solitary rectal ulcer diagnosis is made on the basis of endoscopic and histological findings. Ulcer may be solitary or multiple with thickened mucosa or a polypoid appearance may be present (15).one patient in our study had a polypoid lesion associated with ulcer. Histologically, fibrosis in the lamina propria is the most important diagnostic criterion, which is not seen in inflammatory bowel disease with similar clinical findings (16). Solitary rectal ulcer was found in 17(4.7%) patients in the present our study, similar finding were reported by P Mandhan and Dehghani et all in their studies(17). Nonspecific colitis was present in 18(5.8%) patients. Most patients had left side colon mild erythema and apthous proctitis. Biopsy showed nonspecific inflammatory features without any crptitis, crypt distortion, transmural inflammation or granulomas. Nonspecific proctitis in children is an indistinctly described entity in the pediatric literature. It is often considered a variant of diffuse ulcerative colitis, but the condition differs in its clinical manifestations and prognosis from ulcerative colitis (18). Lesions are restricted to the rectum, but may extend proximally to involve the sigmoid colon (16). One study by deeb M et all describes nonspecific inflammation in 24% pediatric patients presenting as lower GI bleed (7). Inflammatory bowel disease was found in 6 (1.9%) patients as the cause of lower gastrointestinal bleeding in our study. The ulcerative colitis patients had mucosal hyperaemia, increased friability, loss of vascularity, superficial ulcers in distal colon with histological features of cryptitis, crypt distortion and inflammatory cell infiltrates. Crohn's disease patients

had narrow ileocolon, cobblestoning in proximal colon with non caseating granulomas in presence of transmural inflammation. Though IBD is the common cause of rectal bleeding in children from west and about 21% in Pakistan it constituted 1.9% of total rectal bleeding in our study(4). Intestinal tuberculosis was diagnosed in 3 patients (0.9%) with colonoscopic findings of erythema, mucosal ulcers and ileocecal valve deformity. Biopsy showed caseating granulomas and gene expert confirmed the diagnosis of intestinal tuberculosis. In an Indian study tuberculosis constituted 3.5% of rectal bleeding. In large series by Yachha, Khurana and Bhargava the common causes of lower GI bleeding in children are other than IBD (19-21). In 21 patients (6.7%)of the patients, colonoscopy was normal. These patients included 6 patients of Meckel's diverticulum and one patient of dieulafoy lesion of duodenum. Colonoscopic yield in our study was 93.3%. Similar result was reported by Motamed Farzaneh et al (22) in their study.

The limitations of this study are that this is the one of many tertiary care hospitals available in this region, different etiologies might have presented to other centres yet it evaluates the etiological profile from the same region. A multiple centre study from this region would definitely answer the exact proportion.

In conclusion colonoscopy is the most useful tool for evaluating the lower gastrointestinal bleeding and for therapeutic procedure as well. Rectosigmoid polyps are the most common cause followed by lymphoid nodular hyperplasia ,anal fissure, cow's milk protein allergy and trichuris trichuira from the Kashmir, the northernmost India.

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