

## COLONOSCOPIC FINDINGS IN CHILDREN WITH LOWER GASTROINTESTINAL BLEEDING

**Farzaneh Motamed MD.\***, Mehri Najafi MD.\*\* , Ahmad Khodadad MD.\* ,  
Gholamhosseyn Fallahi MD.\*\* , Fatemeh Farahmand MD.\*\* , Mohammad Sobhani MD.\*\*\*

\* Assistant Professor of Pediatric Gastroenterology, Children's Medical Center Hospital, Tehran University of Medical Sciences

\*\* Associate Professor of Pediatric Gastroenterology. Children's Medical Center Hospital, Tehran University of Medical Sciences

\*\*\* Subspecialty Resident of Pediatric Gastroenterology, Children's Medical Center Hospital, Tehran University of Medical Sciences

### ABSTRACT

#### Background

Lower gastrointestinal bleeding (LGIB) in children has many different etiologies and is a serious problem that warrants careful diagnostic work-up.

#### Materials and Methods

164 colonoscopies were done during one year for determining the etiologies of LGIB in children who was referred to Children's Medical Center Hospital. Analyses of results were based on age, sex, etiology and clinical presentations.

#### Results

of 164 colonoscopies, 34.7% of LGIB were due to polyps which was the most common etiology. Lymphoid nodular hyperplasia (LNH) had a prevalence of 22.5%; in 15.8% of patients, colonoscopic findings were normal. The peak age group of polyps was 4–6 yr; for LNH, it was 1 yr.

#### Conclusions

LNH is more common than polyps in patients presenting with LGIB younger than 3 yrs. In older children, however, polyps are the major cause. Therefore, the diagnostic approach and the need for colonoscopy are different in these two age groups.

**Keywords:** lower gastrointestinal bleeding, polyp, nodular lymphoid hyperplasia, colonoscopy

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#### Corresponding author:

*Pediatric Unit of Digestive Disease research Center,  
Children's Hospital Medical Center, Gharib Ave.  
Tehran, Iran*

*Telefax: +98 21 6692 4545*

*E-mail: dr\_f\_Motamed@yahoo.com*

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### INTRODUCTION

Lower gastrointestinal bleeding (LGIB) is those with an origin after the ligament of Treitz. Its incidence in western report is about 20 in 100000 per year.(1), LGIB can be presented in four forms: 1) hematochezia which is passage of bright red blood from rectum. It can be isolated or mixed with stools. Its origin usually is from the large intestine but massive bleeding from upper

GI is also presented as LGIB; 2) melena which is passage of tarry, foul smelling stool which suggest bleeding above the ileocecal valve and can also occur in large intestine when the transient time is high; 3) occult bleeding with symptoms of fatigue and pallor. It is usually detected by lab tests revealing iron deficiency anemia or positive fecal blood test; and 4) symptom of severe blood loss such as malaise, tachycardia, or even shock. (2)

LGIB has frequent etiologies and its cause can be found in anywhere after the ligament of Treitz up to the rectum and anus.

When a child comes with LGIB, the first step in the diagnosis is a through history taking and physical examination. Other complementary procedures will be done in the next steps.(2)

In assessment, we must find out if blood is present or other substances mimicking blood are the cause of stool discoloration. We should also find out whether the bleeding is from the child, if its origin is from gastrointestinal tract and if yes, try to discriminate between an upper and lower gastrointestinal bleeding. (2)

## PATIENTS AND METHODS

In this study we tried to determine etiologies of LGIB in children who presented with LGIB and who came in our center for colonoscopy (without previous or definite diagnosis). The group consisted of children with any age who attended Children's Medical Center Hospital, Tehran, Iran with LGIB during March 2006 to March 2007.

Need for colonoscopy was approved for these children by a pediatric gastroenterologist or a fellow in pediatric gastroenterology. The procedure was explained for parents and consents were taken.

Total colonoscopy was done with a Pentax EPM 330 size 11 mm colonoscope. The patients were premedicated with sedatives and analgesics so that none of them needed general anesthesia. Those patients with a definite diagnosis for their LGIB, who underwent a follow-up colonoscopy or those with bleeding in favor of colitis who needed a different approach, were excluded from the study.

## RESULTS

In this study conducted from March 2006 to March 2007, there were 164 children with LGIB who underwent daignostic colonoscopy.

The minimum and maximum age of patients was 3.5 month and 14 yr, respectively. There was 102 boys and 62 girls (male:female ratio of 1.6). The main symptom was rectal bleeding. In few patients it was associated with other complains; 10 suffered from abdominal pain; seven had a mass protruding from their rectum; five had passage of puss and mucus with blood; two had constipation and four had bloody diarrhea. Weight loss and history of intussusception was present in two children. In five patients there was history of polyp in previous colonoscopy and came with recurrence of LGIB.

In 57 (34.7%) patients, there was polyp in colon with various size; all were resected. In this group, 35 were boy and 22 were girl. Thirty-seven (22.5%) patients had lymphoid nodular hyperplasia (LNH). Gross appearance of colon was normal in 26 (15.8%) patients; in these patients biopsy was taken and sent for histopathologic study (Table 1). Nine (5.4%) patients had solitary rectal ulcer, one had hemangioma, and two had rectal varices. Twenty-three patients had non-specific lesions like local or disseminated inflammation, aphthous or linear ulcers, erythema, decreased or increased vascular marking and fissure.

There was no polyp in age group under one year. Thirteen patients was younger than one year out of whom seven had LNH. The mode age of all patients and those with polyp was four; 45% of patients in this age group had polyp. The highest prevalence of polyp was observed in those aged three years; nine (53%) of 17 patients aged three years had polyp. Those aged seven years or were under one year had no polyp. LNH was reported in 83% of those aged under six years; more than half (54%) of the patients with LNH aged under three years. The prevalence of LNH, based on colonoscopic findings, was nearly equal in three age groups of <1, 1–2 and 2–3 year (19%, 16%, and 19% of all, respectively). A six-year-old patient had hemangioma. Rectal varices was present

**Table 1.** Frequency of colonoscopic findings stratified by age (3-year interval) in children referred to CMC Hospital.

Age (yrs)	n (%)	Polyp	LNH*	NI**
≤3	39 (24)	11	20	3
4 - 6	58 (35.5)	29	10	6
7 - 9	26 (16)	7	2	8
10 - 12	18 (11)	5	3	4
13 - 15	17 (10.5)	3	2	4
>15	5 (3)	2	0	1
Total	164 (100)	57	37	26

\*LNH: Lymphoid nodular hyperplasia

\*\*NI: Normal

in two (18- and 3.5-yr-old) patients—none had predisposing illness such as portal hypertension.

## DISCUSSION

Rectal bleeding is an alarming symptom and requires additional investigation. (3), It is a common reason for referral to pediatric gastroenterologists and surgeons. (4), The etiology of LGIB is different in children from adults. (5), Although causes of LGIB are usually simple and require little or no treatment (e.g., anal fissure or juvenile polyp), sometimes, these symptoms are cues to more serious and life-threatening conditions. (5), Among the diagnostic work up for LGIB, after a thorough history taking and physical examination, we can do colonoscopy which is the procedure of choice for finding polyps or any other mucosal lesions. Polyps are the most common cause of painless rectal bleeding. (6)

In our study, during one year, 164 colonoscopy were done for finding the etiologies of LGIB. In 87% of our patients, rectal bleeding was the only symptom. In the study of Areola, et al, (3) there was 80% presented with only rectal bleeding.

Abdominal pain was found in 6% of our pa-

tients (n=10); there was associated bleeding too, however, only 3.3% of patients with polyp had this complaint. This suggests that painless rectal bleeding is the main presentation of polyps as is already pointed out in references. (6), We found polyp in 34.7% of patient which is quite different from with the rate of 10% reported by Clarke, et al, (4); our rate was however very less than the relative frequency of 75% reported by Mandhan. (5) In all of these studies, the most common cause of LGIB was polyps of colon as our study indicated. Variation in prevalence of polyp is seen in many research (7,8); Western reports revealed a relative frequency of 4%–17% while in studies from India it was reported as high as 61%. (9), It seems that this difference is due to the prevalence in different regions and can explain our data. All these estimations of the prevalence of polyp might be underestimation of the real value since even in expert hands, 10% or so of polyps can be missed at ileocolonoscopy. (6)

About 15.8% of colonoscopies was normal which is within the range reported in other studies; the study done by Clarke, et al (4) reported 30% normal results; another study conducted by the authors in Shiraz revealed a prevalence rate of 23% of normal colonoscopy and Mandhans (5) reported a frequency of 10.6%. Of course, colonoscopy, even in the best centers of the world cannot find any abnormality in 10%–30% of patients with LGIB. (1), That might be attributed to several causes such as hidden positions of lesions between intestinal folds, incomplete colonoscopy because of poor bowel preparation and presence of lesions in not examined segments, auto-amputation of polyps and repaired ulcer or other lesions before performin the procedure.

Mandhan, et al, reported a complication rate of 1.9%. The complications included bleeding and gut perforation. Comparing to other studies which reported complication rates of 5% and 14% (10,11) they were good. (5)

In our study, there was no complication during one year which indicated our good experience.

The peak age in patients with polyps in our study was four and five years; in Mandhan's study, it was six years. In another study conducted by the authors in Shiraz, (12) the mean age of 5.7 years was reported.

LNH is a benign condition in children and one of its major cause is allergy to protein in cow's milk. We observed a higher frequency (22.5%) than that reported by Mandhan's (5) (3%) and Clarke, et al. (4), Although there was not mention for LNH, the prevalence of allergic colitis was 5% in one study, (13) was reported as 11% on radiological films and may be even higher if colonoscopy had been done. The high frequency of LNH observed in our study can be due to the higher prevalence of parasitic infestation, presence of more allergic diet in this region and a higher clinical suspicion for this diagnosis before colonoscopy. Prevalence of LNH in a study performed by the author (12) was 17% and the majority of patients aged below three years with peak age of one year. In Mandhan's study, children with LNH was under 5 years of age. However, in our study, 83% were under six and 53% under three years, with the maximum prevalence at one year of age. Vascular malformation such as angiodysplasia in children is a rare cause of

LGIB. In a research by DeLa torre, et al, (14) during 23 years of follow-up, only six had vascular malformation; the mean age at clinical presentation was 2.3 years. In our study only one seven-year-old patient had hemangioma. In study of Motamed, (12) the prevalence of rectal varices was 1% which was in a patient with portal hypertension; we reported two (1.2%) patients without any predisposing illness.

## CONCLUSION

Etiologies of LGIB are numerous but in painless bleeding, polyps are in top of the list followed by LNH. Based on two studies performed in Iran, it seems that LNH has a higher prevalence in our country. Considering the higher prevalence of LNH in children aged below three years and that the maximum prevalence of polyps occurs between four and six years of age, we suggest when LGIB occurs in children aged below three years, LNH should be considered as the primary differential diagnosis and a trial therapy should be given prior to any further investigations. In those aged above three years, colonoscopy should be among the first diagnostic procedures to rule out polyps.

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