

Causes and Outcome of Children with Lower Gastrointestinal Bleeding (LGIB) Presenting at Tertiary Care Hospital

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ABSTRACT

Background: One of the most potentially fatal pediatric events is gastrointestinal (GI) bleeding. Lower gastrointestinal bleeding children often have anemia, but determining the cause of the bleeding is crucial in developing a management plan.

Objective: To assess the causes and outcome of children presenting with lower gastrointestinal bleeding.

Methodology: The current study was prospective cross-sectional study carried out at the pediatrics department of Fauji Foundation Hospital, Peshawar Cantt for duration of one year from June 2021 to July 2022. A total of 250 children with lower GI bleeding were enrolled in the current study. All the data was analyzed by IBM SPSS version 23.

Results: In the current study, male children were 140 (56%) while female children were 110 (44%) with the mean age of 6.80 (\pm 1.50) years. The commonest complaint was abdominal pain in 105 (42%) patients whereas the commonest clinical observation was pallor observed amongst 115 (46%) patients. Juvenile colonic or rectal polyps were observed in 91 (36.4%) patients based on colonoscopy. Based on histo-pathological findings, polyps were observed in 93 (37.2%) patients, amongst whom 90 (96.77%) cases were juvenile polyps and 3 (3.33%) cases were familial adenomatous polyposis.

Conclusion: There are several underlying causes of lower gastrointestinal bleeding (LGIB). Abdominal pain was a common symptom in children with LGIB while the most typical cause of LGIB in children was a juvenile polyp in our study. Colonoscopy is a safe and effective diagnostic and therapeutic technique for children with LGIB.

Keywords: Children; Lower gastrointestinal bleeding; Causes; Outcomes

INTRODUCTION

One of the most potentially fatal pediatric events is gastrointestinal (GI) bleeding^{1,2}. Upper GI bleeding and lower GI bleeding are the two main clinical subtypes of GI bleeding. Hematemesis and melena are symptoms of upper GI bleeding, which starts from the upper section of the esophagus and travels to the Treitz ligament. When hematemesis is absent, red blood cells in the rectum are particularly helpful in identifying lower GI bleeding, which comes from the distal of the colon.

It is thought that GI bleeding, which can occur at any age due to pathologies of the GI tract's mucosa and vasculature, is a serious presenting symptom³. LGIB typically manifests as hematochezia, occult bleeding, melena and symptoms of extreme blood loss, such as malaise, shock or tachycardia⁴. Children and adults have different causes of LGIB. Anal fissures and juvenile polyps are clear and simple causes that typically require little to no therapies, but on occasion they may exacerbate more severe inherent abnormalities such as intussusceptions, midgut volvulus and Meckel's diverticulum^{5,6}. Chronic LGIB children often have anemia, but determining the cause of the bleeding is crucial in developing a management plan⁷. Radiography, endoscopy, scans of technetium-labeled red blood cells and angiography are all used in the diagnostic assessment. Colonoscopy and proctosigmoidoscopy are advised in all instances for additional evaluation and diagnosis after LGIB bleeding has been confirmed⁸. Colonoscopy has been shown to be a reliable and safe method of examining children's lower GI pathologies⁶. The direct visualization and location of the bleeding origin, a wide range of management options, and effectiveness as a diagnostic and therapeutic device are numerous benefits of colonoscopy. Colonoscopy is required to confirm the LGIB diagnosis. However, due to its invasive nature, colonoscopy requires preparation of the colon, sedation, a well-equipped endoscopy facility, and skilled

personnel^{9,10}. Children from various geographic regions have different LGIB etiologies¹¹. In order to assist clinicians in the management of children with LGIB, epidemiological studies are required. Based on literature, no such study has been carried out in Khyber Pakhtunkhwa region of Pakistan. Therefore this study was designed to determine the etiologies and outcome of children presenting with lower gastrointestinal bleeding.

MATERIALS AND METHODS

The current study was prospective cross-sectional study carried out at the pediatrics department of Fauji Foundation Hospital, Peshawar Cantt. The duration of study was one year from June 2021 to July 2022. The study was approved by the institutional ethical and research committee. All the patients of both the gender having age less than 18 years, presenting to our centre having bleeding per rectum were included whereas all those patients were not included who need emergency surgery or patients with ingested red meat and patients with ingested fruits or vegetables in the past 48 hours that contain per-oxidase such as broccoli, turnips and cantaloupes were not included^{12,13}. All the patients with bleeding disorders, patients with chronic liver disease and patients with viral infections such as dengue fever were also excluded. A total of 250 children with lower GI bleeding were enrolled in the current study. Informed consent in written was taken from all the guardian/parents of the enrolled patients. In every patient, a thorough histopathology, clinical examination, colonoscopy and laboratory tests were performed. A consultant pediatric gastroenterologist from the same department conducted the colonoscopy. All participants underwent twenty four hours of bowel preparation prior to colonoscopy, which was performed under standard general anesthesia. Several mucosal biopsies were performed when the mucosa and vasculature were clearly visible. Biopsy samples were transferred to the institution's

laboratory for assessment while being fixed in phosphate-buffered formalin¹⁴. All polyps were removed using a colonoscopic polypectomy, and the polyps were then sent for histology. All the data was documented on a predesigned Performa. All the data was analyzed by IBM SPSS version 23. Means and standard deviations were calculated for age while frequencies and percentages were determined for the data such as gender, clinical examination, associated complaints, pathological findings and colonoscopy.

RESULTS

A total of 250 children with lower GI bleeding were enrolled in the current study. Male children were 140 (56%) while female children were 110 (44%). (Figure 1) The mean age was 6.80 (± 1.50) years. Based on the age wise distribution, 115 (46%) patients were in age group ≤5 years, 45 (18%) patients in age group 6-10 years, 56 (22.4%) patients in age group 11-14 years and 34 (13.6%) patients were in age group 15-18 years. (Figure 2) Based on associated complaints, the commonest complaint was abdominal pain in 105 (42%) patients, diarrhea in 95 (38%) patients, fever in 35 (14%) patients and constipation in 15 (6%) patients. (Figure 3) Based on the clinical examination, pallor was observed amongst 115 (46%) patients, weight loss in 52 (20.8%) patients and tachycardia was observed in 45 (18%) patients while hypotension was observed in 38 (15.2%). (Figure 4) Based on colonoscopy, “juvenile colonic” or rectal polyps, “infectious colitis”, “solitary rectal ulcer”, Inflammatory Bowel Disease, Idiopathic, suspected Abdominal Tuberculosis and eosinophilic colitis patients observed were 91 (36.4%), 39 (15.6%), 37 (14.8%), 35 (14%), 25 (10%), 13 (5.2%) and 10 (4%) respectively. (Figure 5) Based on histo-pathological findings, polyps were observed in 93 (37.2%) patients, amongst whom 90 (96.77%) cases were Juvenile polyps and 3 (3.33%) cases were FAP (familial adenomatous polyposis). For the removal of all juvenile polyps Colonoscopic polypectomy was used. Amongst the 90 (96.77%) juvenile polyps case, 85 (94.44%) patients became free from disease while in 5 (5.56%) cases bleeding recurrence was observed. Surgery and colectomy was done for all the three cases of familial adenomatous polyposis. Death was reported in one case while the two cases were on followup. All the 37 (14.8%) cases of solitary rectal ulcer were managed with hydrocortisone enema, diet modification and sitz bath. 14 (37.83%) cases were partially responsive, 20 (54.05%) cases were fully responsive whereas 3 (8.10%) cases were resistant to treatment. Amongst the 35 (14%) cases of Inflammatory Bowel Disease, 30 (85.71%) cases had ulcerative colitis and were managed with aminosalicilic acids, steroid enemas and probiotics whereas 5 (14.28%) cases had crohn’s disease. On the basis of histopathological examination, 13 (5.20%) children were observed with ileocolonic tuberculosis (TB). Good response was shown to treatment by all the cases of abdominal TB. All the 10 (4%) patients of Eosinophilic colitis were managed with hypo allergic diet, steroid and montelukast and no recurrence was observed. All the cases of idiopathic findings based on histopathological examination were managed with hypo allergic diet, antibiotics, high fiber diet successfully except 2 (18.18%) cases that were observed with occasional bleeding per rectum. All the cases of onstipation were managed with lactulose. (Figure 6)

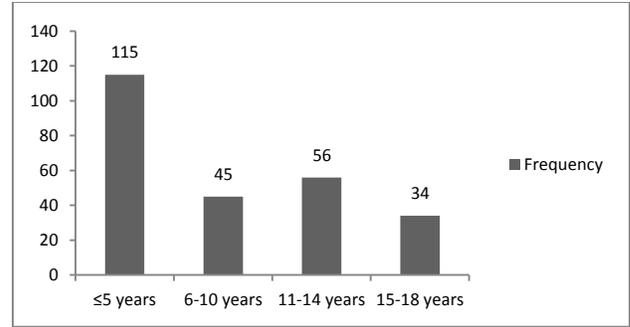


Figure 2: Age wise distribution of the patients

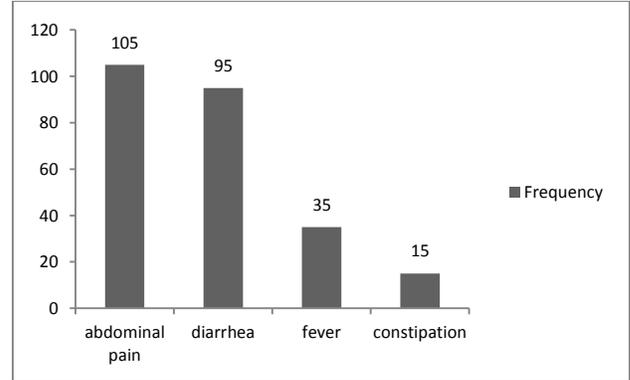


Figure 3: Distribution of patients based on associated complaints

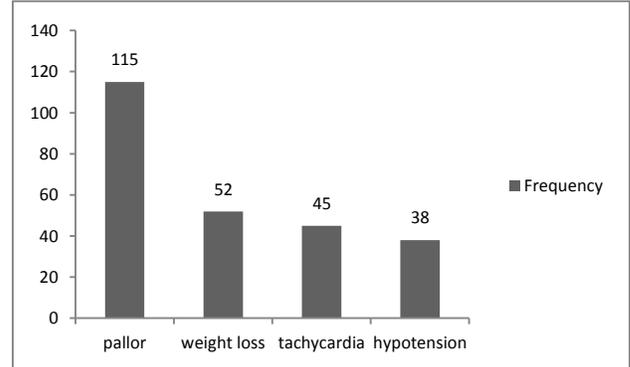


Figure 4: Distribution of patients based on clinical examination

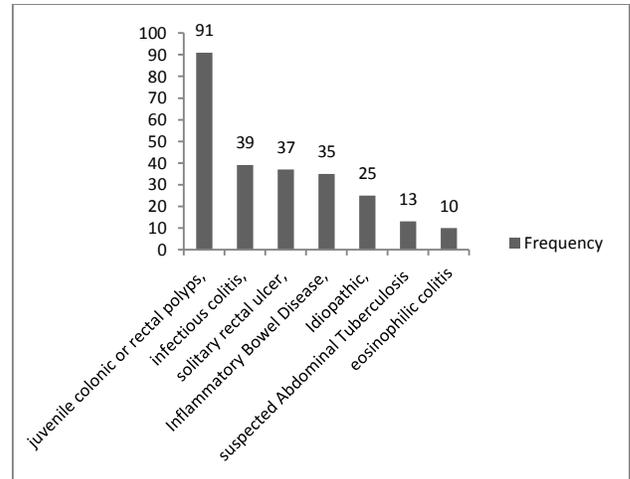


Figure 5: Distribution of patients based on colonoscopy

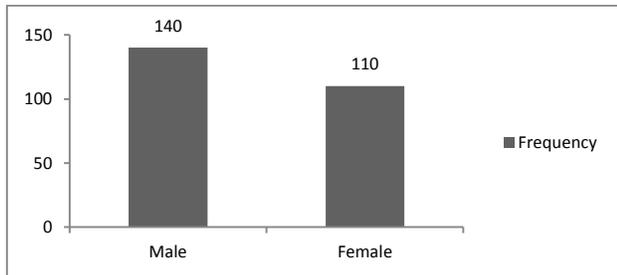


Figure 1: Gender wise distribution of the patients

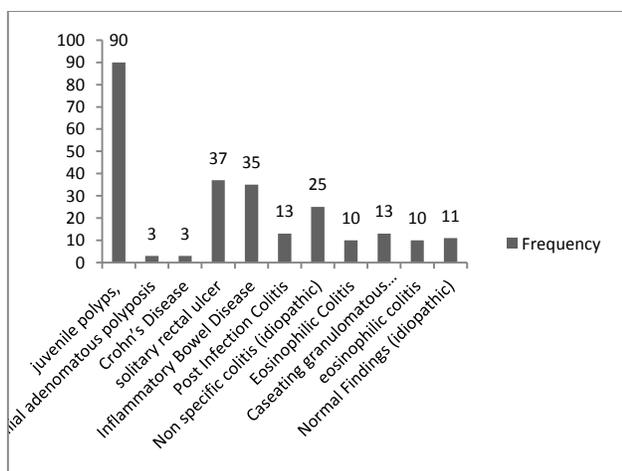


Figure 6: Distribution of patients based on histo-pathological examination

DISCUSSION

The most common reason for referring children to pediatric gastroenterology centers is LGIB^{15s}. Male children were 140 (56%) while female children were 110 (44%) in the current study. Males were predominated in our study like a previous study carried out by Deeb MM et al. who reported 68% males with LGIB in their study from Egypt¹⁶. Another study done in India reported high male to female ratio (2.16:1) amongst children with LGIB undergoing colonoscopy¹⁷. Another study also reported comparable findings¹⁴. The mean age was 6.80 (\pm 1.50) years in our study. Based on the age wise distribution, 115 (46%) patients were in age group \leq 5 years, 45 (18%) patients in age group 6-10 years, 56 (22.4%) patients in age group 11-14 years and 34 (13.6%) patients were in age group 15-18 years. Previous studies reported almost similar findings^{14, 16, 17}. According to a research conducted in Iran, children under the age of 10 made up 79.9% of the patients who presented with LGIB¹⁸. Younger age was also identified as the most prevalent factor among kids with LGIB in a research conducted by Mandhan P et al¹⁹. Based on associated complaints, the commonest complaint was abdominal pain in 105 (42%) patients, diarrhea in 95 (38%) patients, fever in 35 (14%) patients and constipation in 15 (6%) patients in our study. Our findings were quite similar to those of a study conducted in Egypt, with abdominal discomfort and diarrhea being the most frequent symptoms¹⁶. Anemia, abdominal aches, and diarrhea were identified as the most typical symptoms in children with rectal bleeding by Arvola T et al²⁰. Vomiting, diarrhea, and abdominal pain were identified by Ojuawo A and colleagues as being the most prevalent symptoms in patients with LGIB²¹. Zahmatkeshan M et al. from Iran stated that the most prevalent symptoms following bloody stool were fever, gut discomfort, and diarrheas¹⁸. Based on the clinical examination, pallor was observed amongst 115 (46%) patients, weight loss in 52 (20.8%) patients and tachycardia was observed in 45 (18%) patients while hypotension was observed in 38 (15.2%) in the current study. Other previous studies reported similar observations^{14, 16, 17}.

Juvenile colonic or rectal polyps were the most frequent finding in the present investigation, occurring in 36.4 per cent of cases. Almost similar findings were obtained in an Egyptian investigation, where polyps were the most prevalent colonoscopic finding in 44% of patients¹⁶. Children with LGIB had higher rates of polyps (75%) on colonoscopies, according to Mandhan P¹⁹. According to research carried out by Balkan E. et al., 53 per cent of children with LGIB had rectal polyps²², whereas investigations from several other countries found that rectal polyps were the most prevalent cause of LGIB in children^{6, 23, 24}. Based on histo-pathological findings, polyps were observed in 93 (37.2%) patients, amongst whom 90 (96.77%) cases were Juvenile polyps and 3 (3.33%) cases were familial adenomatous polyposis in our study.

As was shown in this research, GI infections are also well recognized as a prevalent cause of children with LGIB. In a prior investigation, non-specific colitis was observed in 20% of patients¹⁶. We observed normal pathological results in 4.4% of the patients. Additionally, prior research showed that 6–10% of children with LGIB had normal pathological results^{16, 18}. Since the majority of the children in our facility were referred cases, it is possible that we assessed children with serious conditions that might have influenced our selection bias. However, the current research is one of the few that evaluates children with LGIB. Given that this was a single centre research it is proposed that more research including other demographics and different centers be carried out in order to improve the body of knowledge on children presenting with LGIB in Pakistan.

CONCLUSION

There are several underlying causes of lower gastrointestinal bleeding (LGIB). Abdominal pain was a common symptom in children with LGIB while the most typical cause of LGIB in children was a juvenile polyp in our study. Colonoscopy is a safe and effective diagnostic and therapeutic technique for children with LGIB.

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