



General Surgery

PREVALENCE OF VARIOUS CAUSES OF LOWER GI BLEEDING IN PATIENTS VISITING A TERTIARY HEALTH CARE CENTER IN INDIA

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ABSTRACT

Introduction- Lower Gastrointestinal bleeding (LGIB) constitutes a major spectrum of signs and symptoms among patients visiting general surgery clinics ranging from occult bleeding to hematochezia and massive hemorrhage with shock. It is a frequent cause of hospital admission, particularly in elderly patients, and is an important determinant of morbidity and mortality. Detailed history taking, thorough clinical examination, and judicious use of diagnostic modalities are paramount in delineating the causative factors. This study aims to understand the distribution and prevalence of various causes of LGIB in the general population visiting a tertiary care center in India. **Methods-** The present study was a prospective observational study conducted at the Department of General Surgery, Anantshree Multispeciality Hospital, Aurangabad, India to observe the prevalence of various causes of LGIB and their age and sex-wise distribution in the patients visiting the surgery clinic for a period of two years from January 2020 to December 2021. All patients were examined and investigated as per the standard protocols and the inclusion criteria to be included in the study. The sample size came out to be 700. **Results-** The majority of the study participants were in the age group of 41-60 years and were males. The most common presenting symptom was hematochezia and the most common etiology of LGIB was found to be hemorrhoids in both males and females. The neoplastic cause (carcinoma) was seen in the elderly group of more than 60 years of age. 65.7 % of the patients in this study were found to have anemia. **Conclusion-** LGIB is a common and alarming presenting condition in the practice of gastroenterology and surgery. A careful clinical history and physical examination with colonoscopic visualization of the lesion with or without biopsy significantly impact the patients' early diagnosis and proper treatment.

KEYWORDS : Per Rectal Bleed, Lower GI Bleeding, Hematochezia, Melena

INTRODUCTION

The conventional definition says Lower Gastrointestinal Bleed (LGIB) occurs when the source of bleeding lies distal to the Ligament of Treitz. However, it is important to note that small intestinal bleeding differs from colonic bleeding in terms of clinical presentation, management, and outcome. LGIB has an annual incidence of 20.5 to 27 cases per 100,000 adults, with admissions to hospitals ranging from 21 to 40 cases per 100,000 individuals and mortality of about 2-4% [1]. Because it accounts only for 20% of all gastrointestinal bleeding, an upper GI bleed must be ruled out. The colon and anus account for the vast majority of LGIB, with just around 5 to 10% coming from the small intestine. Lower intestine hemorrhage has been observed substantially more frequently in males than in women, and the incidence rate rises with age, increasing more than 200 times between the third and ninth decades of life.

LGIB can be acute or chronic; chronic blood loss is commonly accompanied by anemia, while acute LGIB may be characterized by melena (black, tarry stools) or passage of frank blood per rectum (hematochezia) leading to hemodynamic instability and hospitalization [2]. Obscure GI Bleed (OGIB) is bleeding from the gastrointestinal tract which persists or recurs after a negative initial evaluation using bi-directional endoscopy and radiological imaging with small bowel follow-through or enteroclysis. Overt OGIB is clinically perceptible bleeding while Occult OGIB is defined as iron deficiency anemia with or without a positive fecal occult blood test [3]. For timely diagnosis, localization, and management of the bleeding, a thorough understanding of the common causes of LGIB is essential. The etiology and epidemiology of LGIB vary based on environmental factors including lifestyle, food, history of smoking or drug use, age and lifespan of the population, and other factors [4]. Various causes of LGIB include Diverticular disease, Hemorrhoids, Anal fissure, Ischemic colitis, Inflammatory bowel diseases i.e., Ulcerative colitis, Crohn's disease, post-polypectomy bleed, benign polyps, colorectal cancer, angiodysplasia, radiation proctitis, and infectious etiology [5].

Objective

To observe the prevalence of various causes of lower GI bleeding and their age and sex-wise distribution in patients visiting a tertiary care center in India.

MATERIALS AND METHODS

This prospective observational study was carried out on 700 patients

with LGIB who visited the Department of Surgery, Anantshree Multispeciality Hospital, Aurangabad, India within the study period of two years from January 2020 to December 2021. All the cases were thoroughly examined and investigated to be considered appropriate for this study.

Inclusion Criteria- All patients above 18 years presenting with lower GI bleeding

Exclusion Criteria- Patients on anticoagulant therapy, chronic liver disease, age less than 18 years, and those who did not consent to participate in the study.

All patients with signs and symptoms of lower GI bleeding who either visited the OPD clinic or got admitted from the emergency department were included in the study as per the inclusion criteria. After explaining the purpose of the study, written informed consent was obtained from all the participants before data collection. Patients in need of urgent care were first hemodynamically stabilized in the emergency room with IV fluids. To achieve hemostasis, tranexamic acid injection was given. When necessary, blood and blood products were transfused.

Detailed history, physical examination, data collection on demographic factors, symptomatology, clinical characteristics, blood investigations, and coagulation profile were all completed. Digital rectal examination, Proctoscopy, Sigmoidoscopy, and Colonoscopy were performed as per case-to-case suitability and requirement. The colonoscopy procedure was performed after satisfactory bowel preparation. Two liters of polyethylene glycol were administered overnight and the patients were kept nil per oral on the day of the procedure. Hyoscine butyl bromide was administered intravenously while the patient was lying in the left lateral position during the procedure. The results of the colonoscopy were noted, and when necessary, a tissue biopsy was sent. The findings were noted on a predesigned and pretested proforma.

The data was collected and entered simultaneously in the Statistical Product and Service Solutions (SPSS) version 23.0 and coded appropriately. Descriptive statistics were calculated to summarize the sample characteristics in terms of frequency and percentage. Analytical and inferential analysis was applied between a dependent variable and other independent variables. Significance was set at standard 0.05.

RESULTS

The present study was a prospective observational study conducted on 700 patients meeting the inclusion criteria. The age of the patients ranged from 18 to 82 years. The mean age of presentation was 52 ± 11 years. Most of the patients were in the age groups of 41-60 years (61%), and 22% were in the age group above 60 years. The majority of the study participants were males (55%) (Table 1).

Hematochezia (72%) was the most common presenting feature followed by constipation (67%), blood-mixed stool (51%), loss of weight (50.9%), and loss of appetite (46%) respectively. Abdominal pain was found in 35.9% of the patients. 29% of the patients presented with tenesmus while, 22.9% of the patients complained of the passage of mucus in the stools. Nausea was seen in only 2.7% of the patients (Table 2).

The most common etiology of LGIB seen was hemorrhoids (42%) followed by an anal fissure (19.4%), diverticulitis (12%), benign polyp (6.7%), ulcerative colitis (6.1%), neoplasm (4.4%), angiodysplasia (3%), crohn's disease (2.3%), and infections (2%) respectively. The reason for LGIB could not be detected in 1% of the cases. Three patients had radiation proctitis, two had drug-induced colitis, and another two patients had ischemic colitis. Together, the above seven cases were clubbed as other causes in our study (Table 3).

Significant female preponderance was observed in cases of anal fissure, crohn's disease, and diverticulitis whereas male preponderance was seen in the cases of hemorrhoids, ulcerative colitis, benign polyps, and malignancy (Table 4).

Conditions frequently found in the patients of age group above 60 years were angiodysplasia, diverticulitis, benign polyp, and neoplasm (malignancy). Hemorrhoids and anal fissure were the most common diagnosis in the middle year age group of 41-60 years. Other causes of LGIB in the study such as radiation proctitis, ischaemic colitis, etc. were also more commonly seen in the age group of 41-60 years. A majority of the patients in the age group less than 40 years of age were diagnosed with anal fissure and hemorrhoids. All patients with crohn's disease in our study were also less than 40 years of age (Table 5).

All study participants had hemoglobin testing, and the results were divided into anemic and non-anemic patients. 65.7 % of the patients were found to have anemia, whereas the remaining 35 % had normal hemoglobin levels. 30% of the participants in the study had mild anemia (hemoglobin levels between 10 to 12 gm/dl), 27% had moderate anemia (hemoglobin levels between 8 to 10 gm/dl), and 7% had severe anemia (hemoglobin levels below 8 gm/dl) (Table 6).

Table 1: Distribution Of Patients According To Age Group And Gender

Age Group	Gender		Total
	Male	Female	
	Number of Patients (%)	Number of Patients (%)	
< 40 years	50 (13%)	66 (21%)	116 (16.6%)
41-60 years	245 (63.6%)	182 (57.8%)	427 (61%)
>60 years	90 (23.4%)	67 (21.3%)	157 (22.4%)

Table 2: Distribution Of Patients According To The Presenting Clinical Features

Clinical Features	Number of Patients (%)
1. Hematochezia	504 (72%)
2. Constipation	472 (67.4%)
3. Blood mixed stool	357 (51%)
4. Loss of weight	356 (50.9%)
5. Loss of appetite	322 (46%)
6. Abdominal pain	251 (35.9%)
7. Tenesmus	203 (29%)
8. Passage of mucus in stool	160 (22.9%)
9. Nausea	19 (2.7%)

Table 3: Distribution Of Patients According To Causes Of LGIB.

Causes of LGIB	Number of Patients
1. Anal Fissure	136 (19.4%)
2. Haemorrhoids	294 (42%)
3. Angiodysplasia	21 (3%)
4. Ulcerative Colitis	43 (6.1%)
5. Crohn's Disease	16 (2.3%)

6. Diverticulitis	84 (12%)
7. Benign Polyp	47 (6.7%)
8. Neoplasm	31 (4.4%)
9. Infectious	14 (2%)
10. Others	7 (1%)
11. Undetectable	7 (1%)

Table 4: Gender-wise Distribution Of Causes Of Bleeding Across The Study

Causes of bleeding	Gender	
	Male	Female
	Number of Patients (%)	Number of Patients (%)
1. Anal Fissure	59 (15.3%)	77 (24.4%)
2. Haemorrhoids	173 (44.9%)	121 (38.4%)
3. Angiodysplasia	12 (3.1%)	9 (2.9%)
4. Ulcerative Colitis	28 (7.3%)	15 (4.8%)
5. Crohn's Disease	5 (1.3%)	11 (3.5%)
6. Diverticulitis	35 (9.1%)	49 (15.6%)
7. Benign Polyp	32 (8.3%)	15 (4.8%)
8. Neoplasm	21 (5.5%)	10 (3.2%)
9. Infectious	9 (2.3%)	5 (1.6%)
10. Others	6 (1.6%)	1 (0.3%)
11. Undetectable	5 (1.3%)	2 (0.6%)

Table 5: Age-wise distribution of Causes of bleeding across the study

Causes of Bleeding	Age Group		
	< 40 years	41-60 years	> 60 years
	Number of Patients (%)	Number of Patients (%)	Number of Patients (%)
1. Anal Fissure	41 (30.1%)	92 (67.6%)	3 (2.3%)
2. Haemorrhoids	25 (8.5%)	246 (83.7%)	23 (7.8%)
3. Angiodysplasia	0	3 (14.3%)	18 (85.7%)
4. Ulcerative Colitis	20 (46.5%)	23 (53.5%)	0
5. Crohn's Disease	16 (100%)	0	0
6. Diverticulitis	0	41 (48.8%)	43 (51.2%)
7. Benign Polyp	0	8 (17%)	39 (83%)
8. Neoplasm	0	0	31 (100%)
9. Infectious	9 (64.3%)	5 (35.7%)	0
10. Others	1 (14.3%)	6 (85.7%)	0
11. Undetectable	4 (57.1%)	3 (42.9%)	0

Table 6: Distribution Of Patients According To Grades Of Anemia

Grades of Anaemia	Number of Patients (%)
Normal (>12 gm/dl)	245 (35%)
Mild (10 – 12 gm/dl)	212 (30.3%)
Moderate (8 – 10 gm/dl)	189 (27%)
Severe (<8 gm/dl)	54 (7.7%)

DISCUSSION

In developing nations like India, lower gastrointestinal bleeding is a common cause of hospital admission and a significant cause of morbidity and mortality. It can range from mild bleeding to life-threatening hemorrhage. The majority of people with LGIB are elderly, with a mean age at presentation ranging from 63 to 77 years. However, patients in India who present with LGIB are younger than those in the West [5]. Most of the patients in our study who presented with LGIB were middle-aged between the ages of 41 and 60 years and males (55%). The use of tobacco, alcohol, a low-fiber diet, and less fluid intake, which lengthen colonic transit time and retain fecal waste, can be blamed for the male preponderance [6]. Our study found that females had a lower incidence of LGIB which could be due to lower reporting as a result of the unwillingness of seeking medical help for any perineal hemorrhage owing to the stigma and discomfort they feel. In the study conducted by Bansal A et al., male preponderance was seen and the majority of the participants were in the age group of 18-30 years [4]. Our finding of male preponderance was also consistent with the studies conducted by Peura DA et al. [7], Dar IA et al. [8], and Shrestha UK et al. [9]. The mean age of 52 years in our study also coincided with the study done by Paul J where the mean age was 49.8 ± 19.06 years and male individuals were commonly affected [10].

In the present study, hematochezia was the most common presenting symptom followed by constipation. There were no patients who presented with melena as a sign of LGIB. Similar results were reported

by Bansal A et al. [4]. Hematochezia was the most prevalent clinical complaint (80%) followed by constipation (76%), weight loss (56%), and blood in the stools (50%) in the study done by Badiger RH et al. [11]. In the study by Dar IA et al., hematochezia was found in 63.3% of the cases followed by bloody diarrhea, anorectal bleeding, and melena [8]. The causes of LGIB exhibit significant regional diversity. The three most frequent causes in diverse western series were colonic polyps, cancer, and inflammatory bowel disease. This disparity between the various ethnic groups could be explained by genetic, environmental, or nutritional differences [11]. Colonoscopy aids to find out the site, characteristics, and nature of the lesion with or without biopsy.

In our study, hemorrhoids were the most frequent cause of LGIB (42%) in both males and females. The prevalence of hemorrhoids was seen more in the younger and middle age groups up to 60 years of age. The above findings were consistent with the studies conducted by both Paul J and Shahi A et al. respectively [10,12]. Chaudhary S et al. also reported that the majority of the patients with the diagnosis of hemorrhoids were less than 60 years of age [13]. Badiger et al. in their study observed internal hemorrhoids were the most common colonoscopic finding among study subjects followed by ulcerative colitis [11]. Hemorrhoids are three-column clusters of connective tissue, smooth muscle, and vascular tissue that line the anal canal. In healthy people, they serve as cushions to help preserve continence. Even though hemorrhoids are natural structures, the term has come to be used to describe a pathologic or symptomatic process. Bleeding from internal hemorrhoids frequently causes LGIB and the majority of patients first present with painless hematochezia. Bleeding occurs frequently in tiny amounts, but a small proportion of patients may exhibit considerable bleeding, which can lead to hemodynamic instability or severe anemia with related effects from persistent blood loss [7,14].

The anal fissure was found as the second most common etiology of LGIB in 19.4% of the total cases in our study. All the cases were diagnosed based on visual inspection of the anal region and were not subjected to digital rectal examination or colonoscopy due to severe pain and local spasm. An anal fissure (AF) also termed fissure-in-ano, is a linear tear in the distal anal canal starting just below the dentate line and extending to the anal verge. Usually, the patient experiences excruciating pain while passing feces and the anal tone is raised due to spasms [15]. About 70% of the patients report finding a small amount of bright-red blood on the toilet paper or in the feces. Major bleeding is generally not common in an anal fissure [4,10]. In the present study, the majority of the study participants with anal fissures were females (24.4%) and were in the age group of less than 40 years of age. In a study conducted by Shahi A et al., 11.3% of the patients had an anal fissure, and the majority were in the age group of 51-60 years [12]. Chaudhary S et al. reported 13.4% of anal fissures in their study [13]. Paul J in their study reported anal fissures in 17.2% of the study participants, the majority of them being females in the age group of 41-60 years [10].

Diverticulosis is a condition in which there are diverticula but no inflammation. Inflammation of the colonic diverticulum causes diverticulitis which may result in bleeding and perforation of the bowel. Asian populations are more likely to have diverticula in the ascending colon [4]. The majority of studies report rates ranging from 20 to 50% and as high as 66% for diverticular bleeding as the primary cause of LGIB. However, it might be a challenge to determine the real prevalence since there are several cases of suspected diverticular hemorrhage where diverticulosis is present but no obvious source of bleeding is found [16]. In our study, 12% of the cases were diagnosed as Diverticulitis after confirmation by colonoscopy. In the present study, a majority of the study participants with diverticulitis were females (15.6%) and were in the older age group of more than 60 years of age. In the study conducted by Shahi A et al., 2.27% had diverticulitis and the majority were in the age group of more than 60 years of age which is in resemblance to our findings [12]. Shreshtha UK in their study reported 1.7% of the study participants with diverticulitis, but the majority of them were males in the age group of more than 50 years of age [9].

Angiodysplasia is the most common vascular abnormality of the gastrointestinal tract and the colon is the most common site. It is also a frequent cause of obscure GI bleeding (OGIB) from small bowel in patients above 60 years of age. It is an acquired, abnormal, tortuous

dilatation of the small blood vessels of the gastrointestinal tract in the mucosal and submucosal layers caused due to obstruction of the small veins draining these layers while coursing through the muscularis propria [17]. The disease burden of angiodysplasia in our study was 3% and the mean age group was found to be 67 years in males and 64 years in females respectively. Our finding was consistent with the study by Fouchet PG et al. where angiodysplasia was seen in the majority of the patients over 60 years of age [18].

In people with inflammatory bowel disease (IBD), bleeding is a common symptom. Crohn's disease (CD) is characterized by transmural inflammation with skip lesions that may involve any part of the gastrointestinal tract with relative rectal sparing [19]. The most commonly involved region in CD is the terminal ileum. Bimodal age distribution with median onset at age 30 years and female preponderance have been associated with CD [20]. The incidence of acute LGIB in patients with CD is up to 4% as per the available literature [21]. In our study, 2% of the patients were eventually diagnosed with CD after colonoscopy and histopathological confirmation in the suspected cases. The findings were also consistent in regards to a greater number of females having CD than males. Ulcerative colitis (UC) is another form of IBD with a relatively higher incidence of acute LGIB (up to 7%) than CD. It is characterized by diffuse inflammation of rectal and colonic mucosa causing bloody diarrhea. A slight male predominance has been observed in the previous studies, with the onset between 25-40 years of age [22]. An increased risk of malignancy is seen with UC, especially after the development of pancolitis [23]. In the present study, we observed similar results with the majority of the patients being males and the mean age of presentation was 44 years in males and 41 years in females.

According to common estimates, 10 to 15 % of LGIB is caused by bleeding from neoplastic lesions [24]. Malignant polyps or colonic adenocarcinomas are neoplastic lesions that frequently bleed. Due to the occult nature of blood loss, patients may present with complaints of altered bowel habits, abdominal pain, generalized weakness secondary to anemia, and a history of weight loss over a short period [4]. All cases of carcinoma (4.4%) in the present study were found in the older age group of more than 60 years of age which is similar to the findings of Shahi A et al. [18]. Chaudhary S et al. in their study reported mean age of the patients with malignancy was 57 years [20]. Another study from the southern part of India by Morkar DN et al. found that colonic cancer, colitis, and hemorrhoids were the most frequent causes of LGIB in patients older than 60 years of age [22]. The majority of the lesions, hence, were non-neoplastic comprising 95.6% of the total cases. Similar results were found in a study by Rajbhandari M et al. where non-neoplastic lesions made up 73.9 % of the total caseload [25]. Benign polyps constituted 6.7% of all the cases in our study.

Ruling out an infectious cause is of paramount importance while evaluating patients with LGIB. Bacterial infections are a major cause of morbidity and mortality from infectious colitis. Common bacterial species which are observed from the stool cultures are *Salmonella*, *Escherichia coli*, *Clostridium difficile*, O157:H7, *Salmonella*, *Shigella*, etc. [4]. 2% of patients in our study were found to have infectious colitis.

Since the rectum is the most frequently exposed region with radiotherapy in patients of colorectal malignancy, three patients in our study had radiation proctitis as a cause of LGIB. Two patients in our study gave a history of prolonged consumption of Diclofenac sodium tablets (Nonsteroidal anti-inflammatory drugs or NSAIDs) for chronic backache and joint pain. Graham DY et al. in 2005 concluded that endoscopically evident small-intestinal mucosal injuries are very common in chronic NSAID users [23]. Another two patients, both elderlies, were diagnosed to have left-sided Ischaemic colitis as the cause of LGIB. Together, these seven cases were grouped as other causes in this study.

In the present study, the etiology of the bleed could not be identified in seven patients (1%) on account of normal colonoscopy reports and negative stool culture. Similarly, six individuals (8.3%) in the study by Bhattarai S et al. had normal colonoscopies, hence the cause of the bleed could not be determined [26].

A total of 30% of the individuals in the current study had mild anemia, 27% had moderate anemia, and 7% had severe anemia. Almost similar results were reported by Shahi A et al. where 27% of the patients had

mild anemia, 29% had moderate anemia and 6% had severe anemia [12]. Bhattarai S et al. reported a mean hemoglobin level of 9.9 gm%, ranging from 4.8 gm% to 12.5 gm% [26]. Hajare S et al. in their study reported that 48% of the study participants had pallor on clinical examination [27]. Chaudhary S et al. reported the presence of anemia in 62.32% of the study participants [13].

Limitations

As the present study was conducted at a tertiary care hospital, the results observed are subjected to bias arising from the rate of reporting at the hospital (Berkson's bias). To fully comprehend the causes of lower GI bleeding in the state or country, a multicentre research approach covering larger patient groups is necessary. The study does not take into account the management of LGIB as per the underlying cause and rate of recurrence.

CONCLUSION

A frequent and concerning presenting condition in the field of gastroenterology and surgery is LGIB. It is more prevalent in males, typically in the age range of 41 to 60 years, and most frequently presents with hematochezia. The majority of patients with LGIB are anemic to some extent. The main causes of LGIB are hemorrhoids, anal fissures, and diverticulitis. Most cases of carcinoma are seen in people over 60 years of age. Understanding the changes in etiological profiles across different geographic regions can help us better understand the risk factors and pathophysiology connected to these diseases and aid in improving patient outcomes. A thorough clinical history, local inspection, digital rectal examination, proctoscopy, and colonoscopy to visualize the lesion with or without a biopsy substantially impacts the early diagnosis and treatment.

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