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Original Article

Unmasking the Hidden Culprits: Investigating the Diverse Causes of Lower Gastrointestinal Bleeding in a Younger Cohort

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Abstract

Objective: To determine the frequency of different causes of Lower GI bleeding on colonoscopy in younger aged patients.
Study type, settings & duration: This prospective, cross-sectional study was conducted at Endoscopy Unit, National Institute of Liver and Gastrointestinal Diseases, Dow University of Health Sciences, Karachi from September 2020 to September 2021.
Methodology: In this study, patients presenting with lower GI bleed who underwent colonoscopy at inpatient, outpatient department and referral cases were asked to participate after obtained informed consent from them. The sampling technique used was consecutive sampling.
Results: This study included 197 patients, 106 (53.8%) of whom had hemorrhoids alone, 59 (29.9%) had simultaneous diagnosis of hemorrhoids with other etiology, and 32 (16.2%) had aetiologies besides hemorrhoids. Hemorrhoids caused the most lower gastrointestinal bleeding (53.8%), followed by nonspecific ilietis/colitis (17.8%) and polyps (9.1%). Hemorrhoids affected older people and males more. Hemorrhoids were also more common among married and addict patients as compared to unmarried and non-addicted patients. Haemorrhoids was associated with increased weight loss (39.4% vs. 21.2%, *p*-value = 0.010) as well as antibiotic usage (35.1% vs. 32.4%, *p*-value = 0.006).
Conclusion: The study reveals a significant association between age, gender, marital status, addiction history, weight loss, and antibiotic usage in the diagnosis and treatment of lower gastrointestinal bleeding.
Key words: Colonoscopy, hemorrhoids, gastrointestinal hemorrhages, hematochezia.

Introduction

Historically, a bleed that begins below the ligament of Treitz has been considered to be of lower gastrointestinal origin (LGIB) while one that occurs above the ligament of Treitz is of an upper gastrointestinal origin (UGIB). Presentations may range from mild hematochezia all the way to uncontrollable fatal hemorrhages. LGIB is still a frequent cause of morbidity and mortality in hospitalized patients, particularly in older individuals.[1] Approximately 30% of all cases of gastrointestinal hemorrhage are due to LGIB, with an incidence rate of 20-30 per every 100,000 cases.[2]

Around 20% of GI bleeding-related hospital admissions are also entitled to LGIB.[1] Diverticular bleeding, colorectal cancer, anorectal conditions such as hemorrhoids, arteriovenous malformations, colitis (viral, ischemic, and radiation), bowel disease, and iatrogenic factors are among the most frequent causes of LGIB.[3] Studies done in the West show that older people have a higher probability of developing LGIB, with the most prevalent diagnoses being diverticular bleeding, hemorrhoids, colonic polyps, and angiodysplasias. The more common disorders

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SSS conceptualized the project. AKK did the data collection. SZ performed the statistical analysis. SSS, HS, AKK & MS did the literature search. Drafting, revision & writing of manuscript were done by HS, SAIR & MS.

in Asia, according to studies, are colitis and hemorrhoids, with LGIB affecting people as young as 35.81–19.18 years old and as old as 46.93–16.99 years old.[4] LGIB can occur at any age, however, illnesses and symptoms vary with age, requiring age-specific diagnostics. One study found that bleeding polyps, Meckel's diverticulum, or inflammatory bowel disease are the most frequent causes of lower GI bleeding in younger people.[5] In contrast, in older individuals, diverticulosis and neoplasms are found to be the primary culprits according to a majority of research. While middle-aged or older patients dominate the above-mentioned researches, over the years, there has been a growing number of younger patients who present to OPD as well as the Emergency Room (ER) with lower gastrointestinal bleeds. Despite this tendency, data on disease causes in the younger population has not increased. We wanted to research lower GI bleed in young people because there are few studies on it. Small sample sizes have limited Asian research. We hope to eliminate these limitations through our study. Hence, we planned to perform a study to figure out the common aetiologies affecting the younger aged population with LGIB via colonoscopy, after adequate bowel preparation.

Methodology

This is a prospective, cross-sectional study. In this study, patients presenting with lower GI bleed who underwent colonoscopy at the National Institute of Liver and Gastrointestinal Diseases endoscopy unit (inpatient, OPD & Referral cases) were asked to participate after we obtained informed consent from them. Consecutive colonoscopies were performed by six gastroenterologists (each having more than 10 years of experience) using the Olympus 190 series colonoscope (Evis Exera III Olympus CF_HQ 190L). The sampling technique used was consecutive sampling. The duration of the study was one year, starting September 2020 and ending on September 2021.

By using NCSS-PASS version 11 software, test for one sample proportion with 95% confidence interval, 80% power of the test, 5% margin of error, the most common disease on colonoscopy found was Hemorrhoids (22.3%), calculated sample size was 200 as the available total estimated population size of 300 colonoscopy patients within one year and due to Covid-19 pandemic using finite population correction (FPC) factor.

Our inclusion criteria stated that younger aged patients with Lower GI bleed ranging in age from 18 to 40 years would be considered. Meanwhile, patients with a history of hematemesis/melena or vomiting/nasogastric aspirates containing coffee-ground material or fresh blood, those with bleeding per rectum as a result of acute infectious bloody diarrhea, or those with suspected peritonitis/ obstruction were excluded. Patients who did not consent or refused colonoscopy, and those who were pregnant or refused biopsy sampling were also excluded.

All statistical analyses were performed using SPSS software version 26.0. Quantitative variables were represented as mean±SD and categorical variables were represented as frequency and percentages. The normality of variables was assessed by using the Shapiro-Wilk test, and Kruskal Wallis test was used to find the distinguishing characters between all three sub-groups. Chi-squared test was used to assess the difference for categorical variables. A *p*-value of 0.05 or less was considered significant.

Patient details are kept confidential. Their clinical data (including history) was obtained and documented on Performa. Colonoscopy procedures were carried out in the left lateral position by certified gastroenterologists. All procedures were done under conscious sedation with intravenous midazolam (ranging from 0.5mg up to 5mg) and/or intravenous nalbuphine (0.5 mg up to 5mg). The causes of lower GI bleed and other parameters (such as demographic features, history, presenting complaints, and use of medication) were then documented on the Performa attached. Biopsies were taken of suspicious lesions where required, samples were sent for histopathology and the results were finally documented on the Performa using the medical record numbers of the patients.

The ethical approval was obtained from the Institutional Review Board of Dow University of Health Sciences, Karachi vide letter no. IRB-1791/DUHS/Approval/2020.

Results

A total of 197 patients were enrolled in this prospective study to investigate the etiology of lower gastrointestinal (GI) bleeding. The patient population was divided into three subgroups based on the diagnosis: hemorrhoids alone (53.8%), hemorrhoids with other etiologies (29.9%), and other etiologies without hemorrhoids (16.2%). Demographic characteristics and patient history are presented in Table-1. The mean age of the total study group was 31.17±7.86 years, with a higher proportion of males (62.9%) and married individuals (62.9%). Among the patients, 42.1% had a history of addiction, and only 8.1% had a previous episode of GI bleed. Significant differences in age were

Table 1: Demographic features and history of patients. (n=197)

Variables	*Total*	*Hemorrhoids Alone*	*Hemorrhoids With Other Etiology*	*Other Etiology*	
	Mean ± SD	*Mean ± SD*	*Mean ± SD*	*Mean ± SD*	*p-value*
Age (yrs.)	31.17 ± 7.86	32.27 ± 7.41	32.69 ± 7.11	24.69 ± 7.61	<0.001
Height (m2)	1.63 ± 0.07	1.63 ± 0.07	1.63 ± 0.07	1.61 ± 0.08	0.168
Weight (kg)	68.96 ± 20.71	70.31 ± 23.01	68.66 ± 18.19	65.03 ± 6.77	0.093
BMI (kg/m2)	25.93 ± 7.68	26.18 ± 8.44	25.89 ± 6.74	25.18 ± 6.77	0.856
Hemoglobin	11.79 ± 2.28	11.92 ± 2.26	11.81 ± 2.38	11.34 ± 2.18	0.916
	n (%)	n (%)	n (%)	n (%)	p-value*
Gender					
Male	124 (62.9)	73 (68.9)	36 (61.0)	15 (46.9)	0.073
Female	73 (37.1)	33 (31.1)	23 (39.0)	17 (53.1)	
Marital status					
Married	124 (62.9)	71 (67.0)	44 (74.6)	9 (28.1)	<0.001
Unmarried	73 (37.1)	35 (33.0)	15 (25.4)	23 (71.9)	
Addiction					
No	114 (57.9)	53 (50.0)	32 (54.2)	29 (90.6)	<0.001
Yes	83 (42.1)	53 (50.0)	27 (45.8)	3 (9.4)	
Previous history of GI bleed					
No	181 (91.9)	97 (91.5)	55 (93.2)	29 (90.6)	0.892
Yes	16 (8.1)	9 (8.5)	4 (6.8)	3 (9.4)	
Previous history of colonoscopy					
No	190 (96.4)	104 (98.1)	56 (94.9)	30 (93.8)	0.379
Yes	7 (3.6)	2 (1.9)	3 (5.1)	2 (6.3)	
Duration of GI bleed					
< 1 month	34 (17.3)	23 (21.7)	6 (10.2)	5 (15.6)	0.291
1 month to 6 months	110 (55.8)	59 (55.7)	35 (59.3)	16 (50.0)	
> 6months	53 (26.9)	24 (22.6)	18 (30.5)	11 (34.4)	

p-value calculated using Kruskal Wallis test
**p*-value calculated using Chi-Square/Fisher's Exact test

Table 2: Presenting complains and use of any medication among patients. (n=197)

Variables	*Total*	*Hemorrhoids Alone*	*Hemorrhoids With Other Etiology*	*Other Etiology*	
	n (%)	*n (%)*	*n (%)*	*n (%)*	*p-value*
Presenting complains of patients					
Abdominal/pelvic pain	122 (61.9)	59 (48.4)	42 (34.4)	21 (17.2)	0.129
Painful defecation	32 (16.2)	15 (46.8)	10 (31.3)	7 (21.9)	0.574
Weight loss	71 (36.0)	28 (39.4)	28 (39.4)	15 (21.2)	0.010
Chronic diarrhea	30 (15.2)	10 (33.3)	12 (40.0)	8 (26.7)	0.066
Constipation	123 (62.4)	73 (59.3)	31 (25.2)	19 (15.5)	0.108
Fever	2 (1.0)	2 (100.0)	0 (0.0)	0 (0.0)	0.421
Use of any medication					
Laxatives	95 (48.2)	57 (60.0)	24 (25.3)	14 (14.7)	0.233
Antiplatelet	4 (2.0)	2 (50.0)	2 (50.0)	0 (0.0)	0.543
Anticoagulants	3 (1.5)	1 (33.3)	2 (66.7)	0 (0.0)	0.349
NSAIDS	6 (3.0)	5 (83.3)	1 (16.7)	0 (0.0)	0.305
Antibiotics	37 (18.8)	13 (35.1)	12 (32.4)	12 (32.4)	0.006

p-value calculated using Chi-Square/Fisher's Exact test

observed among patients with different diagnoses (p <0.001), with older age being associated with hemorrhoids. Moreover, a higher proportion of males, married individuals, and addicted patients were diagnosed with hemorrhoids compared to their respective counterparts (p <0.001).

Table-2 illustrates the presenting complaints and medication use among patients. The most common complaints were constipation (62.4%) and abdominal/pelvic pain (61.9%), followed by weight loss (36.0%). Weight loss was significantly higher in patients with hemorrhoids compared to those with other etiologies (39.4% vs. 21.2%, p =0.010). Antibiotic usage was also more prevalent among patients with hemorrhoids alone compared to other diagnoses (35.1% vs. 32.4%, p =0.006).

The final diagnosis results are depicted in Figure. Among all patients, hemorrhoids accounted for the majority (53.8%), followed by non-specific colitis (17.8%), polyps (9.1%), solitary rectal ulcer syndrome (SRUS) (5.1%), and colorectal carcinoma (3.5%).

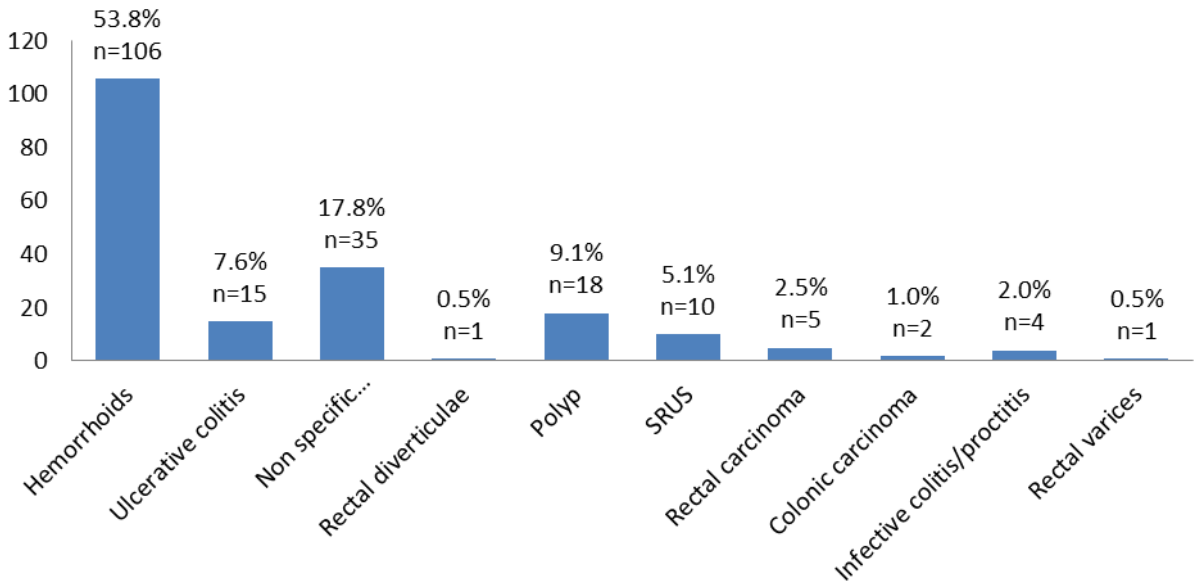

Figure: Final diagnosis.

Discussion

The scope of our research encompassed both acute and chronic causes of lower gastrointestinal bleeding (LGIB) in young patients. This study focused on young patients presenting with LGIB and aimed to classify them based on the underlying etiology. While there is existing research on the causes of LGIB, the majority of studies focus on paediatric age groups or older patients, neglecting the younger middle-aged population.

Previous research has identified diverticular diseases, angio-dysplasias, angio-ectasia, malignancies such as colorectal cancer (CRC), Crohn's disease, ulcerative colitis, and benign anorectal lesions including hemorrhoids and anal fissures as common causes of LGIB.[6] In their study, Gayer et al. reviewed the aetiologies of 1112 individuals hospitalized due to LGIB and identified the most common cause behind the hospitalizations to be diverticulosis (33.5%). This was followed closely by hemorrhoids (22.5%) and then malignancy (12.7%).[7] Other less common causes involved nonsteroidal anti-inflammatory drug (NSAID) related ulcers, solitary rectal ulcer, stercoral ulcers, post-polypectomy bleeding, diversion colitis, history of radiation therapy, and genetic/iatrogenic bleeding diatheses.[8,9] They also discovered that hematochezia (55.5%) was the most typical presenting symptom, while melena appeared in just 11% of individuals. Another local study from Peshawar, Pakistan which targeted patients who presented with lower GI bleed and had solitary rectal ulcer disease as a diagnosis found that in 63.6% of 110 patients, hematochezia was the primary symptom.[10]

Contrary to this, our study found constipation to be the most common reported symptom, followed by abdominal pain, and then weight loss. Interestingly, we found no statistical correlation between hemorrhoids and factors such as obesity or chronic constipation. Additionally, most patients with hemorrhoids presented with weight loss, which requires further investigation to determine its clinical significance.

Our findings align with the work of Amin and Attunes, who also identified hemorrhoids and other anorectal disorders as the leading causes of LGIB in patients under 50 years old.[5]

In this study, we found that the most common causes of LGIB were hemorrhoids followed by colitis, ileitis, and other procto-sigmoid lesions. This was followed by polyps and ulcerative colitis. However, we observed a lower incidence of diverticular bleeding compared to previous research focused on older age groups.[11] Notably, in a study conducted at another tertiary care hospital in Pakistan, with an average patient age of 40.3 years, hemorrhoids were identified as the leading cause of per rectal bleeding among 183 out of 546 patients examined.[12] These discrepancies suggest that risk factors for LGIB may differ based on age and comorbid conditions.

In GI clinics, lower GI bleeding usually causes hematochezia, but right colon or small intestine bleeding might cause melena. Left-sided colon bleeding is bright red, while right-sided bleeding is dark or maroon and may mix with stool. Hemodynamic instability, abdominal pain, and anemia symptoms like lethargy, fatigue, syncope, and angina can accompany acute and chronic upper and lower GI hemorrhage.[13] In contrast,

younger patients presented with constipation and abdominal/pelvic pain.

Regarding demographic characteristics, we observed a significant association between age and the diagnosis of hemorrhoids alone, hemorrhoids with other etiologies, or other etiologies. Patients with hemorrhoids tended to be older compared to those with other causes. Additionally, we found a higher proportion of married individuals in the group diagnosed with hemorrhoids, indicating a potential correlation between marital status and the development of hemorrhoids. The role of addiction in LGIB requires further investigation to establish its clinical significance.[14]

Colorectal cancer (CRC) is a known cause of lower GI hemorrhage. A study by Søren Viborg et al. revealed that lower GI bleeding is a significant clinical indication of widespread gastrointestinal malignancy, particularly colorectal carcinoma.[15] However, in our study focused on a middle-aged population, CRC-related LGIB cases were relatively fewer. This difference may be attributed to generational variations in lifestyle, environmental exposures, and food habits that influence the incidence rates of CRC among younger individuals.[16]

We also observed a significant association between antibiotic use and LGIB. While antibiotics are commonly used to mitigate the risk of upper GI bleeds, their role in the setting of lower GI bleeding requires further investigation.[17] Additionally, weight loss was reported by a significant percentage of patients with hemorrhoids alone or hemorrhoids with other etiologies, suggesting a potential link between weight loss and these conditions.

This study has some limitations. The lack of multivariate analysis limits our ability to establish the association of significant factors such as age, marital status, addiction history, weight loss, and antibiotic use with specific etiologies of LGIB. Future studies should incorporate multivariate analysis, larger sample sizes, and additional clinical variables to provide a more comprehensive understanding of LGIB in young, middle-aged patients.

In conclusion, this study provides insights into the etiology of lower GI bleeding in the study population. Hemorrhoids were identified as the most common diagnosis, with age, gender, marital status, addiction history, weight loss, and antibiotic usage showing significant associations. These findings contribute to our understanding of lower GI bleeding in young patients and have implications for clinical management and further research.

The observed differences in etiology, symptoms, and demographic characteristics have implications for diagnostic approaches and treatment strategies. Further research is warranted to better understand the risk factors, mechanisms, and optimal management strategies for LGIB in this specific population.

Conflict of interest: None declared.

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