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Colonoscopic Findings among Patients with Lower Gastrointestinal Tract Bleeding Admitted to Intensive Care Unit

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ABSTRACT

Background: Acute lower gastrointestinal bleeding (LGIB) is an alarming indication and common disease with annual admission of 0.15% with mortality rate of 5-10%. LGIB is caused by neoplastic and non-neoplastic lesions.

Objective: The aim of the present study was to evaluate frequency of patients admitted to Medical Intensive Care Unit (MICU) of Zagazig University Hospitals (ZUH) with lower gastrointestinal tract bleeding.

Patients and methods: A prospective cohort study included 266 subjects and carried out at in Intensive Care Unit, Faculty of Medicine, Zagazig University. All studied population were subjected to full history taking, general examination, laboratory investigation and colonoscopy examination.

Results: Age of the studied cases ranged from 18 to 75 years with mean 46.24 years and more than half of them were males (53.3%). The most frequent presentation among the studied cases was hematochezia (95%). Colonoscopic findings among the study population (n=257) showed that 5.8% had diverticular disease, 32.3% had inflammatory alteration and 2.3% had solitary ulcer.

Conclusion: Acute LGITB is a common and challenging problem in MICU of ZUH with ulcerative colitis, bleeding piles, and malignancy as the major underlying causes. Colonoscopy represents the most important diagnostic modality.

Keywords: Colonoscopic Findings, ICU, Gastrointestinal Tract Bleeding.

INTRODUCTION

Gastrointestinal (GI) bleeding from the colon is a common reason for hospitalization and is becoming more common in the elderly. While most cases will cease spontaneously, patients with ongoing bleeding or major stigmata of hemorrhage require urgent diagnosis and intervention to achieve definitive hemostasis [(1)].

Acute lower gastrointestinal bleeding (LGIB) is a common acute medical and surgical emergency. In contrast to upper gastrointestinal bleeding (UGIB), which has several published guidelines, is well researched and has seen improvements in clinical outcomes, LGIB has not been a focus for clinical or scientific investigation [(2)]. Although LGIB is common condition, there are limited studies documenting its incidence. A population-based study in ten hospitals in Spain compared patients discharged with hospital codes consistent with GI complications over ten years. It was found that in comparison to the upper GI tract, where the incidence of complications fell from 87/100,000 to 47/100,000 over ten years, the incidence of complications in the lower GI tract increased from 20/100,000 to 33/100,000 [(3)].

Studies of hospital registries have shown that patients that develop LGIB tend to be elderly, with a mean age of 63 to 69 years. Comorbid illness is common, 78% of admitted patients have >1 comorbid condition, 33% have ≥2. Aspirin for secondary prevention is used in 20-33%, clopidogrel in 3.2% and warfarin in 6% patients. There are no published data on the number of patients admitted with LGIB who are receiving a direct oral anticoagulant (DOAC) [(4)]. Population-based database studies suggest an increased risk of developing LGIB with aspirin or long-term oral non-steroidal anti-inflammatory drug (NSAID) use [(5)].

For accurate diagnosis of various colorectal lesions, colonoscopy is gold standard, convenient and cost effective procedure. It is the investigation of choice in LGIB and helps in early diagnosis of colorectal carcinoma [(6)]. Therefore, this study aimed to evaluate prevalence and frequency of patients admitted to Medical Intensive Care Unit of Zagazig University Hospitals with lower gastrointestinal tract bleeding.

PATIENTS AND METHODS

This observational cohort prospective study included patients admitted to Medical Intensive Care Unit (MICU) of Internal Medicine Department with suspected acute lower gastrointestinal bleeding (LGITB).

Inclusion criteria: Patients admitted to MICU with suspected LGITB who were having active bleeding per rectum in the form of hematochezia or melena of suspected lower gastrointestinal origin, and adults ≥ 18 years of both sexes.

Exclusion criteria: Presence of hematemesis and refusal to participate in the study.

Ethical Approval:

The study protocol was approved by the Institution Review Board (IRB) of the Faculty of Medicine of Zagazig University. All procedures were conducted according to the ethical principles expressed in the Declaration of Helsinki and informed written consent was obtained from patients or close relatives.

Methodology:

A total number of 266 patients who met the inclusion and exclusion criteria were enrolled in the study. All patients were subjected to full history taking and thorough physical examination with emphasis on the following: Color, amount, frequency, and duration of bleeding and questioning about any symptoms that may suggest a specific source of lower gastrointestinal

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bleeding. Presence of any upper gastrointestinal symptoms, previous events of gastrointestinal bleeding, abdominal or vascular surgeries, peptic ulcer disease, inflammatory bowel disease, or abdominal–pelvic radiation therapy. Coexisting cardiopulmonary, renal, or hepatic conditions. Vital signs (including postural changes), a cardiopulmonary examination, and abdominal examinations. Digital rectal examination looking for anal fissures, external piles, skin tags, and proctitis. History of non-steroidal anti-inflammatory drugs intake, any other drugs interfering with platelet function or causing coagulopathy, any bleeding diathesis. Hemodynamic status and need for blood transfusion. Blood samples were extracted immediately and sent to the laboratory for routine investigations.

Calculation of Oakland Score: To assess the risk of adverse outcomes in patients with LGIB

Colonoscopy Examination:

a) **Preparation:** All patients were prescribed a standard bowel preparation consisting of a low residue diet for 48 hours with clear fluids only for the last 24 hours and a purgative (castor oil) to be taken for the last 12 hours before the procedure. An enema was given twice at night and immediately before the procedure. The quality of bowel preparation was graded as: adequate (excellent and good) and inadequate (fair and poor).

b) **Procedure:** The patient was initially placed on the examination table in the left lateral decubitus position with knees bent and pulled up. The examination began with an inspection of the perianal region. A simple inspection could detect various perianal lesions such as skin tags, scarring, anal fistulae and fissures, hemorrhoids, and prolapse. Also, the digital rectal examination with topical lidocaine jelly performed to lubricate the anal canal and relax the sphincters. Colonoscopy was complete and successful after examination of the ileocecal valve.

Statistical analysis

All data were analyzed using IBM SPSS version 25 for windows (SPSS Inc, Chicago, IL, USA). Continuous variables were expressed as mean ± SD, median and range, while the categorical variables were expressed as a number (percentage).

RESULTS

The present study showed that the age of the studied cases ranged from 18 to 75 years with a mean of 46.24 years. Regarding sex more than half of them were males (53.3%). Regarding special habits, 4.6% were smokers, 2.3% drink alcohol, and 6.2% were taking illicit drugs **(Table 1).**

Table (1): Demographic characteristics of the studied cases

Variable		(n=257)	
Age: (years)	Mean ± SD	46.24±15.24	
	Median (range)	46 (18-75)	
Variable		**No**	**%**
Age group:	<40 yrs.	99	38.5
	40-60 yrs.	101	39.3
	>60 yrs.	57	22.2
Sex:	Male	137	53.3
	Female	120	46.7
Special habits:	Smoking	12	4.6
	Alcohol	6	2.3
	Illicit drugs	16	6.2
	NSAIDS	9	3.5
	Antiplatelet drugs	2	0.8
	Anticoagulants	7	2.7

SD: Stander deviation, NSAIDS: Non-steroidal anti-inflammatory drugs

The most frequent presentation among the studied cases was hematochezia (95%). Regarding other associated symptoms, in the respiratory system shortness of breath was the most frequent respiratory symptom (31.1%) while headache was the most frequent neurological symptom (82.4%) **(Figure 1)**.

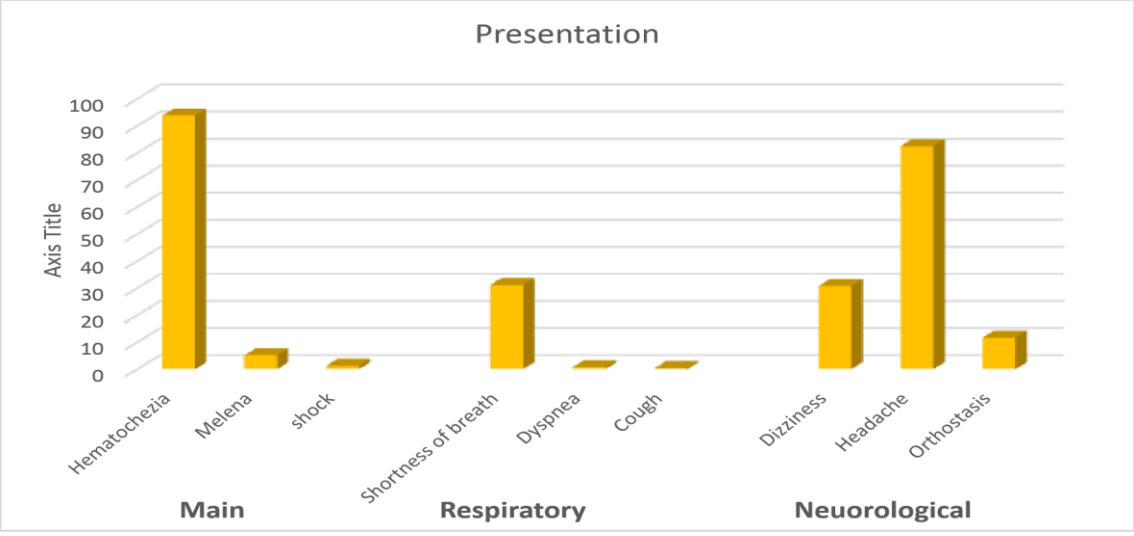

Figure (1): Presentation among the studied cases

Colonoscopic findings among the study population showed that 5.8% had diverticular disease, 32.3% had inflammatory alteration and 2.3% have solitary ulcer **(Table 2).**

Table (2) Colonoscopic findings of the study population (n=257) *

Findings	N	%
• Diverticular disease	15	5.8
• Polyps	25	9.7
• Inflammatory alteration	83	32.3
• Neoplasia	37	14.3
• Vascular lesion	25	9.7
• Hemorrhoids	27	10.5
• Normal	39	15.1
• Solitary Ulcer	6	2.3

*Some patients got more than one colonoscopic finding

Regarding locations of diverticula found in colonoscopy, 66.6% was at sigmoid and descending colon and 26.7 % at the entire colon **(Table 3)**. Regarding locations of neoplasia found in colonoscopy, 54.1% were at anorectal and 27% at descending colon **(Table 4)**.

Table (3): Locations of diverticula found in colonoscopy (n=15)

Location	N	%
• Sigmoid and descending colon	10	66.6
• Transverse colon	1	6.7
• Entire colon	4	26.7

Table (4): Locations of neoplasia found in colonoscopy (n=37)

Location	N	%
• Anorectal	20	54.1
• Sigmoid	3	8.1
• Descending colon	10	27
• Ascending colon	2	5.4
• Cecum	2	5.4

Regarding inflammatory alteration in colonoscopy, ulcerative colitis was represented in 62.7% and nonspecific colitis was in 34.9% **(Table 5)**. Regarding locations of solitary ulcers found in colonoscopy, 50% were located rectally and 33.3% were at sigmoid part **(Table 6)**.

Table (5): Description of inflammatory alteration in colonoscopy (n=83)*

Description	N	%
• **Ulcerative colitis**	52	62.7
• **Crohn's disease**	2	2.4
• **Nonspecific colitis**	29	34.9
◦ Rectosigmoid	14	16.8
◦ Pancolitis	14	16.8
◦ Proctitis	1	1.2

*Some patients got more than one colonoscopic finding

Table (6): Location of Solitary Ulcers found in colonoscopy (n=6)

Location	N	%
Rectal	3	50
Sigmoid	2	33.3
Anal	1	16.7

DISCUSSION

Lower gastrointestinal bleeding (LGIB) is a frequent cause of hospital admission and is a factor in hospital morbidity and mortality. LGIB historically referred to any bleeding distal to the ligament of Treitz, but since 2006 this definition has been modified to bleeding from a source distal to the ileocecal valve [(7)].

About 30% to 40% of all cases of gastrointestinal bleeding originate from a lower gastrointestinal source, although lower gastrointestinal bleeding (LGIB) used to be less common compared with upper gastrointestinal bleeding, this ratio has changed over time. Indeed, emergency department visits between 2007 and 2012 for upper gastrointestinal bleeding decreased by 5%, whereas those for LGIB increased by 17%, with about 900,000 ambulatory care visits in the United States [(8)].

This study was a prospective cohort study, which was done through the period of Jan 2021 to November 2021 to evaluate frequency of patients admitted to Medical Intensive Care Unit of Zagazig University Hospitals with lower gastrointestinal tract bleeding.

In our study, age of the studied cases ranged from 18 to 75 years with a mean of 46.24 years. Regarding sex more than half of them were males (53.3%). Regarding special habits, 4.6% were smokers, 2.3% were drinkink alcohol, and 6.2% were taking illicit drugs. **Shahi *et al.*[(6)]** revealed total 88 patients were included in the study. The mean age of their patients was 48 ±17 years with age range from 17-81 years. Majority were in the age group 50-60 years (25%) (n=22).

The colonoscopic examination was an essential tool for the diagnosis of the source of bleeding [(9)]. The procedure in our study was applied between 24 and 72 hours of hospital admission after initial support for patients and preparation of the colon to guarantee a successful procedure. LGIB stops spontaneously in a significant proportion of patients and the source of bleeding remains a diagnostic dilemma. Colonoscopic examination in our study could identify lesions in 85% of patients. Inflammatory lesions were most common and seen in 32.3% followed by neoplastic and polypoid lesions in 24% of cases. Hemorrhoids were encountered in 10.5%, vascular lesions in 9.7%, and diverticulosis in 5.8%. Solitary ulcers, anorectal and sigmoid regions, were seen in 2.3% of patients.

In most previous studies, diverticulosis was the most common cause of acute lower GI bleeding, accounting for 42-55% of cases [(10-12)]. However, in one large series of patients with severe, persistent

hematochezia, angiodysplasia was the most common diagnosis, accounting for 30% [13].

Also, **Shahi *et al.*[6]** found that colonoscopy detected abnormality in 73.8% cases. The common non-neoplastic were hemorrhoids and non-specific colitis (14.5% each) followed by 12.5% of neoplastic cases. The higher frequency of colorectal lesions was observed in males comprising 72.7% (n=64) patients.

Other study showed less common etiologies include colorectal neoplasia, colonic ischemia, inflammatory bowel disease, infectious causes (particularly Salmonella and E. coli 0157: H7), radiation proctitis, stercoral ulcers, iatrogenic causes (e.g., post polypectomy, endoscope trauma, prep trauma, and so on), intussusception, solitary rectal ulcer syndrome, colonic varices, and endometriosis [14].

Hemorrhoidal bleeding is probably the most prevalent cause of acute GI bleeding in the ambulatory setting, accounting for up to 76% of cases, but it represents only 2-9% of admissions for lower GI bleeding [7, 15]. A parallel Indian study of **Lakhanpal *et al.*[16]** included A total of 138 patients presented with chronic LGIB and were investigated using colonoscopy and relevant investigations. They found majority of patients were in the age group of 40 to 59 years, with a mean age of 49.5 years, slight male predominance, and male-to-female ratio of 1.19:1. The most common clinical presentation was hematochezia (97.8%). Overall, 15% patients had more than one comorbidity, and 39.13% patients were anemic, of which 7.24% received blood transfusions. Diagnostic yield of colonoscopy was 92.75%. Major causes of LGIB were anorectal causes (19.56%), inflammatory bowel disease (19.56%), colorectal carcinoma (17.39%), radiation proctitis (9.42%), infective causes (11.59%), nonspecific colitis (7.24%), and benign growths (5.07%). However, in the elderly (age > 60 years), carcinoma colon, radiation proctitis, and hemorrhoids predominated the clinical picture.

Moreover, **Oakland *et al.*[17]** reported that diverticular disease is the most common cause of LGIB in the United States, is primarily a disease of western cultures. However, this geographic variation is highly influenced by diet and lifestyle factors. However, **Shahi *et al.*[6]** concluded that the common causes of LGIB were hemorrhoids and non-specific colitis followed by neoplastic lesion. A careful history, physical and colonoscopic examination with or without biopsy makes significant impact for early diagnosis and treatment.

CONCLUSION

Acute LGITB is a common and challenging problem in MICU of ZUH with ulcerative colitis, bleeding piles, and malignancy as the major underlying causes. Colonoscopy represents the most important diagnostic modality.

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