Original Article

Evaluation of the causes and outcome of lower gastrointestinal bleeding: An endoscopic study

Abdel Aziz Rabee, Maha M. Maher, Tarek F. Sheta

Summary

***Introduction*:** *Lower gastrointestinal bleeding (LGIB) is bleeding arising below the ligament of Treitz. The epidemiology of (LGIB) in western populations has been well documented in multiple studies, but there are scant reports about this condition in Egypt. We tried to through highlights on the causes and outcomes of such cases.* ***Methods*:** *This prospective study was conducted on all adult patients presented to the hepatology and Gastroentrology unit, specialized medical hospital, Mansoura Univ. with LGIB during the period from 1/1/2016 to 31/12/2016.* ***The results*:** *A total of 193 cases was included in the study consisting of 112 (58%) males and 81 (42%) females, with a median age of 43 years. Most patients were outpatients (116, 60%), or inpatients (68, 35%), while (9, 5%) were referred from other centers. the commonest comorbidities were hypertension (38, 19.7%) and diabetes mellitus (15, 7.8%). The commonest associated drug was anti-platelet (16, 8.3%). Cases were presented by hematochezia (172, 89.1%), iron deficiency anaemia (15, 7.8%), melena (3, 1.6%) and occult lower GIT bleeding (3, 1.6%). The most common causes were colorectal carcinoma (CRC) in 33 patients (17.1%), ulcerative colitis (UC) in 32 patients (16.6%), infectious colitis in 29 patients, (15%), piles in 29 patients (15%) and diverticulosis in 19 patients (9.8%). Only 2 patients were haemodynamically unstable and were candidates for urgent colonoscopy and 10 patients needed transfusion of packed red blood cells before intervention. 62 patients needed surgical consultation for their cause of bleeding.* ***Conclusion*:** *Our research showed that CRC, UC, infectious colitis, piles and diverticulosis were the most common causes of LGIB among our study cases, with men more predisposed to LGIB than women. These findings are broadly different from those reported in western populations.*

Keywords: *Lower gastrointestinal bleeding; Colorectal carcinoma; Ulcerative colitis and piles*

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Introduction

LGIB is a relatively frequent cause of hospitalization worldwide and continues to be a common cause of morbidity and mortality in hospitalized patients, especially amongst the elderly. It accounts for approximately one-third of all cases of acute gastrointestinal bleeding with an annual incidence of about 20 - 30 cases per 100,000 individuals[1]. LGIB is defined as any bleeding originating distal to the ligament of Treitz. Clinical presentations can vary from minor hematochezia up to massive hemorrhage which may lead to fatal outcomes[2]. LGIB usually is chronic and the bleeding stops spontaneously in 80% of cases, but male and older patients suffer from more severe LGIB as the incidence rises steadily with age and in elderly may surpass that of upper gastrointestinal bleeding (UGIB)[3]. Initial assessment of the class begins with the determination of the hemodynamic status of the patient and the need for urgent resuscitation efforts. Depending on the clinical severity, intravenous fluids and blood products may be required with consideration of intensive care unit (ICU) admission. In clinically stable patients, detailed history and thorough clinical examination must take priority to try and determine the etiology of hemorrhage[4]. LGIB can occur

due to a wide variety of causes. The most common causes of LGIB include diverticulosis, angiodysplasia, ischemic colitis, colorectal neoplasms, inflammatory bowel disease and anorectal conditions as hemorrhoids and anal fissures[5]. Colonoscopy is usually the initial test of choice for most patients with LGIB. It can successfully detect the site of LGIB in up to 80% of cases. Colonoscopy also offers the possibility of therapeutic intervention in addition to diagnostic evaluation. Actively bleeding lesions can be treated with resection, adrenaline injection, laser coagulation or clipping[6]. Numerous advancements have been made in recent times aiming to improve diagnostic capabilities when colonoscopy fails to detect the cause. Some of these diagnostic modalities include capsule endoscopy, double-balloon enteroscopy, computed tomographic angiography (CTA), radionuclide scintigraphy, and mescentric angiography[7]. There are worldwide regional differences in the causes of LGIB. For example, in the countries of western Europe and United States colonic diverticular bleeding is the most common source of bleeding making up 30 -50% of cases, while in Asia anorectal causes are most common[3]. The aim of this study is to evaluate the causes and outcome of LGIB and to obtain data about epidemiology of the cases and the commonest causes among patients in our center.

Patients and methods

This prospective census study was conducted on all adult patients presented to the Hepatology and Gastroenterology unit, specialized medical, hospital, Mansoura University with LGIB during the period from 1/1/2016 to 31/12/2016. All patients enrolled in our study were informed about the study protocol and a written informed consent was obtained from them. This study included 193 patients presented to the Hepatology and Gastroentrology unit, specialized medical hospital, Mansoura university with the following inclusion criteria: **A)** Hematochezia (passage of bright red blood per rectum). **B)** Occult lower GIT bleeding. **C)** Cases presented with melena after exclusion of upper GIT causes after upper GIT endoscopy. **D)** Adult patient with unexplained iron deficiency anemia after exclusion of any other cause of chronic blood loss as menorrhagia. All patients were subjected to the following: **1)** Full history taking, including standardized questionnaire covering the following: Age, sex of the patient. Any other orificial bleeding. It is the first or recurrent episode of LGIB. History of peptic or duodenal ulcer disease. History of liver disease, cirrhosis, coagulopathy, and inflammatory bowel disease (IBD). Previous medication (NSAIDs, warfarin, antiplatelet, SSRIs). In patients with cancer, the history of radiotherapy and chemotherapy should be obtained. **2)** Thorough clinical examination, including abdominal examination and per rectal examination (PR). **3)** Routine laboratory investigations, including: Complete blood picture, liver function tests, kidney function test. **4)** Nasogastric lavage in cases of acute hematochezia to rule out upper GIT bleeding. **5)** Colonoscopy was the first diagnostic choice in our study so urgent or elective colonoscopy was done after adequate resuscitation and patient preparation as following: Urgent colonoscopy was within 24 hours of admission after preparation of patients with colonic enema in the presence of one of the following criteria: **1)** The last bloody bowel movement was within 24 h of presentation. **2)** There was clinical or laboratory evidence of significant blood loss, manifested by any one of the following: (a) More than 3 bloody bowel movements in less than 8 hours. (b) Admission to the intensive care unit. (c) Decrease of more than 5% hematocrit points in less than 12 h. (d) Transfusion of more than 3 units of packed red blood cells. (e) Hemodynamic instability in previous 6 h defined by: angina, syncope, presyncope, orthostatic vital signs, mean arterial blood pressure <80 mmHg, or resting pulse >110. Elective colonoscopy was done within 4 days in patients without previous criteria for urgent endoscopy after full colonic preparation. **6)** Patients with negative findings on colonoscopy were re-evaluated for upper GI endoscopy and push enteroscopy. **7)** Patients with negative previous endoscopic findings were evaluated by radiologist for mescentric angiography. **8)** Patients were considered to have obsecure bleeding after fullfiling the previous available diagnostic tools which are available at our center. Outcomes of our study were mainly diagnostic and epidemiologicalyields. Diagnostic yields

achieved by detecting aetiologies of LGIB. Epidemiological yields include distribution of cases regarding sex and age, comorbidities, drug history, presentation, and possible risk factors.

Stastics

Data were collected and analyzed using SPSS version 22. Qualitative data were described using numbers and percent. Continuous variables were presented as mean ± SD (standard deviation) and or median (min-max).

Results

The study included 193 patients presented to our center with the previous inclusion criteria. Table (1) shows that, there is increased incidence of LGIB among male patients than female patients with a median age of incidence around 43 years. The youngest recorded case was 13 years old and the oldest was 85 years. Table (2) shows that, hypertension was the commonest comorbidity found among cases of LGIB followed by DM and IHD as the second commonest comorbidity with least association with CKD (only one case) and stroke (3 cases). DM, diabetes mellitus; LCF, liver cell failure; CKD, chronic kidney disease; IHD, ischaemic heart disease; HF, heart failure. Table (3) shows that, the minimal HB concentration is 8gm/dl with mean HB concentration of 11gm/dl denoting that, the majority of cases had HB levels within normal range. Also the minimal platelet concen-tration of 88× 109/L with median platelet concentration of 260× 109/L denoting that there is no significant relationship between thrombocytopenia and LGIB in our study. Table (4) showing an association of LGIB with anti-platelet drugs administration as more than 8% of cases of LGIB have a positive history of antiplatelet drugs. Oral anticoagulant and NSAIDs came after antiplatelet drugs in association to LGIB. Figure (1) showing a different clinical presentation of the cases with a significant predominance of hematochezia with an incidence of (89.1%) of cases of LGIB, while occult bleeding present (7.8%) of the cases with an incidence of (1.6%) for melena and IDA. Figure (2) showing different diagnosis of our cases of LGIB. After performing the available diagnostic modalities in our center cancer was the most prevalent cause of LGIB with an incidence of (17.1 %) among cases of LGIB. Ulcerative colitis and infectious colitis came in the second and third order with an incidence rate of (16.6 % and 15 % respectively). Rectal varices were the least common diagnosis with an incidence of only (1%) among the cases. No definite source of bleeding was recognized in (5.2%) of the cases, and these cases were classified as obscure bleeding. Table (5) showing the main outcomes of cases of LGIB denoting that, only 2 cases were haemodynamically unstable on admission so they were candidates for urgent colonoscopy. Ten patients needed packed red blood cellt ransfusion before any intervention. After diagnosis of the cause of LGIB, sixty one patients of our cases needed surgical consultation to assess surgical interv-ention as a therapeutic tool.

Table (1) The age and sex distribution of the study populations.

N = 193	
Sex	No (%)
Male	112 (58)
Female	81 (42)
Age	
Mean ± SD	83.07 ± 14.7
Median (min - max)	43 (13 -85)

Table (2) Baseline clinical data of the cases.

N = 193	No (%)
Hypertension	38(19.7)
DM	15 (7.8)
LCF	9 (4.7)

CKD	1 (0.5)
IHD	15 (7.8)
HF	5 (2.6)
Stroke	3 (1.6)

***DM**, diabetes mellitus; **LCF**, liver cell failure; **CKD**, chronic kidney disease; **IHD**, ischaemic heart disease; **HF**, heart failure.*

Table (3) Baseline laboratory values of the cases.

N= 193	
HB (gm/dl)	
Mean ± SD	11.04 ± 1.1
Median (min - max)	11 (8 – 14)
Platelet (× 109/L)	
Mean ± SD	148.6 ± 60.9
Median (min - max)	260 (88 -360)
INR	
Mean ± SD	1.04 ± 0.1
Median (min - max)	1 (1-2)
Serum creatinine(mg/dl)	
Mean ± SD	0.8 ± 0.1
Median (min - max)	0.8 (0.6 – 2)
Albumin (g/dl)	
Mean ± SD	4.3 ± 0.5
Median (min - max)	4.4 (2 -5)
Bilirubin (mg/dl)	
Mean ± SD	0.8 ± 0.2
Median (min - max)	0.8 (0.5 – 1.9)
SGOT (Iu/l)	
Mean ± SD	32.8 ± 9.1
Median (min - max)	32 (20 - 84)
SGPT (Iu/l)	
Mean ± SD	36.7 ± 6.9
Median (min - max)	35 (23 -66)

Table (4) Drug history of the cases.

Total number = 193	**No (%)**
NSAIDs	3 (1.6)
WARFARIN	4 (2.1)
Anti-platelets	16 (8.3)
Selective serotonin reuptake inhibitors	1 (0.5)

***NSAIDs**; non steroidal anti-inflammatory drugs.*

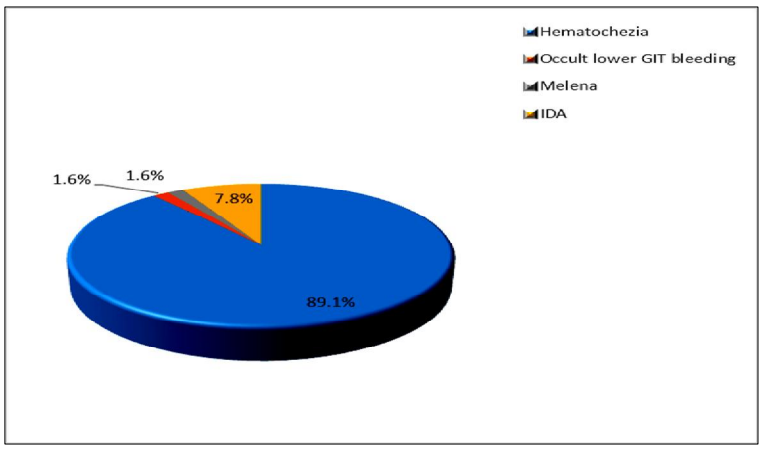

Figure (1) showing clinical presentation of the

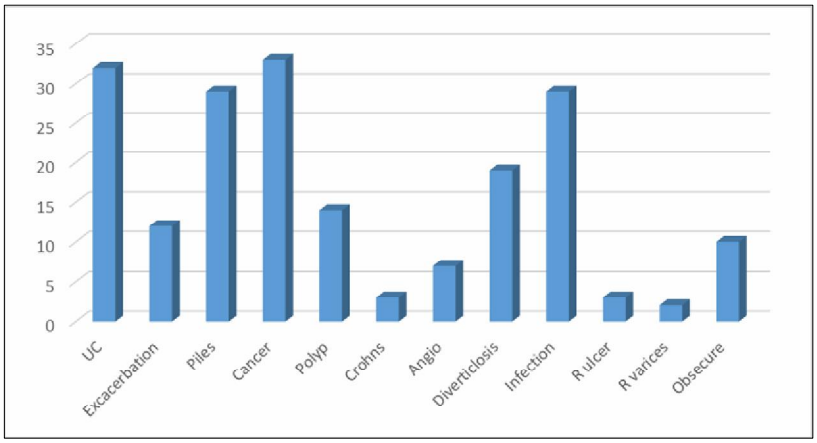

Figure (2) showing causes of LGIB in study cases

Table (5) Outcome of LGIB cases.

Total number = 193	**NO (%)**
Haemodynamicaly unstable	2 (1)
Urgent colonoscopy	2 (1)
Need for PRBCs	10 (5.2)
need for Surgery	62(32.1)

PRBCs *= Packed red blood cells*

Discussion

This prospective census single-center study examined demographic features and outcomes of LGIB in patients who presented to the Hepatology and gastroenterology unit, specialized medical hospital, Mansoura University. This study was carried during the period between 1/1/2016 and 31/12/2016. During the period of our study 347 colonoscopies were carried in our center with 193 cases (55.6%) due to LGIB and 154(44.4%) for other causes as chronic constipation or diarrhea and screening for CRC. Approximately 60% of our cases came from out patients, 35% came from inpatient department and only 5% were referred from other hospitals or centers. Our findings confirmed previous reports concluding that LGIB increases with age[8], and was more common in male than female patients)[9]. Our study showed predominantly a higher perce-ntage of males with LGIB (58.03%), with a median age of 43 years for both sexes. This increased percentage of male cases may be explained that males often suffer from chronic constipation due to low fiber diet, low intake of liquids especially water and intake of tobacco which affect the formation and synthesis of gastric juices and enzymes, together with sedentary life style resulting in retaining faecal wastages in the colon and so enhancing bleeding from the large intestines. In our study 44.5% of the cases had co-morbid disease. Hypertension was the commonest co-morbidity among our cases which correlate with previous reports among cases of LGIB[10]. Hypertension was found among 38 patients followed by DM and IHD in 15 patients. LCF was found among 9 patients as such patients have several risk factors which increase bleeding risk including thrombocytepenia, and abnormal coagulation factors[11]. HF, stroke and CKD were found in 5.3 and 1 patients respectively. The association between antiplatelets either single use of low dose aspirin or dual antiplatelet therapy has been found in 16 patients (8.3%). This finding correlates with previous studies which demonstrate increased incidence of LGIB in cases on antiplatelet therapy[5].The drug history of oral anticoa-gulant use was positive for warfarin in 4 patients which usually increase the severity of bleeding and produce worse clinical outcomes correlating

with previous study carried by Jana G. Hashash, on 2009[12]. NSAIDs are a significant bleeding risk factor worldwide, but the way in which they are metabolized might differ among individuals resulting in different effects. Previous reports suggest the presence of genetic polymorphisms related to drug metabolism that affect LGIB risk denoting that effect of NSAIDs as risk factor for LGIB is more n Europeans than in Eastern and Southern Asians[13]. Selective serotonin reuptake inhibitors (SSRIs) may increase the risk of LGIB bleeding through inhibition of serotonin uptake into platelets. This effect is usually increasesd by concomitant use of antiplatelet and NSAIDs as reported in previous studies[14]. In our study we recorded only 1 patient with positive history for SSRIs. Hematochezia was the commonest presentation in our study representing 172 cases with percentage over 89% of our cases. These findings correlate with most previous studies which put hematochezia as the commonest presentation[15]. IDA was the second most common presentation. No definitive studies exist to exactly quantify the magnitude of IDA as presentation of LGIB. Occult lower GIT bleeding and melena were the least common presentation among our cases with percentage of 1.6 % for both, such cases usually have small intestinal cause of bleeding as reported in previous studies[16]. Among detected causes of LGIB, cancer was the most common finding in 33 patients with percentage of 17%. Ulcerative colitis and infectious colitis came in the second and third order with incidence rate of 16.6 % and 15 % respectively. Rectalvarices were the least common diagnosis with incidence of only 1 % among the cases. The causes of LGIB vary from one region of the world to another. In Western Europe and the United States, diverticulosis is the most common causes of LGIB[17]. hemorrhoids is the most common colonoscopy findings of LGIB in Saudi patients (38.5%) which is similar to data from other neighbour countries, and some regions in African[18]. In 10 patients in our study, the source of bleeding was obsecure with percentage of 5.2%. These cases were considered to be obsecure if no source of bleeding was detected after colonoscopy, upper GIT endoscopy, pushenteroscopy and CT angiography. Although not all recent diagnostic modalities are available in our center as WCE and scintigraphy, the percent recorded in our center correlates with most of other studies recording the percentage of obsecure bleeding of approximately 5%[19].This finding may be attributed to individual skills of diagnosis by our endoscopists. We recorded that only 2 of our cases were hemodynamically unstable and require urgent resuscitation to stabilize them. Both of patients came from inpatient department and were diagnosed both to have rectal varices. Urgent colonoscopy was done only in these two patients after rapid bowel preparation. In our study 10 patients needed PRBCs transfusion with 8 patients presented with IDA or occult bleeding, and 2 patients presented with hematochezia. We found that mean HB concentration of the cases was 11 gm/dl meaning that majority of the cases came with normal HB concentration and that may be explained with hematochezia which the commonest presentation is making patients rapidly seek medical help rather than IDA or occult bleeding. Estimated percentage of 32.1% of our cases needed surgical consultation for assessment of possibility of surgical intervention for both cancer (33 cases) and piles (29 cases).This percentage exceeds most of the previous recorded studies which denote that majority of LGIB cases not usually require surgical intervention[20]. This finding is explained by the difference in causes of LGIB among our study and other studies which put causes as diverticulosis and IBD as commonest causes which not usually require surgical intervention unlike our study with cancer as the leading cause. Widespread protocols of CRC screening in developed countries make diagnosis of CRC early before complications or LGIB.

Limitations

Some diagnostic modalities are not available in our center including WCE, single balloon enteroscopy (SBE), double balloon enteroscopy (DBE), spiral enteroscopy (SE), Enteroclysis and Radionuclide Scintigraphy. Therefore further investigations of cases of obsecure bleeding were limited, however the number of obsecure cases was within the recorded numbers of other centers previous studies.

Conclusion

We found colorectal cancer the commonest cause for LGIB denoting that greater attention should be paid to screening programs for colorectal cancer to detect cases as early as possible. Also cases of IDA specially those of old age should be evaluated properly for the cause and undergo early colonoscopy when indicated, as waiting for hematochezia to occur in colorectal cancer always delay diagnosis.

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