

Colonoscopic evaluation of patients with rectal bleeding

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Abstract:

Background: Lower gastrointestinal bleeding is a common indication for hospital admission. As patients experience persistent or recurrent bleeding requiring blood transfusions and interventions, such as colonoscopic, radiological, and surgical treatments.

Objective: To study various pathologies related to lower GI bleeding with colonoscopy

Methodology: A prospective observational study involving 100 patients of bleeding per rectum and undergone colonoscopy was carried out in gastroenterology department. Demographic data, presenting complaints, clinical examinations, blood and radiological investigations were carried out. Normally colonoscopy was performed after the cessation of bleeding and urgent colonoscopy was performed in cases of hemodynamically unstable patients as per requirement and findings were recorded and analysed.

Results: Out of total 100 patients, 72 were males and 28 were females. Diverticular disease (25), ulcerative colitis were most common presentation in both gender. Most common age group affected was 40-60 years. The commonest cause for GI bleeding was diverticular disease (40%) followed by ulcerative colitis (27%). Out of total 18 patients of colorectal carcinoma, 12 (66.66%), 4 (22.22%), and 2(11.11%) patients had DUKE'S stage C, B and A respectively with no significant association with CEA levels ($p>0.05$). Most common site of adenocarcinoma was rectum (56%) followed by descending & sigmoid colon (22% each). Most common site of polyp distribution were sigmoid colon (59%) followed by caecum (27%), descending colon (7%) and transverse colon (7%).

Conclusion: Appropriate decision-making is needed to manage lower GI bleeding including emergency hospitalization, timely colonoscopy, and appropriate medication use.

Key words: Lower Gastrointestinal bleeding, Colonoscopy, Duke's staging, colorectal carcinoma, diverticulitis, GI polyps

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I. Introduction

Gastrointestinal hemorrhage is one of the most common and serious presenting symptom with increasing prevalence among adults. More than 14-19% patients suffer from rectal bleeding and its prevalence is increasing day by day with a peak period of onset between 45-65 years of age. Anatomically rectal bleeding is defined as bleeding beyond the ligament of Treitz described as the passage of blood from the lower intestinal tract. (1, 2) A wide spectrum of clinical characteristics ranging from trivial bleeding to massive haemorrhage and shock are involved in rectal bleeding. There has been a concomitant increase in the incidence of lower gastrointestinal bleeding (LGIB) in aging population with increasing use of aspirin/non-steroidal anti-inflammatory drugs and anticoagulants. (3) Lower gastrointestinal bleeding (LGIB) is associated with numerous etiologies including diverticulosis, ischemia, inflammatory bowel disease, neoplasm, postpolypectomy and infective colitis. Diverticular disease, haemorrhoids, colonic polyps, angiodysplasia and colitis are the most common sources of lower intestinal bleeding. (4, 5) Appropriate management of gastrointestinal haemorrhage shows tremendous challenges in diagnostic and therapeutic approach. Various modalities are used in management of gastrointestinal haemorrhage ranges from radiographic interventions such as radionuclide scintigraphy and angiography to colonoscopy and flexible sigmoidoscopy. Currently there is no single modality that has proved to be the gold standard treatment in the management of gastrointestinal haemorrhage but colonoscopy has proved to be leading modality with several advantages of definitive diagnosis and is commonly

the most preferable initial test in the majority of cases. (6) Current diagnostic algorithm for diagnosing gastrointestinal bleeding involves multistep radiological approach aiming towards identification of source of bleeding. (7) Recent advancements in endoscopy techniques has led to an advantage in precise examination and evaluation of intestinal mucosa of the large intestine and rectum with safety and accuracy. Colonoscopic examination is most important and reliable technique widely followed in the diagnosis and treatment of suspected colonic diseases. It is a diagnostic procedure of choice for patients with diarrhoea lasting for several weeks to months or for any bloody diarrhoea and rectal bleeding. (7, 8) Early colonoscopy is a primary investigative method for diagnosis of the specific cause of lower intestinal haemorrhage significantly reducing the mortality rate. In order to rationalize the interpretation of the colonoscopic finding and biopsy findings in early stages of lower intestinal haemorrhage this study is aimed to identify normal and abnormal mucosal characteristics of colon under direct visualization and histology and report commonly encountered abnormal histological patterns responsible for individual morbidity in patients.

II. Materials and Method

This was a prospective observational study involving patients of bleeding per rectum and presented to gastroenterology department for further management.

Participant selection: all patients of 18 years and above who had presented history of pure blood or blood-mixed with stool, occult blood in stool or chronic diarrhoea or screening of GI tract for suspected carcinoma with doubtful USG abdomen results and had undergone scopy till terminal ileum were enrolled for the study. Patients with possible upper gastrointestinal bleeding site, suspected peritonitis or history of coagulopathy were excluded from the study. Even those patients who did not consent or refused colonoscopy were also excluded from the study.

Ethical considerations: The study protocol was approved by the institutional ethics committee and written informed consent was obtained from all participants. Patients' identity was not revealed at any stage of the research.

Data collection method: Patients presenting in the out-patient department or admitted patient's in general medical wards of the hospital were included in the study after fulfilling inclusion/exclusion criteria. All patients were interviewed and examined by a gastroenterologist and their demographic data, presenting complaints and clinical examinations and management were recorded in a case record form. All the information of the patients was kept confidential. The data was collected on a proforma. The studies were approved by the institutional review boards.

Colonoscopy examination and Management of patient: Medical management consisted of hospitalization, monitoring, and resuscitation in intensive care. All the patients underwent the routine investigations like complete blood count, blood urea and serum creatinine levels, HIV and HbsAg testing, PT with INR and aPTT, urine examination, Erect X-ray abdomen, USG abdomen, CT/MRI abdomen, colonoscopy and biopsy if required. CEA levels were also carried out in patients of suspected carcinoma.

Normally colonoscopy was performed after the cessation of bleeding however urgent colonoscopy was performed in cases of hemodynamically unstable patients with pallor, fatigue, chest pain and palpitation dyspnea and tachycardia with standing systolic blood pressure decreased more than 10 mm Hg or heart rate increased more than 10 times per minute. Anticoagulants and nonsteroidal anti-inflammatory drugs, including aspirin, were discontinued before colonoscopy. Patients also received transfusions of red cells/packed cells for severe anaemia before they underwent urgent colonoscopy. All the patients were prepared for Colonoscopy by asking them to use liquid only daily for three days prior to the examination and were advised to have nothing by mouth (NPO) for 6-8 hours prior to the elective procedure, or else the stomach was irrigated with Ewald's Tube until clots and particulate matter was completely removed. They were administered enema twice on the night before and twice on the day of examination. Diazepam was used as an anxiolytic and Olympus(R) (PCF) video colonoscope was used for colonoscopy through left knee chest position or lithotomy position.

Meperidine, 50 mg IM and Atropine, 0.4 mg IM were administered 30 minutes prior to the colonoscopy procedure. Lidocaine jelly was used as a local anesthetic. Air or CO₂ was used for insufflation. The scope was initially placed in neutral position with a gentle loop followed by inspection of perianal skin through digital rectal examination. A combination of slow withdrawal, aspiration of air, and torque were performed simultaneously keeping the lumen in view with the angulation knobs for effective loop-reducing technique. Once the caecum is intubated photo-documentation is performed followed by polypectomy and mucosal biopsies. Areas of severe angulation or suboptimal visualization were examined with multiple back and forth passes of the scope or further it may require repositioning of the patient for adequate examination. Abdominal Colonoscopic results were compiled and analysed. Lesions with some degree of suspicion were biopsied and sent to laboratory for evaluated of histo-pathological characteristics.

Statistical analysis: Abdominal Colonoscopic results were compiled and analysed using the statistical tests. Descriptive statistics were used to calculate Mean±SD of numerical data, e.g., age. Nominal data like gender and colonoscopic findings were analysed by their frequencies and percentages. Chi -square test was used for association analysis and p value less than 0.05 was considered significant. All the data were analysed using Microsoft excel 2010.

III. Results:

Total of 100 patients were included in present colonoscopy examination study. Among them 72 were male and 28 were female. Colonoscopic findings of the study patients had been shown in table 1 as per age and gender wise distribution. In the males, diverticular disease (25), ulcerative colitis (20), polyp (11) and rectal carcinoma (9) were the lesion most commonly detected. While in females, diverticular disease (15), ulcerative colitis (7) and polyp (4) were the lesion most commonly detected. (Table 1)

Causes of GI bleeding in study patients are shown in table 2. The commonest cause for GI bleeding in patients was diverticular disease (40%), ulcerative colitis (27%), polyp (15%) rectal carcinoma (10%), descending colon carcinoma and sigmoid colon carcinoma (4%) each.

Table 3 shows the distribution of colorectal carcinoma with respect to their Dukes Staging. It was clearly observed that 12 (66.66%) out of total 18(100%) of colorectal carcinoma had DUKE’S stage C followed by 4(22.22%) had DUKE’S stage B and only 2(11.11%) had DUKE’S stage A. Association of dukes’s staging of carcinoma was not found to be significantly associated with the CEA levels of the patients (p>0.05).

Out of 27 patients having ulcerative colitis, 9 (33%) patients were having crypt abscess with chronic inflammatory cells. Most common site of adenocarcinoma among colorectal carcinoma in present study found was rectal carcinoma (56%) followed by descending colon (22%) and sigmoid carcinoma (22%). (Figure 1)

As per figure 2 out of all 15 (100%) polyp patients, 9 (60%) had Serrated, followed by 5 (33.33%) had tubular, and only 1 (6.67%) had tubervillous. Most common site of polyp distribution in present study were sigmoid colon (59%) followed by caecum (27%), descending colon (7%) and transverse colon (7%). (Figure 3)

Table-1 Age and Sex wise distribution of colonoscopic lesions (n=100)

Age Group	Diverticular disease			Ulcerative colitis			Polyp			Rectal CA			D Colon CA			Sigmoid CA		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
< 30	1	0	1	10	1	11	7	3	10	1	0	1	0	0	0	0	0	0
30-40	1	1	2	6	1	7	2	0	2	1	0	1	0	0	0	1	0	1
40-50	5	4	9	4	3	7	0	1	1	0	0	0	3	0	3	0	0	0
50-60	5	5	10	0	2	2	2	0	2	4	0	4	1	0	1	1	1	2
60-70	8	4	12	0	0	0	0	0	0	2	1	3	0	0	0	1	0	1
>70	5	1	6	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
Total	25	15	40	20	7	27	11	4	15	9	1	10	4	0	4	3	1	4

Table-2 Distribution of diagnosis per rectal bleeding (n=100)

Diagnosis	No. of patients
Diverticular Disease	40
Ulcerative Colitis	27
Polyp	15
Rectal Carcinoma	10
Descending Colon Carcinoma	4
Sigmoid Carcinoma	4

Table-3 Distribution of colorectal carcinoma according the DUKE's staging and CEA levels

Adenocarcinoma DUKE's staging	No. of patients as per CEA category	
	CEA < 5	CEA ≥ 5
A	0 (0)	2 (13.33)

B	0 (0)	4 (26.66)
C	3 (100)	9 (60)
No. of patients n=18 (%)	3 (16.66)	15 (83.33)
Mean Age	52	50.89
Mean CEA Value	4.56	8.79
Chi-square value=2.8, P value=0.24 > 0.05, ns		

Figure 1: Distribution of adenocarcinoma among colorectal carcinoma (n=18)

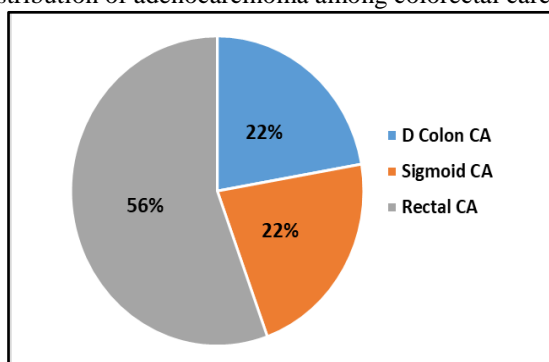


Figure 2: Histopathological correlation of colonoscopic biopsy among polyp disease (n=15)

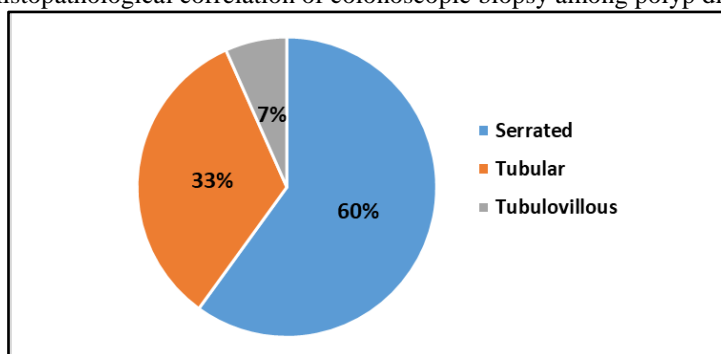
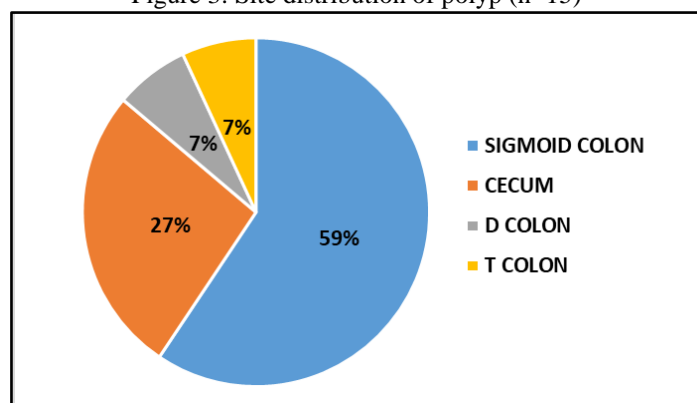


Figure 3: Site distribution of polyp (n=15)



IV. Discussion

Lower gastrointestinal bleeding (LGIB) represents an acute and life-threatening event as chronic bleeding, which may manifests as iron-deficiency anemia, fecal occult blood or intermittent hematochezia. (9) Hemorrhage accounts for more than 20% of all cases of acute lower intestinal bleeding with acute or chronic loss of blood from colon or anorectum. It has been observed in many studies that the average age of patients suffering from Lower gastrointestinal bleeding (LGIB) ranges from 63-77 years with increase in rate of incidence with age. (10-12) The rise in incidence of LGIB with age is due to increased prevalence of colonic diverticulosis and colonic angiodysplasia with age accompanied by co-morbid conditions such as coronary

artery disease, cirrhosis, or chronic obstructive pulmonary disease. Diverticular disease, angiodysplasia or colon cancer are predominantly attributing to lower GI bleeding in old age population while in patients with less than 30 years of age polyps or inflammatory bowel disease are common cause of Lower GI bleeding. Colonoscopic evaluation is generally considered to be the gold standard and safe procedure even with elderly patients for diagnosis of acute lower intestinal haemorrhage. Sigmoidoscopy or total colonoscopy are appropriate diagnostic approaches widely followed for initial evaluation of bleeding lesions as their diagnostic accuracy ranges from 72 to 86% in patients with lower gastrointestinal bleeding. (13,14)

Diverticular disease is bleeding from colonic diverticula which accounts for more than 40% of lower GI bleeding and it often presents as hematochezia without pain occurring either at the dome or neck of the diverticulum which is found to be consistent with present study. It is mainly characterized by presence of sac like protrusion due to defective muscular layer of colon resulting in herniation of colonic mucosa or submucosa. They are often cited as the major source of bleeding in the colon with presence of stigmata or adherent clot. Majority of diverticula are recurrent and are observed in the left colon during colonoscopy while bleeding diverticulum is localized more often in the right colon when angiography is used for diagnosis. Important risk factors of diverticular bleeding includes alcohol consumption, smoking with high smoking index, NSAID's, low dose aspirin and antiplatelet drugs. (15,16) As Diverticular bleeding usually recurs it is imperative to have early diagnosis and proper management. Colonoscopy is generally performed electively in patients when there is a spontaneous cessation of bleeding to exclude various other aetiologies and effective management of diverticular bleeding. (17,18) Most common colonoscopy findings in diverticular bleeding includes granulation tissue protruding from a diverticular opening, erythema and edema of a single diverticular opening or pus coming from a diverticulum. Similar symptoms were observed in our study.(19)

Another prominent cause identified for LGIB in patients is colitis which includes inflammatory bowel disease (IBD), ischemic colitis, and infectious colitis characterized by diarrhoea with blood. A similar higher incidence of Ischemic colitis was observed in previous studies responsible of LGIB in 3-12% of patients with colonic bleeding. Splenic Flexure and sigmoid colon are most commonly involved in colitis characterized by edema, erythema, submucosal hemorrhage with ulceration through flexible endoscopic evaluation. (20,21) Polyps are another common cause of LGIB with prevalence of 4.4% in general population as reported in many studies and commonly found in patients with coagulopathies and platelet dysfunction. Various factors that contribute to postpolypectomy haemorrhage include size of the polyp, morphology, location of polyp and polypectomy technique. Earlier studies reported high incidence of LGIB in case of polyps greater than 2cm diameter. (22) One of the most prominent signs of adenocarcinomas of the colon and rectum is occult bleeding and peranal bright red blood. It is the most fatal of all LGIB etiologies which accounts for 7% and 33% of cases with severe LGB. Earlier studies have reported similar incidence of around 8% of minor bleedings and 5% of major bleedings associated with colon cancer. According to earlier reported studies most of the lower GI bleedings arises from angiodysplasia or diverticular disease. (23)

Urgent colonoscopy is considered to be the mainstay for diagnosis of location and type of bleeding in acute lower gastrointestinal bleeding with a high diagnostic yield of 48-90% and is similar to the results reported in previous literatures also. (24, 25) Few studies reported that early colonoscopy when done within 12-24 hours after admission to the hospital on an unprepared bowel helps in identification of bleeding site and effective haemostasis could be obtained. However cleaning of colon thoroughly improve evaluation of mucosa and even minor lesions which lefts undetected due to poor visualization in other cases. (24, 25)

V. Conclusion

It has always been a debate in performing full colonoscopy instead of sigmoidoscopy in cases with lower GI bleeding and rectal haemorrhage. In our study various risk factors like aged patients with debilitating conditions and persistent symptoms were subjected to urgent colonoscopy which was found to be more accurate, precise and cost effective pathway compared to flexible sigmoidoscopy. Urgent colonoscopy is done to localise the bleeding source, to identify patients at risk of ongoing or recurrent bleeding, and to perform haemostasis.

This approach of initial colonoscopy is very effective for diagnosing diverticular disease, carcinoma and polyps of 1 cm or more which are considered to be the commonest cause of lower GI bleeding compared to flexible sigmoidoscopy with limitations in diagnostic area. Patients with increased heart rate, low blood pressure, low haematocrit, syncope, non-tender abdomen, gross blood on initial rectal examination, use of acetylsalicylic acid, and comorbid conditions should be carefully monitored and managed in an ICU initially before colonoscopy.

However still there remains a window of choice to determine the appropriate therapeutic modality based on the severity of haemorrhage among patients with lower GI bleeding among large scale population.

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