

## **Lower Gastrointestinal Haemorrhage**

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### **I. Introduction**

Lower gastrointestinal bleeding (LGIB) is a frequent cause of hospital admissions and is a factor in hospital mortality and morbidity. Lower gastrointestinal bleeding is a distinct entity and differs from upper gastrointestinal bleeding in epidemiology, management and prognosis. LGIB accounts for approximately 20 to 33% of all episodes of gastrointestinal haemorrhage. Though it is statistically less common than Upper gastrointestinal bleeding, it has been suggested that LGIB is underreported because most of the patients do not seek medical attention (1).

Historically, in the first half of the 20<sup>th</sup> century, large intestinal neoplasms were believed to be the most common cause of LGIB. In the 1950s, this LGIB was commonly attributed to colonic diverticulosis. In the last six decades, diagnostic methods for localizing the precise bleeding point greatly improved. The flexible endoscope was developed in 1954. The full length colonoscope was developed in 1965 in Japan. Baim et al described selective mesenteric angiography which permitted the identification of various vascular abnormalities and the precise bleeding point. Experience with mesenteric angiography in the 1960s and nuclear scintigraphy since the 1980s suggested that angiodysplasia and diverticulosis are the most common causes for LGIB.

### **II. Aetio-Pathology**

#### **Diverticulosis:**

A diverticulum is a sac like protrusion of the colonic wall that develops at a small point of weakness where the penetrating vessel has perforated through the circular muscular fibres. The vessel gets draped over the dome of the diverticulum separated from the bowel lumen only by the mucosa. Subsequent chronic and recurrent trauma to the vasa recta along the luminal aspect as well as the contraction and relaxation of the surrounding muscularis propria leads to eccentric thinning of the media. In due course of time, erosion of the vessel occurs resulting in bleeding (2). These diverticula are commonly located in the sigmoid and descending colon.

It is commonly seen in 50% of western population of more than 60 yrs of age. Approximately, 20% of patients with diverticular disease experience bleeding. In about 80% of these patients, the bleeding stops spontaneously. However in about 5% of the patients, the bleeding is massive. Although, 75% of the diverticula occur on the left side of the colon, right sided colon diverticula are responsible for approximately 50 to 90% of the bleeding per rectum. This may be because right sided diverticula have wider necks and domes which expose the vasa recta to injury over a greater length of time.

#### **Angiodysplasia:**

Colonic angiodysplasia are arterio-venous malformations located in the caecum and ascending colon. These are acquired lesions affecting elderly people older than 60 years of age. Most colonic angiodysplasias are degenerative lesions that arise from chronic intermittent, low grade colonic contractions that obstruct the mucosal venous drainage over a period of time, the mucosal capillaries dilate, become incompetent and form an arterio-venous malformation. These lesions have a tendency to rebleed (3). These lesions may be associated with aortic stenosis, Von-Willebrand disease or chronic renal failure.

#### **Colitis:**

Colitis, generally include various different pathological lesions like, irritable bowel syndrome, ulcerative colitis, Crohn's disease, ischaemic colitis, infective colitis, radiation colitis etc.

Massive bleeding is rare in most of these lesions. In ulcerative colitis, 50% of the patients present with recurrent attacks of bloody diarrhoea. In about 4% of the cases only, massive LGIB occurs.

In Crohn's disease, only 1 to 2% of the patients show massive LGIB if colonic involvement is present rather than the small bowel involvement.

In ischaemic colitis, in elderly patients bleeding occurs, but not that much significant. It is common in patients with ischaemic heart disease and cardiac arrhythmias.

In infective colitis, Salmonella and Shigella colonic invasion occurs but the bleeding is insignificant. In E.coli infection, toxin mediating colitis occurs and again the colonic bleeding is insignificant.

In radiation colitis, LGIB is not that common unless other risk factors like associated arteriosclerosis or concomitant chemotherapy are present.

**Colon malignancy:**

Occult bleeding is common as a result of mucosal ulceration or erosion. Massive bleeding occurs in only 5 to 10% of cases.

Post polypectomy bleeding may occur in 0.1 -3% of patients up to one month.

**Benign ano rectal diseases:**

Haemorrhoids, anal fissure, ano-rectal fistulae can cause intermittent rectal bleeding. Massive haemorrhage is seen in less than 11% of cases.

Table.1. Aetiology:

<b>Anatomical Lesions:</b>	<b>Diverticular bleeding.</b>
<b>Vascular lesions:</b>	<b>Angio dysplasia</b>
	<b>Ischaemic colitis</b>
	<b>Radiation induced colitis</b>
<b>Neoplastic lesions:</b>	<b>Benign polyps</b>
	<b>Carcinoma</b>
<b>Inflammatory lesions:</b>	<b>Infective lesions like E.coli and salmonella infections</b>
	<b>Non infective lesions like ulcerative colitis and Crohn's disease.</b>

Table.2. Common causes in Adults:

<b>Diverticular disease:</b>	<b>60%</b>
<b>Irritable bowel syndrome:</b>	<b>13%</b>
<b>Benign ano-rectal diseases:</b>	<b>11%</b>
<b>Neoplastic lesions:</b>	<b>9%</b>
<b>Coagulopathy:</b>	<b>4%</b>
<b>A-V malformations:</b>	<b>3%</b>

Table.3. Aetiology in children and adolescents:

<b>Intussusceptions</b>	
<b>Polyps and various polyposis syndromes:</b>	<b>Juvenile polyps and polyposis</b>
	<b>Peutz-Jegher's syndrome</b>
	<b>Familial adenomatous polyposis</b>
<b>Inflammatory lesions:</b>	<b>Crohn's disease</b>
	<b>Ulcerative colitis</b>
<b>Indeterminate</b>	<b>colitis caused by various causes</b>

In this century, infections with HIV can also cause LGIB due to Infections like cytomegalo virus infection causing colitis, Idiopathic colonic ulcer, Kaposi's sarcoma, Lymphoma (4). In addition, HIV along with benign ano-rectal diseases shows increasing bleeding due to concomitant coagulopathy due to NSAID abuse (5).

**III. Epidemiology**

LGIB is more common in men than in women because diverticular disease and vascular lesions are more common in men. LGIB is more common in elderly personnel than in younger people because diverticular diseases and vascular lesions are more common in elderly people. Haemorrhoids are the most common cause of LGIB in patients less than 50yrs of age.

**Clinical presentation:**

LGIB encompasses a whole spectrum of symptoms ranging from trivial haemato chezia to massive bleeding with shock. Acute LGIB is defined as bleeding that is of recent duration originating beyond the ligament of Treitz, resulting in instability of vital signs and is associated with signs of anaemia with or without need for blood transfusion.

LGIB is classified under three groups based on amount of bleeding.

**1. Chronic Occult bleeding:**

Patient of any age may present with microcytic hypochromic anaemia due to chronic blood loss. Various causes include congenital (polyps), inflammatory (colitis) and neoplastic (carcinoma) conditions.

**2. Moderate bleeding:**

Patient of any age may present with haematocheizia or melaena of moderate severity. Various causes include benign ano-rectal diseases like rectal polyp, haemorrhoids, fissure-in-ano etc.

**3. Massive bleeding:**

Patient, usually more than 65 yrs of age with multiple co morbid medical problems present with the history of passage of bright red blood per rectum. Most of them are haemodynamically unstable. The most common causes are diverticulosis and angiodysplasia.

The clinical presentation varies with the anatomic site of the bleeding. Maroon stools of bleeding are usually from the right side of the colon. Bright red stools indicate the site of the bleeding as left side of the colon. Melaena indicates the site of the bleeding as caecum and above.

The presentation also varies with the aetiology. Young patients with infective or non-infective colitis may present with fever, dehydration, abdominal cramps and bleeding from rectum. Colonic diverticulosis may present with massive painless bleeding per rectum in older age group.

The clinical features also vary with the age of the patient. Juvenile rectal polyp may be present in the childhood. Benign ano-rectal diseases are common in middle age group patients. In elderly personnel, diverticular disease, angiodysplasia and malignant lesions are common.

**Diverticular Disease:**

Diverticulosis is common in elderly people of western countries. Bleeding is arterial in origin. Usually painless but sometimes associated with mild abdominal cramps due to triggering of spasmodic contractions of the colonic wall due to intermittent bleeding. Sometimes the bleeding is very massive producing shock. In about 80% of the cases, bleeding is self limiting but in 25% of cases, rebleeding is common.

**Angiodysplasia:**

Angiodysplasia is also common in elderly people. Bleeding is veno-capillary in origin. Usually painless and self limiting, but repeated episodes are common resulting in iron deficiency anaemia. Occult blood test in the stools is positive. History of syncopal attacks is very common.

**Colitis:**

Infective colitis is common in middle aged people but responds to treatment in most of the cases. However in non infective cases the medical treatment is still elusive.

**Malignant conditions:**

Malignant conditions are common in elderly personnel, but sometimes do occur in younger age group. Right sided colon lesions present with anaemia and a lump in the right iliac fossa. Left sided colon lesions present with maroon coloured bleeding per rectum along with altered bowel habits. And in some cases chronic intestinal obstruction is the presenting feature.

**Benign ano-rectal conditions:**

These lesions are very common in middle aged personnel. Haemorrhoids present with painless bleeding, where as the fissure in ano commonly associated with pain.

**Diagnosis:**

There are three important diagnostic tests in LGIB cases. They are colonoscopy, radionuclide scan and angiography.

**Colonoscopy:**

Colonoscopy is the initial diagnostic method in LGIB in patients who are haemodynamically stable. It can detect the lesion in 80% of cases. Rapid colonic lavage with Golytely either orally or by naso-gastric tube cleans intraluminal blood clots and stool. Colonoscopy provides opportunity to therapeutic intervention in the treatment of vascular ectasia, diverticulosis, benign neoplastic lesions and ulcerative lesions.

**Advantages of Colonoscopy:**

1. Lesion is detected in 80% of cases.
2. Definitive treatment like thermo coagulation, epinephrine injection therapy, clip application, laser photo coagulation is possible.

3. Massive bleeding lesions that have stopped bleeding are detected more with colonoscopy rather than other investigations.

**Disadvantages of colonoscopy:**

1. Skilled endoscopist is necessary.
2. Requires good bowel preparation, hence the delay of 5 to 6 hrs occurs before the procedure is done.
3. A perforation is a possible complication.
4. The patient who is actually bleeding and sick requires "sedation".
5. Technical problems can make diagnosis and treatment more difficult.

**Radionuclide scans:**

These can be done with 99 Te labelled sulphur colloid scan, pertechnetate labelled autologous RBC scan and 111 Iridium labelled RBS scan. Radionuclide scans are performed before angiography because the scan detects bleeding at a slower rate than angiography. (7) This investigation suffers from low specificity of 50% when compared with colonoscopy and angiography due to its limited resolution.

**Advantages:**

1. It is a non invasive test.
2. It has got very high sensitivity.
3. Bowel preparation is not mandatory to do this investigation.

**Disadvantages:**

1. It has got high false localisation rate of 3 to 59%.
2. Scan must be performed only during active bleeding.
3. Hepatic and splenic flexures are masked by liver and spleen respectively due to high activity in these areas.

**Angiography:**

First, superior mesenteric angiography is to be done. Use of Rete plase, a fibrinolytic agent is safe and effective as a provocative agent in angiography to allow localisation in patients with occult recurrent massive LGIB. (8)

**Advantages:**

1. Accurate localisation is possible.
2. No bowel preparation is required.
3. Therapeutic use of vasopressin infusion or embolisation is possible.

**Disadvantages:**

1. Low sensitivity of 30 to 45%
2. It can be performed only during active bleeding.
3. Complications like thrombosis, embolisation and renal failure can occur in 50% of cases. (9)

Other investigations like double contrast barium enema, enteroclysis, upper GI endoscopy and wireless capsule endoscopy for the visualisation of small bowel and push endoscopy may be useful in some cases.

## **IV. Management**

The management of a patient with LGIB consists of three components.

1. Resuscitation and initial screening.
2. Localisation of the bleeding site.
3. Therapeutic intervention to stop bleeding at the site.

**Resuscitation and Initial screening:**

Admission of the patient is mandatory. Establish a large bore IV access and resuscitation is started with saline administration. In massive bleeding with unstable haemodynamic state blood transfusion is essential.

**Localisation of the bleeding site:**

Early colonoscopy within 2hrs of initial presentation is helpful in localising the bleeding site. In some cases the other investigations are carried out to localise the bleeding site.

**Therapeutic intervention to stop the bleeding:**

Once the bleeding site is localised, intra arterial Vaso pressin infusion at a rate of 0.2 I.U/ minute is started. In about 95% of the patients, bleeding stops. (10) If the bleeding is not stopped or rebleeding occurs, surgery is contemplated.

If vasopressin infusion fails in controlling LGIB, therapeutic embolisation is tried by using gelatine sponge, coil springs, poly vinyl alcohol, or oxidised cellulose. (11) (12) (13) (14)

In diverticular bleeding cases, endoscopic control using bipolar thermo coagulation or local epinephrine injection or multiple metallic clips application may be attempted. If recurrent bleeding occurs, resection of the affected bowel segment is done. In angiodysplasia cases, vasopressin arterial infusion may be tried. If the site bleeding is localised, electro coagulation or thermo coagulation or argon plasma coagulation may be used. If bleeding is not controlled, super selective arterial embolisation or surgical intervention is indicated.

### **Prognosis**

LGIB has got significant morbidity and mortality. The patients with advanced age and associated co- morbid medical conditions are at greater risk.

## **V. Conclusion**

Though LGIB is less common than UGIB, it is a frequent cause of hospital admission and causes considerable hospital morbidity and mortality. In the last six decades, diagnostic methods for localising the precise bleeding site are greatly improved. Non surgical therapeutic modalities in the form of therapeutic embolisation, thermo coagulation, electro coagulation and other methods have come into the armamentarium of the physician in the recent past.

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