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Original Article
Lower Gastrointestinal Bleed
Pak Armed Forces Med J 2021; 71 (1): 215-20

ENDOSCOPIC FINDING IN PATIENTS PRESENTING WITH LOWER GASTROINTESTINAL BLEED - A STUDY FROM A DEVELOPING COUNTRY

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ABSTRACT

Objective: To find the frequency of different diseases causing lower gastrointestinal bleed, its significance in relation to age, gender and socioeconomic status and to compare the results with national and international studies.

Study Design: Prospective cross sectional study.

Place and Duration of Study: Combined Military Hospital Rawalpindi and Pak Emirates Military Hospital Rawalpindi, from Jan to Dec 2017.

Methodology: Patients with age >12 years presenting with lower gastrointestinal bleed in the form of hematochezia, malena or occult blood loss were offered colonoscopy. The findings were noted and their significance in relation to age, gender and socioeconomic status calculated.

Results: The most common finding was inflammatory bowel disease (31%), followed by hemorrhoids (13.7%), colorectal malignancy (11% of which 52% were rectal), solitary rectal ulcer (8.6%), miscellaneous causes (6.5%), polyps (5.5%) and diverticular disease (3.6%) with male to female ratios of 2.5:1, 3:1, 3.4:1, 1:1, 2.4:1, 4.8:1 and 2.2:1 respectively. The youngest age group corresponded to solitary rectal ulcer and inflammatory bowel disease, whereas colorectal malignancy and diverticular disease was seen in the elderly. A low to middle socioeconomic status corresponded to colorectal malignancy and inflammatory bowel disease, whereas a middle to higher status was found in case of polyps and diverticular disease.

Conclusion: Inflammatory bowel disease, hemorrhoids, colorectal malignancy, solitary rectal ulcer, polyps, diverticular disease and vascular ectasias are on the rise in our country.

Keywords: Colonoscopy, Developing country, IBD, Lower gastrointestinal bleed, Socioeconomic status.

INTRODUCTION

Lower gastrointestinal bleed is defined as the passage of bright red colored blood, maroon colored stools or occult loss of blood intermittently or continuously distal to ileocecal valve[1], a modification to a previous definition. Lower gastrointestinal (GI) bleed is seen in 20-30% of all patients presenting with a GI bleed, the annual incidence of which is reported to be 0.03%, with an increase of 200 fold from second to eight decades of life[2]. The hospitalization rate for lower GI bleed in United States is 35.7 per 100,000 adults annually[3], whereas it was reported to be as high as 87 per 100,000 adults annually in Europe[4].

Compared to acute upper gastrointestinal bleed, patients with lower GI bleed are hemodynamically stable with a higher hemoglobin level and seldom need blood products tranfusion[5]. The mortality rate for these patients range from 2-4% and is usually secondary to co-morbidities and hospital acquired infections[6].

There is a considerable difference among etiologies of lower GI bleed from region to region, depicting a complex interaction of socioeconomic, racial, dietary, sanitation and healthcare availability. For Western population, diverticular disease has been the commonest cause of lower GI bleed, accounting to 20-65% of all cases[7], followed by ischemic colitis (1-19%)[8], angioectasias, hemorrhoids, colorectal cancer, post-polypectomy bleed, NSAIDs, solitary rectal ulcer, radiation proctitis and inflammatory bowel disease in the descending order[9]. Previous studies from Asian

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Received: 07 Jan 2019; revised received: 15 Jan 2019; accepted: 22 Jan 2019

countries showed a higher incidence of inflammatory bowel disease, hemorrhoids and rectal malignancy with diverticular disease, ischemic colitis and vascular ectasias scoring low percentages[10].

There are many studies from Pakistan highlighting the current trends in causes of lower GI bleed but none of these have taken in to account the socioeconomic stratification of the masses and its possible impact on the etiology of lower GI bleed. This study segregates the study population on the basis of age, gender, socioeconomic status and the significance of their impact on the outcome of colonoscopic findings in lower GI bleed.

METHODOLOGY

This prospective cross sectional study was carried out from January 2017 to December 2017 at Gastroenterology Departments of Combined Military Hospital Rawalpindi and Pak Emirates Military Hospital Rawalpindi. Patients of age ≥12 years presenting with passage of bright red colored blood per rectum or maroon colored stools, melena with no upper gastrointestinal source found through endoscopic studies and iron deficiency anemia with no apparent cause (normal upper gastrointestinal endoscopy, no history of nutritional deficiency with or without fecal occult blood test positive) were enrolled in the study through non-probability convenience sampling with a standard error 0.02 of and a relative standard error of 4.37 for a confidence interval of 95% using National Statistical Services Calculator. Patients in shock, previous history of gastrointestinal carcinoma or surgery, those with a known upper or lower gastrointestinal cause of bleeding, patients with coagulopathy, acute infectious diarrhea with bleeding per rectum, suspected peritonitis, age <11 years and those not willing for the procedure were excluded.

In those cases where the first endoscopic procedure didn't reveal the source of bleeding or was incomplete or abandoned and subsequent endoscopies were required, the endoscopic study with definite source of bleed was considered index examination.

All the enrolled patients whether presenting in out patient departments (OPD) or admitted with lower gastrointestinal bleed were interviewed by a trainee gastroenterologist, after appropriate resuscitation, for a detailed history includeing gender, age, previous co-morbids, drugs and surgical history, family or personal history of malignancy, previous endoscopic studies and hospital admissions, followed by colonoscopy with full preparation according to ASGE guidelines[11]. Socioeconomic status of the individuals was broken in to three levels i.e; low, middle and high according to the income (low, middle, high) and education level (0-9, 10-11, ≥12 years)[12].

Quantitative data was presented as frequencies and percentages, whereas descriptive statistics were used to calculate mean ± SD of the continuous data. Chi square statistics were used to compare qualitative data whereas one way ANOVA was used to compare quantitative data of multiple groups. A *p*-value of ≤0.05 was considered significant. Data was analyzed using SPSS version[19].

RESULTS

A total of 524 patients participated in the study of which 72.5% were males and 27.5% females with mean ages of 45.6 ± 19.6 and 44.2 ± 20 respectively. The most common presenting complaint was hematochezia (86.4%), followed by anemia (11%), with normal upper gastrointestinal endoscopy and with or without fecal occult blood test positive and melena (2.5%) with normal upper gastrointestinal endoscopy. Associated signs and symptoms presented in only 25.6% of the subjects with the commonest being altered bowel habit (51%), anemia (26%), weight loss (17%), fever (6%) and pain abdomen (6%) (table-I).

The commonest endoscopic finding in patients presenting with lower gastrointestinal bleed was inflammatory bowel disease (IBD) accounting to 31% of the total subjects with a male to female ratio of 2.5:1. Ulcerative colitis corresponded to 97.5% of all the IBD cases with only four cases of Crohn's disease (table-II). Negative endoscopies were recorded in 20% of the cases with a

male to female ratio of 3.4:1. Only 4% of the cases were found to have the source of lower gastrointestinal bleed in small intestine. Hemorrhoids as a source of lower gastrointestinal bleed corresponded to 13.7% of all the cases with internal hemorrhoids being the commonest finding (93%) anda male to female ratio of 3:1.

Table-I: Demographics of patients with lower gastrointestinal bleed (n=524).

Variables	n (%)
Total males	380 (72.5)
Total females	144 (27.5)
Mean age ± SD (years)	45 ± 19.8
Mean age males ± SD (years)	45.6 ± 19.6
Mean age females ± SD (years)	44.2 ± 20
Socioeconomic Status	
Low	197 (37.6)
Middle	260 (49.6)
High	67 (12.8)
Presentation	
Hematochezia	453 (86.4)
Malena	13 (2.5)
Anemia	58 (11)
Associated Signs and Symptoms (n=134)	
Altered bowel habits	68 (51)
Anemia	26 (19.4)
Weight loss	17 (12.7)
Fever	8 (6)
Pain abdomen	8 (6)
Tenesmus	4 (3)
Family history of colon malignancy	3 (2.2)

Colorectal malignancy was found in 11% of all the cases with a male to female ratio of 3.4:1. Rectal malignancy (73.7%) was the commonest of all the colonic malignancies according to site, followed by sigmoid and ascending colon, descending colon, rectosigmoid, transverse colon and cecum respectively (table-II). Solitary rectal ulcer was found in 8.6% of the subjects with an equal male to female distribution. Adenomatous polyps with no dysplasia were found in 5.5% of the patients with rectal predominance and a male to female ratio of 4.8:1. Diverticular disease was seen in 3.6% of all the subjects with a male to female ratio of 2.2:1. The findings like ischemic colitis, non-specific colitis, vascular ectasias and post-polypectomy bleed were find only in minority of the patients (table-IV).

The youngest age group corresponded to the SRU group with a mean age of <30 years, followed by the IBD group (≤40 years) (table-III). Diverticular disease and colorectal malignancy were reported in older age groups (≥70 years and ≥55

Table-II: Frequency of endoscopy findings in patients with lower gastrointestinal bleed (n=524).

Endoscopic Findings	n (%)
Inflammatory bowel disease	162 (31)
Ulcerative proctitis	16 (9.9)
Ulcerative proctosigmoiditis	28 (17.3)
Distal colitis	32 (19.8)
Extensive colitis	24 (14.8)
Pancolitis	56 (34.6)
Pancolitis with backwash ileitis	2 (1.2)
Crohn's disease	4 (2.5)
Normal	106 (20)
Hemorrhoids	72 (13.7)
Internal	67 (93)
External	3 (4.2)
Both	3 (4.2)
Malignancy	57 (11)
Rectal	42 (73.7)
Rectosigmoid	2 (3.5)
Sigmoid	4 (7)
Descending colon	3 (5.3)
Transverse colon	1 (1.8)
Ascending colon	4 (7)
Cecal	1 (1.8)
SRU	45 (8.6)
Polyp	29 (5.5)
Rectal	15 (51.7)
Sigmoid	3 (10.3)
Descending colon	6 (20.7)
Transverse colon	3 (10.3)
Ascending colon	1 (3.4)
Multiple	1 (3.4)
Diverticular disease	19 (3.6)
Miscellaneous	34 (6.5)
Non-specific colitis	11 (32.4)
Vascular ectasias	8 (23.5)
Radiation proctitis	3 (8.8)
Pseudomembranous colitis	2 (5.9)
Ischemic colitis	2 (5.9)
FAP	2 (5.9)
Post-polypectomy	2 (5.9)
Dielufoy lesion	1 (2.9)
Blue rubber bleb nevus	1 (2.9)
TB stricture	1 (2.9)
CMV colitis	1 (2.9)

SRU Solitary Rectal Ulcer, FAP Familial Adenomatous Polyposis, TB Tuberculous, CMV Cytomegalovirus .

years respectively).

The socioeconomic status of the test subjects was found to be statistically significant in relation to the endoscopic findings (table-III). About 50% of the cases belonged to middle class, 38% to low class and only 11% to high class (table-I). IBD, SRU, polyp, hemorrhoids and miscellaneous groups had predominantly middle class distribution, whereas negative endoscopies and colorectal malignancies were common in low socioeconomic class. Diverticular disease was seen in higher socioeconomic class as evident by many other similar studies.

Table-III: Relation of endoscopic findings in lower gastrointestinal bleed with age and socioeconomic status.

Variable	IBD (n=162)	Normal (n=106)	Hemorr-hoids (n=72)	Malig-nancy (n=57)	SRU (n=45)	Polyp (n=29)	Diverticular Disease (n=19)	Misc (n=34)	*p*-value
Socioeconomic Status, n (%)									
High	15 (9.3)	10 (9.4)	6 (8.3)	7 (12.3)	3 (6.7)	10 (34.5)	13 (68.4)	3 (8.8)	
Middle	80 (49.4)	46 (43.4)	38 (52.8)	20 (35.1)	36 (80)	15 (51.7)	5 (26.3)	20 (59)	<0.001
Low	67 (41.4)	50 (47.2)	28 (38.9)	30 (52.6)	6 (13.3)	4 (13.8)	1 (5.3)	11 (32.2)	
Mean Age									
(Years ± SD)	37.96 ± 14.9	48.93 ± 19.6	57.12 ± 17.3	26.53 ± 15.7	51.24 ± 17.8	49.66 ± 20.6	45.82 ± 20.6	71.63 ± 12.34	<0.001

IBD inflammatory Bowel Disease, SRU Solitary Rectal Ulcer, Misc miscellaneous, p is considered significant if ≤ 0.05

Table-IV: Relation of endoscopic findings in lower gastrointestinal bleed with gender distribution.

Endoscopic Findings	Gender		*p*-value
	Male	Female	
Inflammatory Bowel Disease (n=162)	116 (71.6)	46 (28.4)	0.047
Normal (n=106)	82 (77.4)	24 (22.6)	
Hemorrhoids (n=72)	54 (75)	18 (25)	
Malignancy (n=57)	44 (77.2)	13 (22.8)	
SRU (n=45)	23 (51)	22 (49)	
Polyp (n=29)	24 (83)	5 (17)	
Diverticular Disease (n=19)	13 (68.4)	6 (31.6)	
Miscellaneous (n=34)	24 (70.6)	10 (29.4)	

SRU Solitary Rectal Ulcer, FAP Familial Adenomatous Polyposis, TB Tuberculous, CMV Cytomegalovirus p is considered significant if ≤0.05

DISCUSSION

This study was used to segregate the cases presenting with lower gastrointestinal bleed according to etiology, age, gender and socioeconomic status and their significance in relation to one another.

Male population was in abundance in accordance to similar studies from Asia[13-15] and Western countries16probably because of social and economic constraints for female patients to attend health care facilities in this region. Solitary rectal ulcer was found to be equally prevalent between the two genders whereas vascular ectasia was predominantly seen in female population in accordance to a multicenter study on the presentation and management of angiodysplasia[17].

Inflammatory bowel disease was the most commonly encountered endoscopic finding in this study with Ulcerative Colitis predominating Crohn's Disease in accordance to many Asian studies[14] but in contrast to a study from Pakistan[13] and many Western studies[18,19]. The incidence of IBD has been stable for Western population but has been on the rise for the developing countries[20]. IBD is considered a disease of the elderly in the West[21] but our study showed that the mean age for both males and females was ≤40 years which is in accordance to a similar study from Pakistan[13]. This reflects a possible changing etiological pattern of IBD in our region.

Negative colonoscopies with no source of bleed in the lower gastrointestinal tract were encountered in 20% of the cases which was higher than similar studies from the West[19,22] but lower than studies carried out in Pakistan[13] and Nigeria[15].

Hemorrhoids, predominantly internal, were the third most common finding with a higher male population in our study in contrast to similar studies from Paksitan[13], African population[15] and a few Western studies[19,22] that showed a relatively higher incidence and an equal gender distribution but in accordance to other studies[23]. In America, 50% of population is affected by hemorrhoids some time during their lives and the precise incidence is difficult to calculate due to reluctance of seeking medical or surgical help for this relatively benign condition[24]. Hemorrhoids tend to occur in socioeconomically stable population and ages ≥45 years[24], which is in accordance to our study.

Colorectal malignancy as the primary source of lower gastrointestinal bleed accounted for 11% of the total cases studied that was in accordance to two similar studies[19,25], the incidence higher than other studies[13,14,22] and lower than a multicenter Western study[25]. Rectal malignancy was the commonest of all the colorectal malignancies seen and corresponded to elderly male population with a relatively low socioeconomic status, also seen in similar studies[13,14].

Solitary rectal ulcer with an equal male to female ratio and affecting the youngest of the study population was found in 8.6% of the cases, higher than similar studies from Pakistan[13,14] but in accordance to an international study[19]. Polyps were seen in 5.5% of the cases with rectal polyps being the commonest and predominant population being that of males, the incidence of which was much lower than a national studybut higher than a similar internationally study[22].

Diverticular disease was predominantly seen in populations with high socioeconomic status that possibly reflects westernization of lifestyles and low fiber intake. The incidence is considerably low as compared to Western data, showing a prevalence of 30-65% of all patients with lower gastrointestinal bleed[25]. Rare causes of bleeding per rectum or occult blood loss including nonspecific colitis, angiodysplasia and post polypectomy bleed were seen only in 6.5% of the patients with ages ranging from 50-82 years, the incidence of which is higher in Western population[25].

There has been a rise in the incidence of colorectal malignancies, colonic polyps, solitary rectal ulcer and vascular ectasias as compared to studies from Pakistan a decade ago[14], possibly because of better adenoma detection rates, easy availability of endoscopic studies, low threshold for colonoscopy and a higher level of acceptance in the general population.

The factors such as convenience sampling, lack of a multicenter study, non-incorporation of the etiology of bleed in case colonoscopic study was negative and the outcomeare some of the lacunae that needs to be rectified for future studies.

CONCLUSION

Colonoscopy is the preferred diagnostic technique for most of the patients with lower gastrointestinal bleed and literature shows that an early procedure helps with prompt diagnosis, potential reduction of early re-bleed and a low mortality plus hospital stay. Inflammatory bowel disease with Ulcerative Colitis was the commonest cause of lower gastrointestinal bleed in our study, followed by negative endoscopy, hemorrhoids, colorectal malignancy, solitary rectal ulcer, miscellaneous causes, polyps and diverticular disease. The incidence of polyps, diverticular disease, vascular ectasias, colorectal malignancy and solitary rectal ulcer is on the rise. Inflammatory bowel disease is seen in younger population than expected and diverticular disease in much elderly. The socioeconomic status does correspond to the possible etiological factors of lower GI bleed.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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