



## Original Article

# Upper and Lower Gastrointestinal Bleeding: A Retrospective Study on 10 Years Experiences in Southeastern Iran

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## Abstract

**Background:** Gastrointestinal bleeding (GIB) is an emergency medical situation that is very common, although often benign but can cause considerable morbidity and mortality and health care costs. The aim of this study was to analyze the endoscopic evaluation of upper GIB (UGIB) and lower GIB (LGIB) in Sistan and Balouchestan, southeast Iran.

**Methods:** Data from patients with GIB in a referral university-affiliated hospital in Zahedan, Southeastern Iran during a 10-year period, were obtained. A total of 21 884 reports of adult patients' endoscopy and colonoscopy from 2011 to 2020 who were admitted to Ali-Ibn-Abitaleeb hospital were studied of which 5862 reports were related to GIB. Incomplete files were excluded. Information on age, sex, and endoscopic diagnosis of the 5053 reports was analyzed and compared using chi-square statistical test.

**Results:** There were 3310 men (65.6%) and 1743 women (34.4%) with a mean ( $\pm$ SD) of age 48.4 ( $\pm$ 19.83) years. 3079 patients had UGIB (60.8%) and 1974 patients had LGIB (39.2%). Peptic ulcer (72.8% duodenal ulcer and 27.2% gastric ulcer) was seen as the main reason for UGIB (29.7%) and hemorrhoids were the main reason for LGIB (44.2%). Mallory-Weiss syndrome was significantly common in the age <40 years old, and the incidence rate of malignancy was significantly higher in those aged >40 years old than in the younger age group ( $P < 0.001$ ).

**Conclusion:** Peptic ulcer was the most common etiological factor and it was more common in men than in women. Gastroesophageal varices were the second most common cause of UGIB. Hemorrhoids and anal fissures were observed as the most common colonoscopic findings of LGIB. The prevalences of UGIB and LGIB are more common in men than women and increase with age. It is important for physicians to constantly update their information about the spectrum of diseases in their region and their changing over time to provide accurate diagnosis and management timely.

**Keywords:** Gastrointestinal bleeding, Peptic ulcer disease, Hemorrhoids, Endoscopy, Colonoscopy, Iran

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## Introduction

Gastrointestinal bleeding (GIB) is one of the serious medical conditions in gastroenterology practice worldwide with considerable mortality of about 5%-15%.<sup>1</sup> GIB can be occurred by several pathologies and they differ in onset, site, clinical features, and prognosis. Upper GIB (UGIB) is defined as blood loss that originates proximal to the Treitz ligament (esophagus, stomach, or duodenum), and lower GIB (LGIB) occurs distal to the ligament of Treitz. UGIB is four times as common as LGIB. The most common etiology for UGIB include gastric ulcers, duodenal ulcers, variceal bleedings, Mallory-Weiss tears, and GI malignancies.<sup>2</sup> The commonest causes of LGIB, in addition to hemorrhoids and anal fissures, include diverticula, angiodysplasia, malignancy, and inflammatory bowel disease.<sup>3</sup> UGIB in most cases is managed by conservative methods and endoscope.<sup>4</sup> LGIB is less severe than UGIB and it is often a self-limiting condition, although about one-third of patients with LGIB are treated using endoscopy.<sup>5</sup>

Although GIB can be due to numerous benign conditions, life-threatening blood loss due to ulceration, varices, and malignancies need to be investigated and carefully ruled out.<sup>6</sup> In recent decades, significant progress in the medical practice and therapeutic guidelines have been implemented in the prevention of GI ulcers due to *Helicobacter pylori* and non-steroidal anti-inflammatory drugs (NSAIDs) and these functions resulted in a decrease of UGIB complications, but not LGIB outcomes. However, evidence with different results has been published. The clinical history, physical examination, and laboratory tests are crucial to define the probable site of GIB and guide the appropriate definitive investigation and intervention. GIB probably makes a heavy burden on the health and well-being of our people. The economic consequences for the nation are enormous.<sup>7</sup> Although the burden of GIB is considerable, accessible information on the prevalence is sparse. Accurate information on the overall prevalence could serve several purposes. The data could help to shape the healthcare measures for GIB.



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And also, the data could be used to evaluate or modify priorities and resource allocations of hospitals that fund research or pay for health care services.<sup>8</sup>

Moreover, it is important for physicians to constantly update their information about the spectrum of diseases in their region and their changing over time to provide accurate diagnosis and management timely. In line with this important point and considering that to our best knowledge, only a few epidemiological studies have been performed with regards to determining GIB causes, the aim of this study was to analyze the endoscopic evaluation of UGIB and LGIB in our patients who had been referred to an academic referral center over 10 years in Zahedan, southeastern Iran.

### Materials and Methods

This retrospective study was conducted from March 2011 through February 2020 at Ali-Ibne- Abitaleb specialist & subspecialist teaching hospital, a tertiary care center in Zahedan, southeast Iran. The data was collected from the case file and electronic medical records. A total of 21884 reports of patients' (>14 years) endoscopy and colonoscopy who were admitted to the hospital were studied of which 5862 reports were related to GIB.

The collected information from the patients was anonymous. No patients were involved in developing the research process and informed consent forms were not required in this retrospective study. The study was approved by the Research Ethics Committee affiliated with Zahedan University of Medical Sciences. Trained research assistants investigated required documentation and information on age, sex, and endoscopic/colonoscopic diagnoses. In this study, the subjects were selected using the census sampling method. Inclusion criteria were age 14 years or older, complete report of endoscopic/colonoscopic procedures, and accurate diagnosis. If a patient had two or more endoscopies in one month and bleeding was due to recurrence of initial bleeding, only one record was included and other reports were excluded. Endoscopic/colonoscopic reports that identified a patient as a UGIB or LGIB case but no confirmed etiology were classified as "No Definitive Diagnosis". In some reports such as Mallory-Weiss syndrome, the endoscopy was normal, and the diagnosis was confirmed by patient's history. Also, in cases such as Dieulafoy's lesion, if the lesion had been observed by an endoscopist, this condition was considered as a diagnosis and if not, the cause of bleeding was classified as "No Definitive Diagnosis". In colonoscopies, if any source of bleeding was identified and blood was observed at the terminal ileum, the small intestine was considered a source of bleeding. It is important to note that because of anemia and the absence of CO<sub>2</sub> for inflation during endoscopy in our hospital, some vascular telangiectasia may be missed at endoscopy time and these cases in our report were included as "No Definitive Diagnosis". Both endoscopic and colonoscopic procedures were performed by a well-

trained gastroenterologist in our institute. Inclusion criteria in most files were observed. Finally, from 5862 records, 5073 were eligible for the study and 789 reports were excluded because of incomplete information or were related to patients under the age of 14 years.

Data were collected using checklists and analyzed through SPSS software version 18 and Microsoft Excel. Descriptive data were reported as percentages, means, and standard deviations. T-test was used for the comparison of continuous variables, and the detailed clinical diagnosis of UGIB and LGIB in the subgroups (age and sex) were assessed using chi-square test.  $P < 0.05$  was considered statistically significant.

### Results

The analyses include the data records of a total of 5053 patients who were diagnosed with UGIB and LGIB and whose data records were complete and treated in the observation period of 2011–2020. They included 3310 (65.5%) male and 1743 (34.4%) female patients. The mean ( $\pm$ SD) age of patients was 48.4 ( $\pm$ 19.83) years. There was no significant difference in the mean age of men and women ( $P=0.77$ ). Of the total patients with GIB 3035 (60.06%) were 40 years old and over, and 2018 (39.94%) were aged below 40 years. There were no significant differences in the distribution of sex by age groups ( $P=0.3$ ).

In this study, 3079 patients with UGIB (60.8%) were more common than 1974 patients with LGIB (39.2%). Chi-square analysis showed there was a significant relationship between the two age groups (<40, >40) and the UGIB and LGIB ( $P < 0.001$ ). Peptic ulcer (72.8% duodenal ulcer and 27.2% gastric ulcer) was seen as the main reason for UGIB (29.7%) and hemorrhoids were the main reason for LGIB (44.2%). Mallory-Weiss syndrome was significantly common in the age <40 years old, and the incidence rate of malignancy was significantly higher in those aged >40 years than in the younger age group ( $P < 0.001$ ).

Table 1 shows the frequency distribution of UGIB, and Table 2 presents the frequency distribution of LGIB in patients based on age and gender subgroups.

### Discussion

GIB is one of the most life-threatening events in medicine. To the best of our knowledge, this is the first study to investigate the data on the endoscopic evaluation of GIB from southeast Iran, which also has a long period of time (10 years). The large sample size and the geographic setting of our hospital ensure the generalization of the results.

The present study was conducted in Zahedan, the center of Sistan, and Balouchestan province. Our hospital is a teaching referral center and the only which receives all the referred cases from the entire province of Sistan and Balouchestan. Our findings showed the main etiologies of UGIB were peptic ulcer and gastroesophageal varices with

**Table 1.** Frequency distribution of upper gastrointestinal bleeding in patients based on age and gender subgroups (n=3079)

Frequency, No. (%)	Total	Age		P value	Gender		P value
		<40 years	>40 years		Male	Female	
Peptic ulcer	915 (29.7)	326 (35.6)	589 (64.4)		690 (75.4)	225 (24.6)	
Gastroesophageal varices	644 (21)	234 (36.3)	410 (63.7)		478 (74.2)	166 (25.8)	
Mallory–Weiss syndrome	320 (10.4)	187 (58.4)	133 (41.6)		197 (61.6)	123 (33.4)	
Erosive gastritis/duodenitis	286 (9.3)	98 (34.6)	188 (65.4)		154 (53.8)	132 (46.2)	
Prolapse gastropathy	284 (9.2)	122 (42.9)	162 (57.1)		169 (59.5)	115 (40.5)	
GAVE (Watermelon Stomach)	151 (5)	50 (33.3)	101 (66.7)		138 (91.4)	13 (8.6)	
Malignancy	144 (4.7)	12 (8.3)	132 (91.7)	<0.001*	110 (76.8)	34 (23.2)	<0.001*
Esophagitis	135 (4.4)	53 (39.4)	82 (60.6)		102 (76.1)	33 (23.9)	
Vascular ectasia	33 (1)	8 (24.2)	25 (75.8)		21 (63.6)	12 (36.4)	
Dieulafoy's lesion	28 (0.9)	14 (50)	14 (50)		17 (60.8)	11 (39.2)	
Other problem*	101 (3.2)	37 (36.6)	64 (63.4)		66 (65.3)	35 (34.7)	
No definitive diagnosis	38 (1.2)	14 (36.8)	24 (63.2)		20 (52.6)	18 (47.4)	

Abbreviations: GAVE, gastric antral vascular ectasia.

\* Aortic–duodenal fistula, Cameroon ulcer, Submucosal mass including gastrointestinal stromal tumors (GIST), hemophilia, hemosuccus pancreaticus, marginal ulcer, post-ERCP (endoscopic retrograde cholangiopancreatography).

**Table 2.** Frequency distribution of lower gastrointestinal bleeding in patients based on age and sex subgroups (n=1974)

Frequency, No. (%)	Total	Age		P value	Gender		P value
		<40	>40		Male	Female	
Hemorrhoids	881 (44.2)	356 (40.5)	525 (59.5)		501 (56.9)	380 (94.1)	
Fissure	246 (12.3)	160 (65)	86 (35)		148 (60)	98 (40)	
Malignancy	190 (9.5)	38 (20)	152 (80)		67 (35.3)	123 (64.7)	
Polyp	145 (7.3)	61 (42.6)	84 (57.4)		120 (83.3)	25 (16.7)	
IBD	141 (7)	75 (53.8)	66 (46.2)		102 (73)	39 (27)	
Solitary rectal ulcer	137 (6.9)	104 (76.5)	33 (23.5)		104 (76.5)	33 (23.5)	
Probable small intestine	67 (3.3)	25 (37.3)	42 (62.7)	<0.001*	31 (46)	36 (54)	<0.001*
Telangiectasia	44 (2.2)	10 (22.8)	34 (77.2)		20 (45.5)	24 (54.5)	
Non-specific ulcer	36 (1.8)	16 (46.1)	20 (53.9)		54 (76.9)	18 (23.1)	
Diverticulosis	8 (0.4)	0	8 (100)		0	8 (100)	
Post-polypectomy	8 (0.4)	8 (100)	0		0	8 (100)	
No Definitive Diagnosis	51 (2.6)	8 (15.8)	43 (84.2)		34 (68.4)	17 (31.6)	
*Other problem	20 (1)	2 (10)	18 (90)		3 (15)	17 (85)	

Abbreviation: IBD, Inflammatory bowel disease.

\* Ischemic colitis, Infectious colitis, Pseudomembranous colitis.

29.7% and 20.7 %, respectively. Moreover, Mallory-Weiss syndrome and prolapse gastropathy were the following causes. In addition, we also found hemorrhoids, fissures, and polyps were the most findings in LGIB. The current study is consistent with previous reports showing that the incidence is more common in males than females and increases with age.<sup>9</sup>

Based on the epidemiological studies of UGIB in Iran, peptic ulcer is the commonest endoscopic diagnosis,<sup>10</sup> and that was in accordance with our findings. In a study done by Minakari and colleagues on a large sample in the central region of Iran, it was reported that peptic ulcer (duodenal ulcer in most cases) was observed as the main cause for UGIB (42.4%).<sup>11</sup> Also, another study from Tehran, Iran by Sharifian et al in 2016<sup>12</sup> showed that out of all the 990 patients with UGIB, the most common reason

for UGIB was peptic ulcer (52.2%) and then followed by esophageal and gastric varices (19.5%). Of note, the results of the present research are lower in comparison with the reported rate of peptic ulcers in above mentioned studies (29.7%). The rate of peptic ulcer disease declined in more recent studies.<sup>13,14</sup> This might result from decreasing trend in the *H. pylori* infection rate.<sup>15</sup> Considering other less frequent causes of UGIB, our results were in accordance with the previous studies reported from Iran.<sup>11,12</sup> It should be noted that variceal bleeding rate is declining due to more effective treatments for hepatitis and cirrhosis and also for patients with portal hypertension.<sup>16</sup> In contrast, in a recent study from India in 2017, portal hypertension-related varices were found to be the most common cause of UGIB (53.62%).<sup>9</sup>

According to recent epidemiological studies, the

UGIB is decreasing whereas LGIB is increasing.<sup>1</sup> The findings of our study stand in accordance with the medical literature and the incidence rate of LGIB has been reported to be lower than UGIB. Our findings showed hemorrhoids (44.2%) seem to be the most common cause, and fissures (12.3%) are the second-most common cause of LGIB. A study by Khodadoostan and colleagues<sup>17</sup> in Iran was conducted to evaluate full colonoscopy and sigmoidoscopy in patients with LGIB and reported hemorrhoids (60%) and diverticula (12%) were common causes of LGIB in their sample. Another study in Iran by Askarpour et al found the most cause of LGIB was polyp in young patients and colorectal cancer and diverticulitis as the most common causes in elderly patients.<sup>18</sup> In line with our result, Hajare and colleagues from India reported hemorrhoids (48%) to be the most common colonoscopic findings of LGIB.<sup>19</sup> In contrast, a western prospective population-based study reported the most common causes of LGIB were diverticulosis (23.3%) and ischemic colitis (16%).<sup>20</sup> Ghassemi and Jensen reviewed the assessment and management of severe LGIB and reported LGIB cases requiring hospitalization were diverticulosis (30%), hemorrhoid (14%), and ischemic colitis (12%).<sup>21</sup>

Our study had a large sample size that was representative of the general population in our province and this can be regarded as one of the strengths of the present research. Our study is limited by its retrospective examination, and incomplete recorded data in patients' files on *H. pylori* status and pathology reports for evaluation of its association with the study variables.

### Conclusion

This study analyzed the epidemiological data of UGIB and LGIB in a large representative sample of the general population in Zahedan. Peptic ulcer was the most common etiological factor and it was more common in men than in women. Gastroesophageal varices are the second-most common cause of UGIB. Hemorrhoids and fissures were observed to be the most common colonoscopic findings of LGIB. The incidences of UGIB and LGIB are more common in men than in women and increase with age. It is important for physicians to constantly update their information about the spectrum of diseases in their region and their changing over time to provide accurate diagnoses and management timely.

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### Competing Interests

The authors declare no conflict of interest related to this work.

### Ethical Approval

The present study was completed in accordance with the Declaration of Helsinki and the Ethical Guidelines for Medical and Health Research established by the Ministry of Health and Medical Education and the Ministry of Science, Research and Technology,

Iran. We obtained approval from the Ethics Review Committee of Zahedan University of Medical Sciences, Iran (Registration No.IR.ZAUMS.REC.1393.1451).

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