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Clinical and etiological profile of patients with upper gastrointestinal bleeding admitted in a tertiary hospital at present scenario

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Abstract:
Conflict of interest: The authors declare that they have no conflicts of interest. **Background:** Upper gastrointestinal bleeding (UGIB) is a common gastrointestinal (GI) emergency, and mortality rates have been reported to represent a serious and life-threatening condition despite advances in diagnosis and treatment. **Aim:** the present study aimed to determine the clinical and etiological profiles of patients with UGIB. **Materials & methods:** Department of General Medicine, VIMSAR, Burla,November 2019–October 2021. This is a cross-sectional study. Patients presenting with upper GI bleeding (hematemesis, melena, or both). After obtaining ethical committee approval and written informed consent from patients or their caretakers, we included patients with upper GI bleeding. **Results:** Of the enrolled population, more than half were male. The mean age of the patients was 42.5 ± 15.29 years. The majority of the participants were from rural area. More than half of the enrolled study population were alcoholic, 13.1% were smokers and 13 % being both smokers and alcoholics. NSAIDS was associated with 12% of cases and was associated with isolated UGI lesions. Erosive gastritis and antral gastritis being the most common. The most common cause of upper GI bleed was isolated GI lesion (peptic ulcer disease) with antral ulcer being the most common cause. The second most cause was that of cirrhosis of liver with oesophageal varices being the most common contributor. CKD with features of UGI bleed had uremic gastritis with most having antral gastritis and erosive gastritis. Infection with sepsis and acute liver failure also contributes to upper GI bleed with high mortality rates. Other less common causes of upper GI bleeding are GI malignancies, hematological conditions, and pancreatitis. Melena was the most common presentation and hematemesis being the second most common presentation with more than 2/3rd patients presenting with combined melena and hematemesis. **Conclusion:** The emergency of UGI endoscopy to diagnose and cure UGIB necessitates prompt treatment. Unfortunately, many parts of our country and state lack this technology, causing enormous sickness and death. Thus, this issue must be resolved to enhance UGIB patients outcomes.

Key words: Upper gastrointestinal bleeding; Common gastrointestinal emergency; Hematemesis; Hematochezia; Occult bleeding; Obscure bleeding.

INTRODUCTION:

Upper gastrointestinal bleeding (UGIB) is a common gastrointestinal (GI) emergency, and mortality rates of 5–11% have been reported to represent a serious and life-threatening entity, despite advances in diagnosis and treatment. The epidemiology of UGIB varies among populations, and there is a paucity of data on UGIB, and the factors associated with morbidity and mortality in India. The extensive clinical spectrum of gastrointestinal bleeding may encompass many different scenarios. The reason for this diversity is that bleeding can occur from multiple lesions and at many sites in the gastrointestinal tract. Gastrointestinal bleeding is a common clinical problem that requires more than 300,000 hospitalizations per year. Upper Gastrointestinal bleeding, which most commonly arises from erosive mucosal diseases, accounts for up to 20,000 deaths annually. The overall incidence of acute upper gastrointestinal hemorrhage is estimated to be 50-100 per 1,00,000 persons per year, with an annual hospitalization rate of approximately 100 per 1,00,000 hospital admissions. Bleeding from the upper gastrointestinal tract is approximately five times more common than that from the lower gastrointestinal tract. Bleeding can be massive, trivial, obvious, or hidden.

Gastrointestinal bleeding occurs clinically in one or more of the following four ways: hematemesis (from the upper GIT), hematochezia (from the lower GIT), occult (unknown to the patient), and obscure (from an unknown site in the GIT). The most important step in the management of gastrointestinal bleeding is to determine the source of bleeding, stop active bleeding, treat underlying abnormalities, and prevent recurrent bleeding. Historically, the most common cause of upper GI bleeding has been gastroduodenal ulcer disease, although other UGIB tract mucosal lesions account for a

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substantial proportion of cases. Therefore, the present study aimed to determine the clinical and etiological profiles of patients with UGIB.

MATERIAL & METHODS:

Department of General Medicine, VIMSAR, Burla, November 2019–October 2021. This is a cross-sectional study. Patients presenting with upper GI bleeding (hematemesis, melena, or both). After obtaining ethical committee approval and written informed consent from patients or their caretakers, we included patients with upper GI bleeding. Upper GI bleeding was confirmed on the basis of history and stool occult blood. The authors of this study included 212 participants. This will be adequate to capture all etiologies (diagnosed at UGI endoscopy) that contribute to at least 27% of all UGI bleeds. [3] with a precision of ± 5% at a 95% confidence level, correcting for a finite population size of 700 using the following formula: consecutive sampling was then performed. Demographic variables: age (in years), sex (male/female/third gender), and residence (urban/rural).

Anthropometric variables: Height (in mts), weight (in kg), and BMI (kg/m^2). Clinical variables: temperature (^{0}f), blood pressure (mmHg), respiratory rate (beats per minute), pulse rate (beats per minute), and oxygen saturation (%, in room air, with $o_{2)}$.

Laboratory variables: complete blood counts; liver function tests; renal function tests; FBS, PPBS, HbA1c, RBS, HIV, HBSAG, HCV, dengue, urease test (of gas collected during endoscopy if present to r/o Pylori); PT (in seconds)/INR, bleeding time (BT) clotting time (CT) in minutes; and USG of abdomen and pelvis findings (s/s/o cirrhosis of liver, s/s/o any malignancies, s/s/o any chronic kidney disease). UGI endoscopy findings (s/s/o erythematous changes, ulcers, erosions, mass, and bleeding points). The inclusion criterion was patients (>14 years of age) with a history of upper GI bleeding. (Presenting with hematemesis, melena, or both). The exclusion criteria were orodental abnormalities, recent myocardial infarction on clopidogrel, aspirin, congestive cardiac failure (with pulmonary edema), suspected hollow viscus perforation, presenting with only melena or hematochezia, normal upper GI endoscopy, and previous surgical intervention for UGIB. Patients with known bleeding disorders and those receiving anticoagulants or antiplatelet agents. Patients will be subjected to UGI endoscopy after normalizing their vitals (if necessary) within 24/48 hours of admission.

Data collection method: Patients were enrolled in the study from outdoor and indoor wards of the Department of General Medicine. Informed consent was obtained from all the patients. Proper history taking and bedside examination: Bedhead tickets**.** Hematological and biochemical parameter estimations (10 cc venous sample to be drawn most from the antecubital vein or femoral vein, whichever is accessible) of the USG abdomen and pelvis**.** Findings of UGI endoscopy**.** Patient characteristics, such as age and sex, were also noted. A detailed history of UGI bleeding, such as the number of times of hematemesis, approximate quantity of blood vomited each time, associated with melena, or presenting with melena alone, was obtained. Symptoms of common diseases that can lead to UGI bleeding and a detailed history of drug intake, such as aspirin, other NSAIDs, and steroids, and symptoms due to blood loss were recorded in the questionnaire. Detailed history was obtained from the patients regarding the risk factors of UGI bleeding: known peptic ulcer disease (diagnosed by a physician or a gastroenterologist), alcoholism (those who regularly consume alcohol at least 100 ml/day regularly for >3 months), smoking (those patients who smoked one or more beedis or cigarettes per day regularly for >3 months), stress and serious systemic illnesses of the patients, and intake of drugs that may cause UGI bleeding when taken like NSAIDs, steroids, bisphosphonates, and chemotherapeutic agents. Routine general and systemic examination of the patients was carried out with the aim of assessing the general condition of the patient, confirming UGI bleeding by Ryle's tube aspiration, assessing the severity of blood loss, assessing the common causes of gastrointestinal bleeding such as cirrhosis of the liver with portal hypertension, and ruling out hematological disorders causing UGI bleeding.

Laboratory investigation: Renal and liver function tests were performed using the **ACCULAB AT 112+ (ACCUREX diagnostics**) semiautomated analyzer. Complete blood counts were performed with **ACCUREX CBC 360 plus** an automated analyzer with partial differentiation of WBC's. Serological tests: HIV- ARKRAY signals HIV Flow through HIV 1+2 spot/IMMUNODOT test kit; HBsAg- AVECON HBsAg rapid test kit; HCV- aspen HCV rapid test kit; HAV- RapiGEN BIOCREDIT HAV IgG/IgM rapid test kit; HEV- On-Site HEV IgM/IgG rapid test kit; MPICT-ABBOTT SD BIOLINE Malaria Ag P.F/PV test; SCRUB TYPHUS- ACCUDIAG ELISA S. Typhus IgM/IgG; DENGUE- Dengue test kit combo (NS1/IgM/IgG); PT/ INR were estimated using the photochemical clot detection method in the cogucense PT/INR testing device. A sphygmomanometer cuff was placed around the patient's arm, and the pressure was raised to 40 mmHg and kept fixed throughout the test.

Two separate punctures were made–5-10 cm apart on the volar surface of the forearm with a micro-lancet with a cutting depth of 2.5 mm and width of 1.0 mm. Two stopwatches were started immediately, and the blood was wiped gently at 15 s intervals. When bleeding ceased, the stopwatch was stopped, and the time was recorded. Two siliconized glass tubes with a 10 mm external bore were prewarmed by keeping a 37-degree centigrade bath. Blood was drawn from the antecubital vein using clean venipuncture. As soon as the blood entered the syringe, two stopwatches were started.

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2-2.5 ml of blood was collected and 1 ml of blood was poured into each tube after removing the needle. The tubes were kept at 37 °C for 2 min and were gently inclined at 1 minute interval until they could be tilted at an angle >90 °without spilling or flowing out of blood. The stopwatch was stopped. Similarly, this was done with the second tube simultaneously, and the time was recorded. CT was recorded as the mean of two readings.

After overnight fasting, the patient underwent endoscopy, during which the sample (from the mucosa) was collected from abnormal areas of the stomach and esophagus and sent for biopsy. After the abnormal tissue was fixed in 10% neutral buffered formalin, sections were made depending on the amount of tissue received, and the sections were placed within cassettes into an automated tissue processor(fixation-> dehydration->clearing->impregnation). Subsequently, the sections were embedded and blocked in wax. Sections were cut using a rotatory microtome, placed on a slide, stained with hematoxylin and eosin, and examined under a microscope. A biopsy of the mucosa was obtained from the antrum of the stomach and placed into a medium containing urea and an indicator such as phenol red. The urease produced by H. Pylori hydrolyzes urea to ammonia, which increases the pH of the medium and changes the color of the specimen from yellow (negative) to red (positive). Endoscopy was performed for all patients after overnight fasting using a PENTAX video endoscopic system to directly visualize the mucosa of the esophagus, stomach, and duodenum, such as varices, ulcers, and erosions. The endoscopic stigmata of active or recent hemorrhage and endoscopic prognostic features such as the number of ulcers, site and location of ulcers, size of ulcers, bleeding or not healing, clean base of the ulcer or adherent blood clot, oozing of blood from the ulcer base, and visible blood vessels were studied. The site and grading of varices were studied, and the rare causes of UGI bleeding were identified.

Patients underwent ultrasonography (USG) of the abdomen and pelvis in the department of radiodiagnosis with the help of a GE **LOGIQ-F 6** USG machine with curvilinear and linear probes of frequency 6 mHz and 11 mHz, respectively, with fasting for 4 h and water intake to distend the bladder.

Statistical Analysis:

After collection, data will be analyzed using statistical methods such as mean, standard deviation (SD), per value, and Chi square test. The results are displayed in tables, with categorical variables presented as numbers and percentages, and continuous variables are presented as mean ± SD. Data were analyzed using SPSS Version 22.

RESULTS & DISCUSSION:

A total of 216 patients participated in this study. Among them, 174 (80.56%) were males and 42 (19.44%) were females. The majority of the participants were from rural areas (77.78%) and the rest (22.22%) were from urban areas. The mean age among them was 42.5+15.29 years. Among them, the majority were aged 45-60 years (27.31%) followed by 35-45 years of age (26.39%). 12.04% of patients were aged more than 60 years. Among the study participants, 162(75.0%) were having healthy weight BMI (18.5-24.9), 48 (22.22%) were over-weight (BMI: 25-29.9), 5 (2.31%) were obese and only one patient was under-weight. Regarding their addition, 126 (58.33%) were alcoholic and 185 (86.85%) were smokers (Figure 1 & 2). More than half of the enrolled study population were alcoholic, 13.1% were smokers and 13 % being both smokers and alcoholics (Figure 3).

Figure 1: Number of patients according to their age

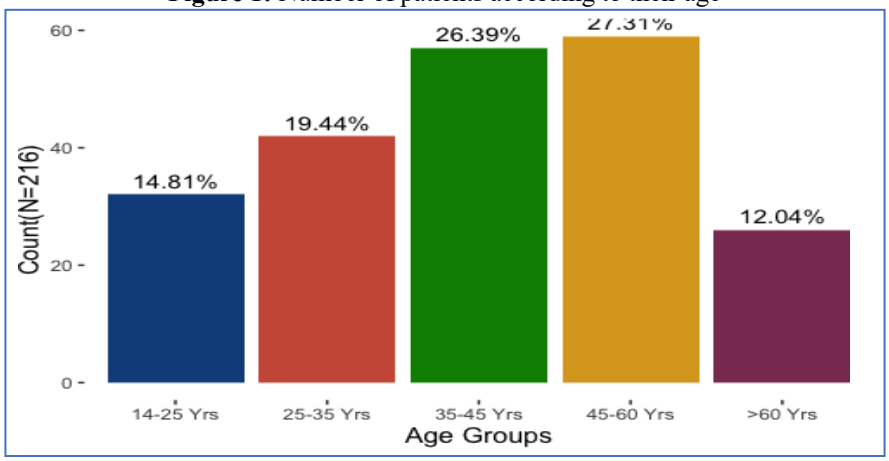

Figure 2: BMI classification of the study participants

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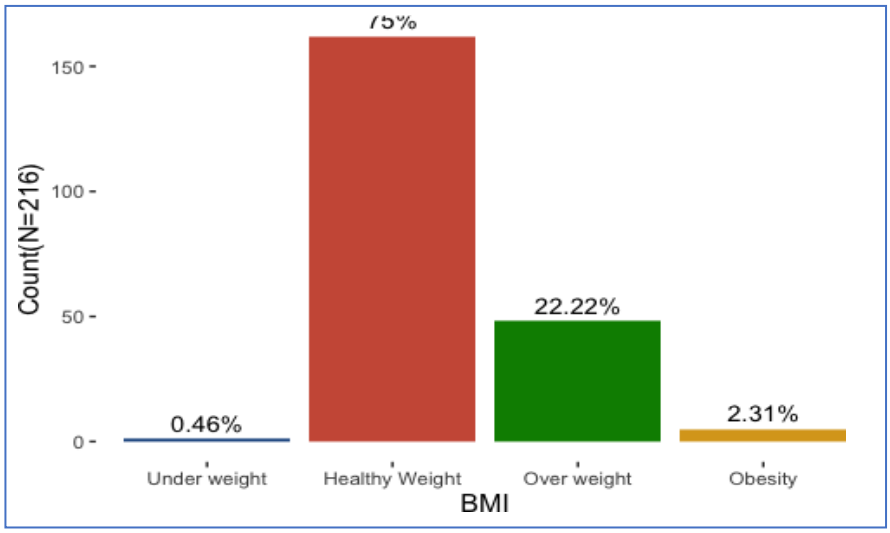

Figure 3: Risk factors of the study population

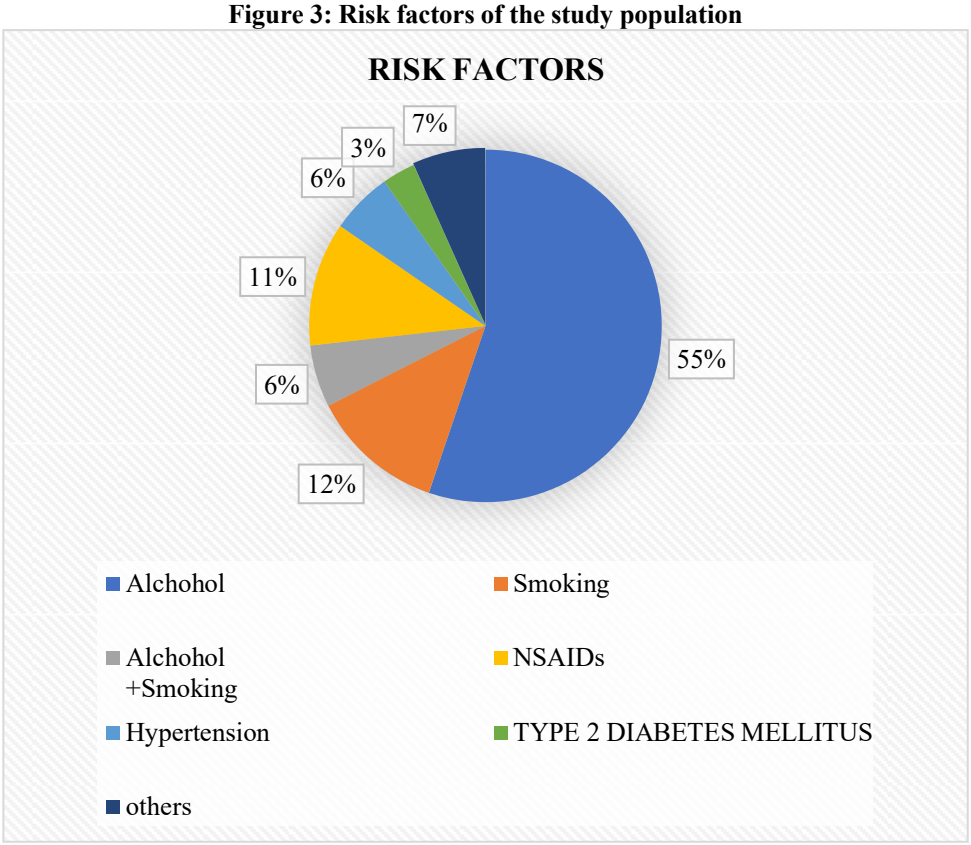

Table 1: Etiological distribution of the UGIB among the participants

Pathology	Count(n)	Percentage (%)
Isolated Upper GI Lesions	96	44.4%
Hepatic	58	26.9%
CKD	19	8.8%
Malignancy	12	5.6%
Pancreatic	5	2.3%
Infective	17	7.9%
Hematological	9	4.2%

Table 2: distribution of Etiology of UGIB in Cirrhotic Patients

	Cirrhosis (N=90)	Total (N=90)
Count		
ANTROPYLORITIS	1 (1.1%)	1 (1.1%)

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	Cirrhosis (N=90)	Total (N=90)
CG	25 (27.8%)	25 (27.8%)
D-1 SCAR	1 (1.1%)	1 (1.1%)
EROSIVE GASTRITIS	3 (3.3%)	3 (3.3%)
ESOPHAGIAL CANDIDIASIS	2 (2.2%)	2 (2.2%)
EV-1	2 (2.2%)	2 (2.2%)
EV-2	44 (48.9%)	44 (48.9%)
EV-3	9 (10.0%)	9 (10.0%)
GERD	3 (3.3%)	3 (3.3%)

This study enrolled a total of 216 patients. There were 174 men (80.56%) and 42 women (19.44%) among them. The patients' average age was 42.5 ± 15.29 years. The majority of participants (77.78%) were from rural areas, while 22.22% were from metropolitan areas. In research conducted by Rathi *et al*. [7] in Western India, the mean age of patients presenting with UGIB was 42 years. The average age of the patients in a 2000 study by Lakhwani *et al*. [8] was 51.9 years. UGIB was reported to be more common in men (83.33%) than in women (16.66%) in a study by Deep Anand *et al*. [9], and in an early investigation by Cook *et al*. [10], the relative risk for elderly patients aged > 60 years was 3.8 times higher than the rest. Another study discovered that the incidence of UGI hemorrhage was twice as high in men as in women [11]. There were 162 study participants with a healthy BMI (18.5-24.9), 48 (22.22%) were overweight, 5 (2.31%) were obese, and only one patient was underweight. 126 (58.3%) of the study participants were alcoholics, while 90 (41.7%) were not. 28 (13.1%) of the individuals were smokers, while 185 (86.9%) were not. Thirteen people (6.01%) were both smokers and alcoholics. 26 (12%) of the subjects had a history of NSAIDS use. 13 (6.01%) were hypertensive, and 7 (3.2% were diabetic). They were all T2DM.

The following etiologies were found in the 216 people investigated, in decreasing order: Isolated upper GI lesion: 96 (44.44%); Hepatic (cirrhosis of the liver): 58 (26.85%); chronic renal disease: 18 (8.79%); infectious: 17 (7.87%); malignancy: 13 (5.55%); hematological: 9 (4.16%); and pancreatic: 5 (2.31%). The most common cause of upper GI bleeding was an isolated upper GI lesion. There was no single entity responsible for the disease's emergence. The majority of the patients exhibited an admixture of numerous lesions that contributed to the illness process. The most common lesion was antral ulcer (18.8%), followed by pangastritis and ulcer D1 (13.5%) each. With 12.3%, GERD was the fourth-most frequent lesion. 14.5% of the lesions had erosive gastritis. Mallory Weiss tears were found in 2.3% of the lesions. Patients with this lesion had a history of binge alcohol consumption. Esophagitis was discovered in 4% of the lesions. It was mostly linked to NSAID use and a history of drinking and smoking. 3.5% of the lesions had esophageal candidiasis. Out of that maximum, it was discovered to be connected with individuals who were immunocompromised. Three patients with esophageal candidiasis had HIV. The majority of patients had overlapping lesions. Antral ulcers with duodenal scars and GERD were found in 43% of people with isolated upper GI lesions. Pangastritis with antral ulcers affected 36% of the study population. 30% of those in the study had a duodenal ulcer with a hiatal hernia. According to Silverstein *et al*. [12], chronic stomach and duodenal ulcers are the most common causes of hematemesis and melena. According to Pang *et al*. [13], the most prevalent lesion on endoscopy in patients with UGI hemorrhage was a peptic ulcer. Fletcher *et al*. [14] observed 7–22% erosive gastritis. According to the American Society for Gastrointestinal Endoscopy's National Survey of UGI Bleed [11–13], gastric erosions were reported in 23.4% of cases. According to [14], stomach erosion was responsible for 2–7% of UGI hemorrhage. According to the American Society for Gastrointestinal Endoscopy's nationwide study [11], esophagitis was the cause of 6.3% of UGI bleeds. Kumar *et al*. [16] found that 36% of individuals with esophageal candidiasis developed upper GI hemorrhage. Esophageal varices (48.9%) and congestive gastropathy (27.8%) were the two most typical presentations in people with liver disease (cirrhosis of the liver). Patients with cirrhosis of the liver had overlapping sources of upper GI hemorrhage, as in solitary upper GI lesions. Half of the patients exhibited esophageal varices as well as congestive gastropathy. 10% of patients had esophageal varices, erosive gastritis, and GERD all at the same time. In Atkinson's study, esophageal varices accounted for 7.3% to 11.1% of all cases. Esophageal varices were the second most common cause of UGI hemorrhage in the OMGE International UGIB Survey, 1978–1986 [17]. Varices were responsible for 7–20% of UGI bleeds, according to Van Leerdam *et al*. [18]. According to Dilawari *et al*. [19], the most common cause of variceal bleeding was portal hypertension (36%), followed by peptic ulcers (24%), and stomach erosions (19%). The most prevalent cause of life-threatening bleeding is varicose vein rupture. When varices are big and visible in the gastric fundus, the risk of bleeding is greatest [20]. The most common cause of upper GI bleeding in individuals with chronic renal disease was an amalgamation of upper GI diseases such as antral ulcers, erosive gastritis, GERD, pangastritis, and so on. Antral ulcer was the most prevalent prominent lesion, seen in 29% of the lesions. Then came erosive gastritis, which was found in 12.9% of the lesions. According to Liang *et al*. [21], individuals with grade 3–5 CKD have a 90% increased risk of upper GI hemorrhage if they are not on renal replacement therapy. H. pylori was discovered to be the causal agent among the infectious agents. In 10 of the 17 infectious causes discovered. In 22.2% of cases, the most prevalent lesion was an upper GI lesion, with a preference for the antrum of the stomach and the first section of the duodenum. Scar D-1 and antral gastritis were seen in 11.1% of patients. Following H. pylori, dengue was linked to three of the 17 infective factors associated with

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hemorrhagic mucosal ulcers in the esophagus and stomach in an upper GI research study. The remaining causes, such as hepatitis E (1 of 17), malaria (1 of 17), scrub typhus (1 of 17), and leptospira (1 of 17), were associated with upper GI bleeding due to sepsis and hepatic failure leading to DIC, as demonstrated by an increase in TLC, transaminases, and a disordered coagulation profile. Twelve of the 216 trial participants developed cancer, which caused an upper GI hemorrhage. Adenocarcinoma, lymphoma, and stomach squamous cell carcinoma were the three most prevalent types of stomach cancer out of the 12, which totaled 11. There was only one case of squamous cell carcinoma in the esophagus. In a 2014 study of clinical and endoscopic characteristics of upper GI bleeding, Dewan *et al*. [22] discovered that 3.3% of their sample population had GI cancer. Gastric cancer accounted for 2.7% of instances of acute alimentary tract bleeding in Jones [23]. Problems of alimentary bleeding, 1970 4.1 cases of stomach cancer as a cause of acute GIT bleeding were described by Peterson *et al*. [24]. There were nine people in the study population who had an underlying hematological etiology of upper GI bleeding. ITP was the most common cause in this study, accounting for 33.33% (3 out of 9) of all cases. It was followed by acute leukemia and hemophilia, each accounting for two out of nine (26.5%) occurrences. Aplastic anemia and thalassemia each account for 11% of the causes, accounting for one out of every nine cases. A study of 32 people by Soylu *et al*. [25] found that the most common cause was acute leukemia (41.2%), followed by ITP, hemophilia, and aplastic anemia. Antral gastritis, antral ulcer, duodenitis, erosive gastritis, and GERD were the combined causes of UGI bleeding in pancreatitis. The most common etiology among the study population was erosive gastritis, which accounted for 40% of the lesions. GERD was the second-most common pathology after erosive gastritis, accounting for 30% of the pathology. The remaining lesions contributed 10% to the cause. Alcohol was linked to all of the pancreatitis' cases that presented with UGIB. Haller *et al*. [26] discovered in an old study that the most common cause of upper GI hemorrhage in individuals with pancreatitis was erosive gastritis. They further attributed the cause to pancreatitis complications such as pseudocysts, which increase the likelihood of bleeding. There were 87% of the study population who complained of melena and 77.8% who complained of hematemesis. Melena and hematemesis were found in 72% of the population. At the time of presentation, 4.6% of the study population had hypertension, 45.8% had hypotension, and 49.5% had normotension. In this study, 60.2% of the participants had tachycardia, and 39.8% had a normal heart rate. Tachycardia was present in 87% of hypotensive individuals. The average hemoglobin level in the study population was 8.50, TRBC was 3.23, TPC was 141, and TLC was 9.33. The study comprised patients with microcytic hypochromic anemia (68.06%), normocytic normochromic anemia (23.15%), and microcytic normochromic anemia (8.33%). The mean urea level in the study population was 43.37 (increased), and the creatinine level was higher than the normal limit (1.32). With a mean sodium level of 132, sodium was present on the lower side. However, potassium and calcium levels were found to be within normal ranges. The mean serum bilirubin (t) level was 1.80 (increased), while the mean AST and ALT levels were 101.56 and 87.10, respectively. ALP was within the usual range. The mean serum total protein level was within acceptable limits, but the mean serum albumin level was on the low side at 2.76 (mean). Except for 34 patients, whose PT/INR was extended, the coagulation profile was largely normal. In 30 individuals, BT and CT were extended. Cirrhosis and hepatic failure were related to altered coagulation profiles, which were connected with different infectious etiologies such as hepatitis E, malaria, scrub typhus, and leptospira. Patients with infective etiologies developed sepsis and DIC. Four people in the study population had hepatitis B, with 1 previously diagnosed hepatitis, 3 newly diagnosed hepatitis B, 1 newly diagnosed hepatitis C, 2 known PLHA, and 2 newly diagnosed HIV. One patient tested positive for both HIV and HBsAg. Hepatitis B and C were linked to liver cirrhosis, with esophageal varices causing upper GI hemorrhage. One HIV patient had liver cirrhosis as the cause, while the others had esophageal candidiasis.

CONCLUSION:

UGIB is a major medical emergency that requires spontaneous intervention in the form of UGI endoscopy, as this procedure can be both therapeutic and diagnostic. Unfortunately, many regions of our country and state are not equipped with this instrument, leading to high morbidity and mortality rates. Hence, this problem needs to be addressed very early, as this can change the picture of the outcomes of patients with UGIB.

Conflict of interest:

The authors declare that they have no conflicts of interest.

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