

The characteristics of adults with upper gastrointestinal bleeding admitted to Tripoli Medical Center: a retrospective case-series analysis

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Background: Acute upper gastrointestinal bleeding (UGIB) is a common reason for hospital admissions worldwide. Aetiological causes of UGIB vary according to geographic region and socioeconomic status. However, despite the implementation of early endoscopy as the standard method for the diagnosis and treatment of UGIB, data on the characteristics of patients with UGIB in Libya are still minimal. In this study, we describe patient demographics, aetiological causes for UGIB, and possible risk factors for upper gastrointestinal bleeding in patients admitted to the Gastroenterology Department at Tripoli Medical Center from January 2001 through June 2006.

Method: This is a retrospective case-series analysis of all adult patients with upper gastrointestinal bleeding admitted to the Gastroenterology Department at TMC. Patients' medical records were individually reviewed and relevant data abstracted.

Results: A total of 928 cases with diagnoses of UGIB were admitted to Tripoli Medical Center during the study period. Of these cases, 60.3% were males and 39.7% females (3:2) and males were significantly younger than females (49.6 years vs. 53.9 years, $p = 0.001$). The most common cause of UGIB was peptic ulcer (37.1%) of which duodenal ulcer was the most common (30.7% of all UGIB), especially amongst male patients (36.4%). The second most common cause was bleeding due to varices (29.8%), especially amongst females (35.1%). Additionally, smoking and NSAIDs use were reported by 18.6% and 9.7% of cases and both were significantly associated with bleeding due to peptic ulcers.

Conclusion: This study has investigated the characteristics of adults with UGIB at a tertiary referral center in Libya. The high frequency of bleeding due to varices amongst females mandates further investigations into the possible underlying hepatic causes and their management, and the potential impact on patient outcome and prognosis.

Keywords: *bleeding; UGIB; gastroenterology; Libya*

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Acute upper gastrointestinal bleeding (UGIB) is a common reason for hospital admission worldwide. Causes of UGIB vary according to geographic region and socioeconomic status. For instance, in the UK UGIB incidence was reported at about 50–110 per 100,000 population, with more than 2,500 bleeding-related hospitalisations every year (1–3). Additionally, with a medical financial cost in excess of two billion dollars per year and mortality rates of 10%–30%, UGIB is more common and has a worse outcome than bleeding from the lower gastrointestinal tract (1, 3).

Data from Saudi Arabia, Kuwait, Jordan, Greece, and Iran reported peptic ulcer diseases and oesophageal

varices as the major causes of UGIB, and the use of non-steroidal anti-inflammatory drugs (NSAIDs) and chronic *Helicobacter pylori* infection as the most common predisposing factors (4–8). However, despite the implementation of early endoscopy as the standard method for the diagnosis and treatment of UGIB in most tertiary-level hospitals in Libya, data on the characteristics of patients with UGIB are still minimal.

In this study, we aim to describe patient demographics, causes for UGIB, possible risk factors, and concomitant co-morbid conditions for patients with upper gastrointestinal bleeding admitted to the Gastroenterology

Department at Tripoli Medical Centre (TMC) from January 2001 through June 2006.

Method

Study site

Tripoli Medical Center is a teaching public hospital with 1,200 beds. It provides tertiary-level health care to the general population in Tripoli and other cities in the western and central regions of Libya. The Gastroenterology Department includes three units with fully equipped endoscopy facilities.

Study design and patients

This is a retrospective case-series analysis of all adult patients with upper gastrointestinal bleeding admitted to the Gastroenterology Department at TMC. For the purpose of the study, vomiting a fresh bright-red or coffee-ground blood and/or passing a black, tarry stool (melena), either reported by the patient or detected on digital rectal examination, were considered indicators for UGIB. Cases with UGIB were identified from the department's annual records of admissions for the period under study. Case files were then individually examined to abstract data relevant to the scope of the study. Ethics approvals were granted by the Department of Medicine and the Scientific Committee at TMC.

Collected data included demographics (age, gender, and place of residence), cause of UGITB (peptic ulcer, varices, reflux, erosions, inflammation, others), possible predisposing factors (smoking, alcohol use, or NSAID), and co-morbid conditions (diabetes, hypertension, stroke, chronic renal failure, rheumatoid arthritis, or ischaemic heart disease). In addition, endoscopy reports were individually examined to ascertain endoscopic findings and confirm the underlying aetiology of bleeding. Access to all UGIB case files has been granted only for the period from 2001 through 2006 and, thus, analysis was limited to that.

Statistical analysis

Statistical Package for Social Science (SPSS 17) was used to perform the analysis. Parametric variables were analysed using independent two-sample *t*-test, whilst binary and nominal variables were analysed using chi-squared test (χ^2). All tests were two-tailed and *p*-values of <0.05 were considered statistically significant.

Results

Between January 2001 and June 2006, a total of 928 patients with diagnoses of UGIB were admitted to TMC (560 males and 368 females; male:female ratio 3:2). The majority of patients were from Tripoli ($n=558$, 60.1%), Garian ($n=65$, 7%), Benghazi ($n=62$, 6.7%), and Zawia ($n=59$, 6.4%). The mean age was 49.6 years for males

(95% CI: 48.0–51.2), 53.9 years for females (95% CI: 51.9–55.9), and the difference was statistically significant ($t=-3.3$, $df=926$, $p=0.001$). The age distribution by gender is shown in Fig. 1.

Peptic ulcers were the most common cause of UGIB (Table 1), while the duodenum was the most common site of bleeding (Table 2). Biopsies were taken from all identified ulcers and whenever suspicious lesions were encountered during endoscopy. There were eight cases with malignant diagnoses confirmed by histopathology: there were six gastric and one duodenal malignant ulcers and one ampullary growth. All of them were adenocarcinomas.

A significantly higher proportion of males presented with bleeding due to peptic ulcers than females (43.4% vs. 27.4%, $\chi^2=24.2$, $df=1$, $p<0.0001$), especially duodenal ulcers (36.4% vs. 22%, $\chi^2=21.7$, $df=1$, $p<0.0001$) (Table 1). In contrast, a significantly higher proportion of females presented with UGIB due to varices than males (39.4% vs. 23.6%, $\chi^2=26.6$, $df=1$, $p<0.0001$), especially oesophageal varices (35.1% vs. 21.3%, $\chi^2=21.6$, $df=1$, $p<0.0001$). However, there were no statistically significant differences in proportions of males and females diagnosed with reflux disease (10.7% vs. 8.4%, $\chi^2=1.3$, $df=1$, $p=0.3$), erosions (10.9% vs. 12.2%, $\chi^2=64.5$, $df=1$, $p=0.5$), or gastritis and duodenitis (5.9% vs. 6.3%, $\chi^2=0.05$, $df=1$, $p=0.8$).

We also examined the presence of some predisposing factors. Smoking was the most common, reported by 173 patients (18.6%) of whom 151 were males (27%) and 22 were females (6%). NSAIDs use was reported by 90 patients (9.7%). Furthermore, exposure to more than one predisposing factor was reported by 31 patients (3.3%). Alcohol use was reported by only 20 patients (2.2%). In addition, smoking and alcohol use were significantly more frequent amongst males than females ($\chi^2=64.5$, $df=1$, $p<.0001$ and $\chi^2=5.2$, $df=1$, $p=0.02$, respectively), but there was no significant gender difference in the reported NSAIDs use ($\chi^2=1.1$, $df=1$, $p=0.3$).

Smoking was significantly associated with bleeding due to peptic ulcers ($\chi^2=9.7$, $df=1$, $p<0.002$) especially

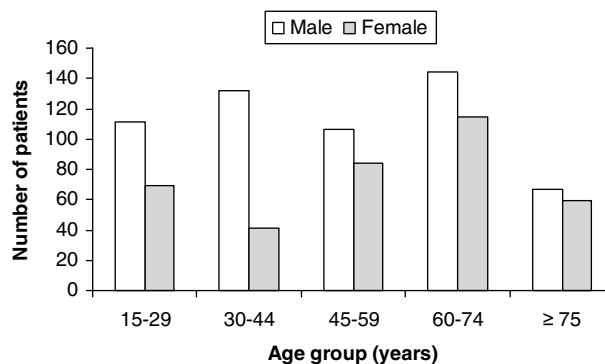


Fig. 1. Gender and age distribution of patients.

Table 1. Distribution of acute upper gastrointestinal bleeding by aetiology

Aetiology	Aetiology by site	Male		Female		Total	
		Number of cases	%	Number of cases	%	Number of cases	%
Peptic ulcer ^a	Duodenal ulcer ^a	204	36.4	81	22.0	285	30.7
	Gastric ulcer	39	7.0	20	5.4	59	6.4
	Total	243	43.4	101	27.4	344	37
Varices ^b	Oesophageal varices ^b	119	21.2	129	35.1	248	26.7
	Fundal varices	11	2.0	14	3.8	25	2.7
	Total	130	23.2	143	38.9	273	29.4
Reflux	Reflux oesophagitis	60	10.7	31	8.4	91	9.8
Erosions	Gastric erosions	29	5.2	28	7.6	57	6.1
	Duodenal erosions	32	5.7	17	4.6	49	5.3
	Total	61	10.9	45	12.2	106	11.4
Gastritis & duodenitis	Gastritis	19	3.4	18	4.9	37	4.0
	Duodenitis	14	2.5	5	1.4	19	2.0
	Total	33	5.9	23	6.3	56	6
Others	Angiodysplasia	7	1.2	2	0.5	9	1.0
	Portal gastropathy	2	0.4	2	0.5	4	0.4
	Anastomosal ulcer	1	0.2	1	0.3	2	0.2
	Total	10	1.8	5	1.3	15	1.6
Unknown	No cause identified	23	4.1	20	5.4	43	4.6

^aSignificantly more frequent amongst males than females ($p < 0.0001$).

^bSignificantly more frequent amongst females than males ($p < 0.0001$).

duodenal ulcer ($\chi^2 = 8.4$, $df = 1$, $p < 0.004$), but not with reflux disease ($\chi^2 = 1.3$, $df = 1$, $p < 0.3$), erosions ($\chi^2 = 3.7$, $df = 1$, $p < 0.06$), or gastritis and duodenitis ($\chi^2 = 0.3$, $df = 1$, $p < 0.6$) (Table 3). NSAIDs use was significantly associated with bleeding due to peptic ulcer ($\chi^2 = 9.8$, $df = 1$, $p < 0.002$), especially duodenal ulcer ($\chi^2 = 6.2$, $df = 1$, $p < 0.01$) and reflux disease ($\chi^2 = 5.3$, $df = 1$, $p < 0.02$) but not erosions ($\chi^2 = 0.9$, $df = 1$, $p < 0.3$) or gastritis and duodenitis ($\chi^2 = 0.04$, $df = 1$, $p < 0.8$).

The most common non-hepatic co-morbid condition was diabetes ($n = 173$, 18.7%), followed by hypertension

($n = 126$, 13.6%). A significantly larger proportion of female than male patients were diabetic (23.2% vs. 15.7%, $\chi^2 = 8.1$, $df = 1$, $p < 0.004$), but there were no differences in the proportions of patients with hypertension (13.4% vs. 13.9%, $\chi^2 = 0.05$, $df = 1$, $p < 0.8$) between male and female patients (Table 4).

Discussion

Upper gastrointestinal bleeding is a common reason for emergency hospital admissions and a major cause of morbidity and mortality worldwide. Of the 928 cases

Table 2. Distribution of acute upper gastrointestinal bleeding by bleeding site

Bleeding site	Male			Female		
	Number of cases	% (per gender)	% (per site)	Number of cases	% (per gender)	% (per site)
Oesophagus ^a	179	32.0	52.8	160	43.5	47.2
Stomach	107	19.1	56.0	84	22.8	44.0
Duodenum ^b	251	44.8	70.7	104	28.3	29.3
Unknown ^c	23	4.1	53.5	20	5.4	46.5
Total	560	100	60.3	368	100	39.7

^aSignificantly more frequent amongst females than males ($p < 0.0001$).

^bSignificantly more frequent amongst males than females ($p < 0.0001$).

^cUnknown: Patient who did not receive positive diagnoses by endoscopy, bleeding was self-limiting, and more invasive diagnostic procedures (e.g. angiography) were not performed.

Table 3. Frequency of smoking and non-steroidal anti-inflammatory drugs use by acute upper gastrointestinal bleeding aetiology

Cause	Smoker		Non-smoker		NSAIDs user		Not a user	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Peptic ulcer ^{a,b}	82	47.4	262	34.7	47	52.2	297	35.4
Varices	21	12.1	256	33.9	0	0.0	277	33.1
Reflux ^c	13	7.5	78	10.3	15	16.7	76	9.1
Erosion	27	15.6	79	10.5	13	14.4	93	11.1
Gastritis and duodenitis	9	5.2	47	6.2	5	5.6	51	6.1
Others	0	0.0	11	1.5	1	1.1	10	1.2
No cause identified	21	12.1	22	2.9	9	10.0	34	4.1
Total (<i>n</i>)	173		755		90		838	

^aSignificantly more frequent amongst smokers ($p < 0.002$).

^bSignificantly more frequent amongst NSAIDs users ($p < 0.002$).

^cSignificantly more frequent amongst NSAIDs users ($p < 0.02$).

included in this analysis, males constituted the larger proportion of cases in all age groups and were significantly younger than their female counterparts. These findings were similar to reports from Jordan and Iran (4, 5, 7), but our patients were older than reported in Pakistan and Kuwait (9, 10). Although many studies have documented increasing age of patients with UGIB (8, 11), only 13.6% of our patients were older than 75 years.

Positive diagnosis by endoscopy was obtained in 885 cases (95.6%). The most common cause of UGIB was peptic ulcer, which represents 37.1% of all cases, followed by bleeding due to varices in 29.8% of the cases. These findings were similar to those from Kuwait (10), Iran (5), Pakistan (12), and Greece (8), but different to data from Saudi Arabia (6) and Jordan (4).

When considered by site of bleeding, the duodenum was the most common site (38.3%) followed by oesophagus (36.5%). Moreover, when bleeding site and aetiology

were considered together, duodenal ulcers (30.7%) and oesophageal varices (26.7%) were the most common pathologies identified by endoscopy. Malignant gastric ulcer was the cause of UGIB in six patients, which represents 10.2% of all identified gastric ulcers ($n = 59$).

Of interest in this study is the low level of NSAIDs use, as it was reported by only 9.7% of the patients, which is lower than reported in Iran (75%), Jordan (28.6%), and Greece (42.7%) (5, 7, 8). However, NSAIDs use was positively associated with UGIB due to peptic ulcers or reflux disease. Smoking, in comparison, was reported by 18.6% of patients, mostly males, and was only significantly associated with bleeding due to peptic ulcers. Although data on *H. pylori* were not collected for this study, a recent study found more than 80% positive results amongst patients with chronic upper gastrointestinal symptoms attending the gastroenterology clinics at the same hospital (TMC) (13).

Table 4. Frequency of non-hepatic co-morbid conditions

Co-morbidity	Male		Female		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Diabetes ^a	88	15.7	85	23.2	173	18.7
Hypertension	75	13.4	51	13.9	126	13.6
Ischaemic heart disease	17	3.0	6	1.6	23	2.5
Stroke	9	1.6	7	1.9	16	1.7
Asthma	6	1.1	6	1.6	12	1.3
Rheumatic heart disease	5	0.9	3	0.8	8	0.9
Rheumatoid arthritis	1	0.2	1	0.3	2	0.2
Chronic renal failure	4	0.7	2	0.5	6	0.6

^aSignificantly more prevalent amongst females than males ($p < 0.004$).

Another important finding is that almost 40% of UGIB in females was due to varices (oesophageal and fundal) in contrast to about 24% amongst male patients. This is worth investigating as it might imply a significant degree of underlying liver disease.

The rates of diabetes and hypertension in this series reflects the prevalence in the general population (14) and require special considerations during the course of management, as these co-morbid conditions are generally associated with less favourable outcomes.

This study is the first, to our knowledge, to characterise patients with UGIB at the Tripoli Medical Center and it has limitations that should be mentioned. The retrospective nature of the study and lack of a consistent, electronic system to store/archive serological and ultrasonographic data resulted in non-intentional loss of substantial proportions of some information such as vital signs upon presentation, initial laboratory results, history of blood transfusions, hepatitis serology and hepatic ultrasound findings, and post-discharge follow-ups. This loss hindered any meaningful analysis of these data, particularly for bleeding severity assessment, and such incomplete datasets were generally excluded. This has prompted us to start systematically and prospectively collecting data on this important medical condition to ensure more informative reports in future.

Conclusion

This study has investigated the characteristics of adults with UGIB at a tertiary referral center in Libya. The high frequency of bleeding due to varices amongst females mandates further investigations into the possible underlying hepatic causes and their management and the potential impact on patient outcome and prognosis.

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Conflict of interest and funding

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