




ORIGINAL RESEARCH ARTICLE

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Acute gastrointestinal bleeding in Egyptian elderly patients: real-life experience

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Abstract

Background: Elderly people are a vulnerable group of patients subjected to multiple health problems. Upper gastrointestinal bleeding (UGIB) in older adults is a frequent cause of hospital admissions. The presence of multiple comorbidities and greater medication use influence the clinical outcome.

Aim: The aim of our work was to analyze the etiology, precipitating factors, management, and outcome of the elderly Egyptian patients (> 65 years old) presenting with acute UGIB.

Methods: Three hundred thirty-two patients presenting with acute UGIB. The patients were classified into two groups according to age (elderly, above 65 years old, and young, below 65 years old). Clinical assessment, laboratory tests, and upper endoscopy were done for all patients. They were followed for 1 month.

Results: Elderly females showed higher incidence of acute UGIB (45.8% versus 28.9%) with significant *P*-value (0.001). The incidence of esophageal varices was high in young patients than in the elderly (46.4% vs 35.5%) with *P*-value (0.045), while the elderly patients showed a higher incidence of esophageal ulcers and gastric mass than the young patients (7.8% vs 2.4%), (6% vs 0%) with *P*-value (0.025 and 0.013) respectively. Also, there was a higher incidence of peptic ulcer in elderly than young patients but does not reach a significant value with *P*-value (0.067), while there was no difference between both groups as regards presence of (fundal varix, erosive gastritis, moniliasis, portal hypertensive gastropathy, antral gastritis, bulb duodenitis, post band ulcer, dieulafoy, gastric polyp, and angiodysplasia). Rockall score, duration of hospital stay, and mortality incidence (33.1% vs 15.7%) were high in the elderly than young patients with *P*-value (< 0.001).

Conclusion: The elderly are vulnerable groups who are at high risk of adverse outcome and mortality following acute upper gastrointestinal bleeding.

Keywords: Acute upper gastrointestinal bleeding, Elderly, Adverse outcome

Introduction

Upper gastrointestinal bleeding is an emergency condition that causes more than 300,000 hospital admissions and about 30,000 deaths per annum in America [1] with special concerns in elderly populations as they need special evaluation and management [2].

More than 1% of people aged 80 years and older are hospitalized each year because of gastrointestinal bleeding [3]. They are a vulnerable group of patients as they are subjected to multiple health problems and greater consumption of drugs used in their treatment such as NSAIDs, antiplatelets, or anticoagulants, which may lead to acute upper gastrointestinal bleeding (UGIB) [4, 5].

Gastrointestinal bleeding is a frequent cause of hospital admissions [3, 6] in older adults with relatively high mortality [7].

In elderly people, morbidity and mortality from gastrointestinal bleeding is determined by both the nature of

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the bleeding lesion and the presence of comorbid medical conditions.

Gastric and duodenal ulcers are more common. An initial shock or hypothermia, re-bleeding, or persistence of bleeding carries a worse prognosis [8].

The promising outcomes of acute UGIB in the elderly need a coordinated approach with the involvement of acute care specialists, advances in diagnostic and therapeutic endoscopy, the use of powerful acid-suppressive and vasoactive agents, and less invasive surgical approaches [9].

Aim of the work

The study included 332 patients presented with acute UGIB. The aim of the study was to analyze the etiology, precipitating factors, management, and outcome of the elderly patients.

Subjects and methods

Patients

Three hundred thirty-two patients with acute UGIB presented to ER. The study was approved by our institution's Research Ethics Committee, and Informed consents were obtained from all participants or, if patients were unable to provide consent, from designated surrogates before inclusion in the study.

Patients were classified into two groups according to their age (elderly patients >65 years old and young patients <65 years old). All the patients included in the study were subjected to thorough history taking including age, gender, comorbid diseases (diabetes, hypertension, liver disease, renal disease, cardiac disease, and malignancy) and concomitant medications (NSAIDs, antiplatelets or anticoagulant), clinical assessment including the Blatchford and Rockall score to assess the severity of the GI bleeding, routine laboratory investigations in the form of CBC, LFTs, KFTS, electrolytes, and virology screening. The endoscopic findings and management, the need for blood transfusion, and hospital stay were recorded. Also, adverse events in the form of re-bleeding, shock state, infection, aspiration, deterioration of the conscious level, need for ICU admission, and GI bleeding-related mortality were recorded. All patients were followed for 1 month.

Statistical analysis

Data were coded and entered using the Statistical Package for the Social Sciences (SPSS) version 25 (IBM Corp., Armonk, NY, USA). Data was summarized using mean and standard deviation for quantitative variables and frequencies (number of cases) and relative frequencies (percentages) for categorical variables. Comparisons between groups were done using unpaired *t* test. For comparing

categorical data, chi-square test was performed. Exact test was used instead when the expected frequency is less than 5. Correlations between quantitative variables were done using Pearson correlation coefficient. *P*-values less than 0.05 were considered as statistically significant.

Results

The study included 332 patients; they were classified according to age into elderly patients (age above 65 years old), included 166 patients [90 males and 76 females; their ages ranged from 65 to 91 with mean \pm SD (72.7 ± 6.5)] and young group (age below 65 years old), and included 166 patients [118 males and 48 females their ages ranged from 18 to 64 with mean \pm SD (49.8 ± 11.7)] as shown in Table 1. The majority of our patients were males (71.1% in elderly group and 54.2% in young group).

We found that elderly females showed a higher incidence of acute UGIB than the younger ones (45.8% versus 28.9%) with significant *P*-value (0.001), while elderly patients (both gender) showed significant higher incidence of HTN and IHD with *P*-value (0.001, 0.009) respectively; however, there was no statistically significant difference between both groups as regards presence of diabetes, renal impairment, hepatic disease, or other comorbidities (*P*-value > 0.05) as in Table 2.

The Rockall score was higher in the elderly than young patients (mean 3.90 vs 2.56) with *P*-value < 0.001, as in Fig. 1, with also a high Blatchford score but does not reach a significant value *P*-value (0.251).

Anticoagulation intake was high in elderly patients as shown in Table 3 and Fig. 2. There was no difference between both groups as regards the clinical presentation with *P*-value (> 0.05).

The most common endoscopic findings in elderly patients were esophageal varices (35.5%), peptic ulcer (27.1%), erosive gastritis (9.6%), esophageal ulcer (7.8%), antral gastritis (5.4%), gastric mass (3.6%), post band ulcer (2.4%), and angiodysplasia (1.2%) in a descending manner as in Fig. 3, while, for the younger patients, the most common endoscopic findings were esophageal

Table 1 Comparison between the study groups regarding age and sex

	Elderly group		Young group		<i>P</i> value
	Mean or count	SD or percentage %	Mean or count	SD or percentage %	
Age	72.50	5.67	49.90	11.52	< 0.001
Sex					
F	76	45.8%	48	28.9%	0.001
M	90	54.2%	118	71.1%	

Table 2 Comparing both groups regarding gender and medical condition

		Groups				P value
		Elderly group		Young group		
		Count	%	Count	%	
Sex	F	76	45.8%	48	28.9%	0.001
	M	90	54.2%	118	71.1%	
DM	Yes	62	37.3%	52	31.3%	0.248
	No	104	62.7%	114	68.7%	
HTN	Yes	67	40.4%	21	12.7%	<0.001
	No	99	59.6%	145	87.3%	
IHD	Yes	23	13.9%	9	5.4%	0.009
	No	143	86.1%	157	94.6%	
RI	Yes	17	10.2%	13	7.8%	0.444
	No	149	89.8%	153	92.2%	
Hepatic	Yes	82	49.4%	91	54.8%	0.323
	No	84	50.6%	75	45.2%	
CHILD score	C	23	28.0%	19	20.9%	0.475
	B	35	42.7%	46	50.5%	
	A	24	29.3%	26	28.6%	
Other comorbidities	Yes	24	14.5%	18	10.8%	0.322
	No	142	85.5%	148	89.2%	

P-value < 0.05 is significant

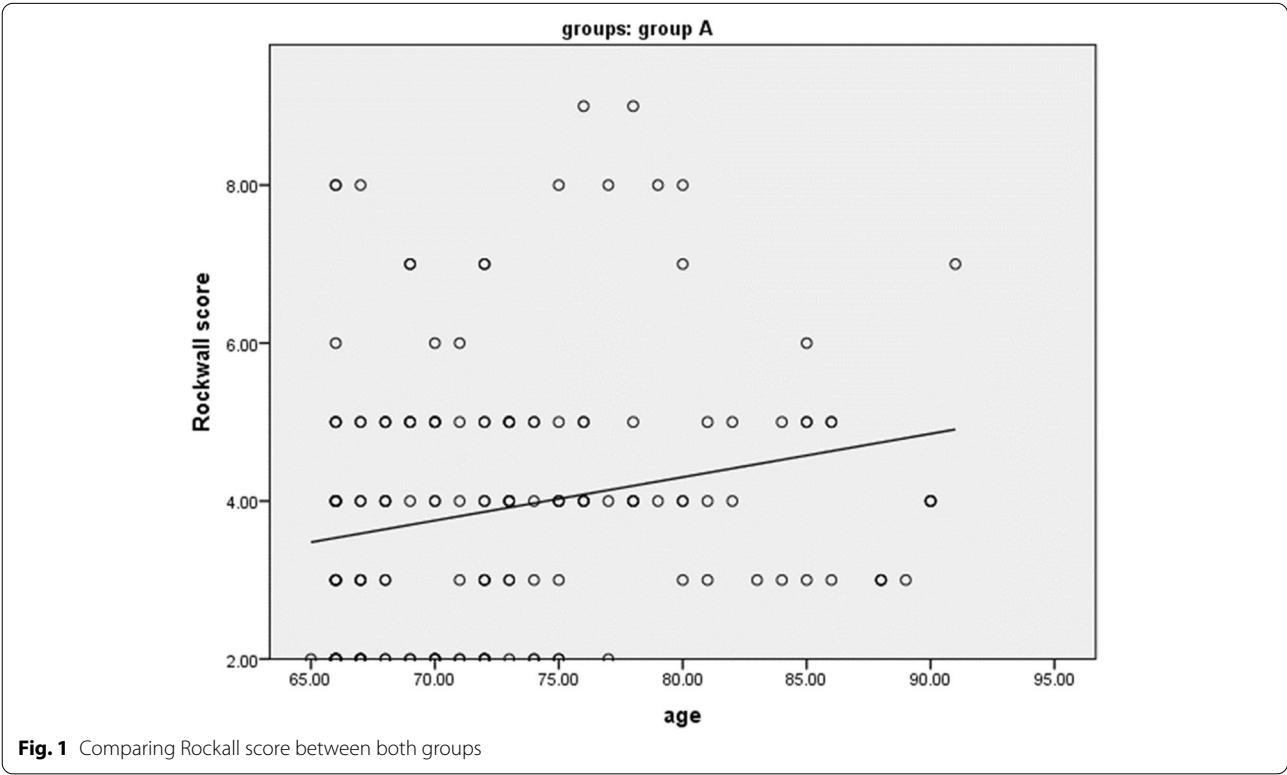


Table 3 Comparing both groups regarding clinical presentation and drug history

		Groups				P value
		Elderly group		Young group		
		Count	%	Count	%	
C/O						
Bleeding/R	0	0.0%	2	1.2%	0.128	
H,M	56	33.7%	52	31.3%		
M	40	24.1%	28	16.9%		
H	70	42.2%	84	50.6%		
Hematem	70	42.2%	84	50.6%	0.123	
Melena	40	24.1%	28	16.9%	0.103	
H,M	56	33.7%	52	31.3%	0.639	
bleed/rec	0	0.0%	2	1.2%	0.498	
Drug H/O						
no	111	66.9%	124	74.7%		
NSAIDs	39	23.5%	34	20.5%		
Aspocid	3	1.8%	8	4.8%	0.001	
Antiplatelet	5	3.0%	0	0.0%		
Anticoagulant	8	4.8%	0	0.0%		
No	112	67.5%	124	74.7%	0.146	
NSAID	39	23.5%	34	20.5%	0.508	
Anti-platelet	8	4.8%	8	4.8%	1	
Anticoagulant	8	4.8%	0	0.0%	0.007	

varices (44.6%), peptic ulcer (18.7%), erosive gastritis (14.5%), antral gastritis (6.0%), fundal varix (4.2%), and esophageal ulcer (2.4%) in a descending manner as in Fig. 4.

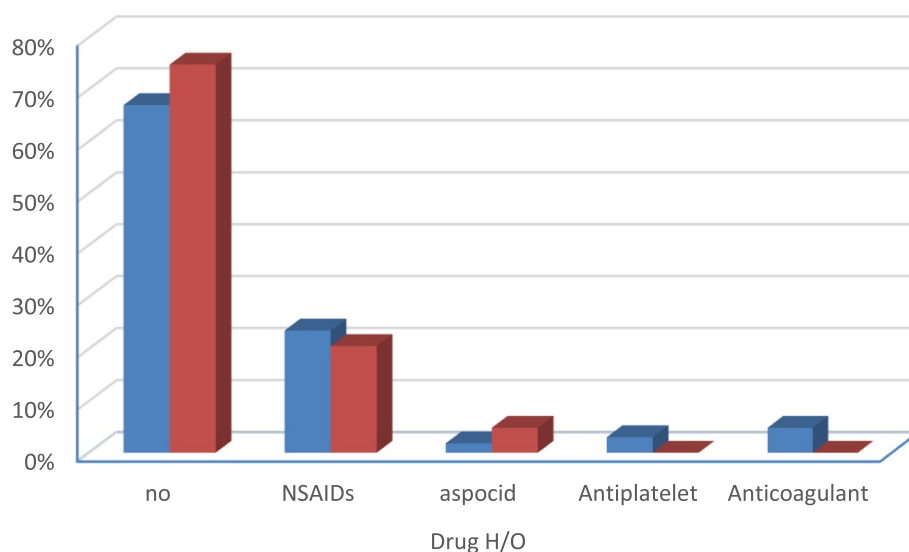
The incidence of esophageal varices was higher in younger patients than elderly (46.4% vs 35.5% respectively). On contrary, the incidence of esophageal ulcers and gastric mass were higher in the elderly than young (7.8% vs 2.4% and 6% vs 0% respectively). There was also higher incidence of peptic ulcer in the elderly but does not reach significant value with *P*-value (0.067), while there was no difference found as regards presence of fundal varix, erosive gastritis, moniliasis, portal hypertensive gastropathy, antral gastritis, bulb duodenitis, post band ulcer, dieulafoy, gastric polyp, and angiodysplasia as in Table 4.

There was no difference regarding the modality of treatment and needs for blood transfusion between elderly and young patients as in Table 5. The incidence of complications was higher in the elderly than young patients regarding the deterioration of conscious level (13.3% vs 6.0%) and incidence of shock (16.3% vs 4.8%) for the elderly and young group respectively as in Table 6. There was a significant increase in the duration of hospital staying in elderly patients (mean 8.84 vs 6.86 days), and therefore, there was a rapid recovery in younger patients as in Table 7 and Fig. 5.

The incidence of mortality was high in the elderly than in young (33.1% vs 15.7%) with *P*-value (<0.001) as in Table 8 and Fig. 6.

Discussion

Gastrointestinal bleeding is a frequent cause of hospital admissions [3, 6] in older adults with relatively high mortality [7]. They are a vulnerable group of patients as they are subjected to multiple health problems and greater

**Fig. 2** Comparing both groups regarding history of drug intake

upper endoscopy (group A)

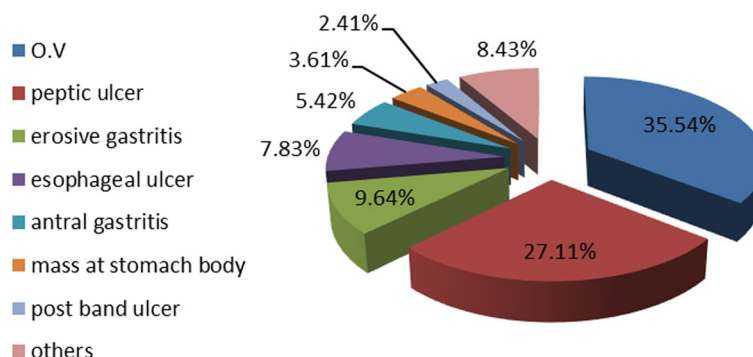


Fig. 3 Findings of upper endoscopy of elderly group

upper endoscopy (group B)

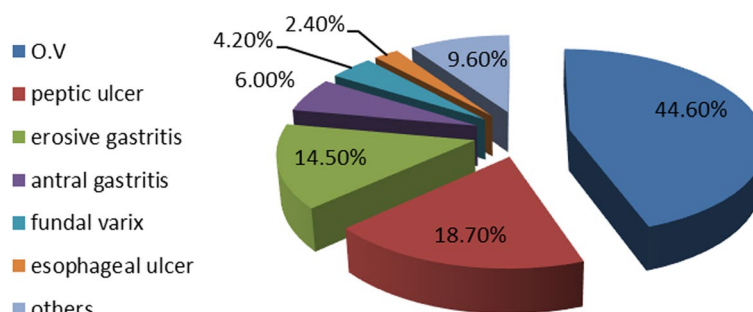


Fig. 4 Findings of upper endoscopy of young group

consumption of drugs used in their treatment such as NSAIDs, antiplatelets, or anticoagulants, which may lead to acute upper gastrointestinal bleeding (UGIB) [4, 5].

The promising outcomes of acute UGIB in the elderly need a coordinated approach with the involvement of acute care specialists, advances in diagnostic and therapeutic endoscopy, the use of powerful acid-suppressive, vasoactive agents, and less invasive surgical approaches [9].

Our study was designed to analyze data from 332 patients presenting with acute UGIB. The patients were classified into two equal groups according to their age (elderly patients >65 years old and young patients <65 years old).

The majority of our patients were males in both groups with percentage (71.1% in elderly group) and (54.2% in young group), while the female patients were 28.9% in the elderly group and 45.8% in the young group, and this matched with previous studies from different countries

which found a higher incidence of acute UGIB in males than females as in Rockall et al. Esmat et al. and Hreinsón et al. [10–12].

This could be explained by that in European countries, males consume more excess alcohol and having chronic liver disease than females, and in Egypt, males are more liable for exposure to schistosomal infection and viral hepatitis than females as reported in Esmat et al. [10].

We found that the percentage of females was high in the elderly group than in the younger group (45.8% vs. 28.9%), while there were more males in the younger group than in the elderly (71.1% vs. 45.2%) with *P*-value 0.001. This agrees with the study of Nahon and colleagues [13] who found significantly more women with GI bleeds in the older group (47.8% women) than in the younger group (26.8% were women). This could be attributed to the fact that older females have a higher incidence of osteoarthritis and osteoporosis with the use of drugs that induced GI bleeding (NSAIDs and bisphosphonates).

Table 4 Details of upper endoscopy findings

	Groups				P value
	Elderly group A		Young group		
	Count	%	Count	%	
O.V	59	35.5%	77	46.4%	0.045
Peptic ulcer	45	27.1%	31	18.7%	0.067
Fundal varix	4	2.4%	7	4.2%	0.358
Erosive gastritis	16	9.6%	24	14.5%	0.177
Esophageal ulcer	13	7.8%	4	2.4%	0.025
Moniliasis	2	1.2%	3	1.8%	0.999
PHG	3	1.8%	2	1.2%	0.999
Antral gastritis	9	5.4%	10	6.0%	0.812
Bulb duodenitis	0	0.0%	2	1.2%	0.498
Post band ulcer	4	2.4%	3	1.8%	0.999
Dieulafoy	1	0.6%	0	0.0%	0.999
Gastric polyp	1	0.6%	0	0.0%	0.999
Gastric mass	6	3.6%	0	0.0%	0.013
Angiodysplasia	2	1.2%	0	0.0%	0.498

O.V esophageal varices, PHG portal hypertensive gastropathy

Table 5 Comparison between both groups regarding modality of treatment

		Groups				P value
		Elderly group		Young group		
		Count	%	Count	%	
ttt						
Surgery	0	0.0%	1	0.6%		
Ligation, injection	0	0.0%	2	1.2%		
Injection, PPI	20	12.0%	10	6.0%		
Band, injection	0	0.0%	2	1.2%		
Band ligation, PPI	0	0.0%	1	0.6%		
Band ligation	54	32.5%	66	39.8%		
Anti-fungal, PPI	2	1.2%	3	1.8%		
PPI	90	54.2%	80	48.2%		
Medical ttt: PPI antifungal						
Yes	92	55.4%	84	50.6%	0.379	
Endoscopy: band ligation						
Yes	54	32.5%	71	42.8%	0.054	
Injection sclerotherapy						
Yes	20	12.0%	11	6.6%	0.090	
Surgery (perforated ulcer)						
Yes	0	0.0%	1	0.6%	1	

As expected, we found that elderly patients showed a higher incidence of HTN and IHD with P -value (0.001); however, there was no statistically significant difference between both groups as regards the presence of

diabetes, renal impairment, hepatic disease, or other comorbidities (P -value > 0.05).

In our study, the most common cause of acute UGIB was esophageal varices in both groups; this could be explained by high prevalence of chronic liver disease and more liable for exposure to schistosomal infection and viral hepatitis as reported in Esmat et al. [10]. Also, we found higher incidence of acute UGIB from esophageal varices in the young than in the elderly (46.4% vs 35.5% respectively).

We found also that the elderly had a higher incidence of peptic ulcer than the young which may be attributed to greater anticoagulation intake (P -value 0.007), and this matched with Gonzalez-Gonzalez et al. [14] who showed increased incidence of peptic ulcer in elderly patients than young patients (63.8 and 57.9% respectively) which assumed to be due to a higher prevalence of *H. pylori* infection among the elderly, increased NSAIDs/aspirin use, and polypharmacy including medications associated with increased risk of PUD as anticoagulants, selective serotonin reuptake inhibitors (SSRIs), and oral steroids, and this was also similar to Kawaguchi et al. and Dumic et al. [15, 16].

Lau et al. [17] reported that the risk of major UGIB increases with low-dose aspirin when compared with that seen with controls. This risk is further increased with the previous history of UGIB, longer duration of use, and concomitant use of clopidogrel and anticoagulants. This is pertinent to the elderly, as they often require one or more antiplatelet agents and NSAIDs for cardiovascular risk modifications and management of cerebrovascular disease in addition to rheumatological conditions. NSAID consumption is also underestimated in the elderly since many patients use these drugs as over-the-counter therapies.

In our study, the Rockall score was higher in elderly patients. This means that the elderly patients are at higher risk of adverse outcomes following acute UGIB with P value (< 0.001). These results were also similar to Gonzalez-Gonzalez et al. [14] which were (5.6 ± 1.9 vs. 4.2 ± 2.1 , $P < 0.001$).

We found that the duration of hospital stay was longer in elderly patients than in the young (mean 8.84 vs 6.86 days) with P -value (< 0.001). So, there was rapid recovery in younger patients. Findings are in disagreement with Segal et al. [18] who found that patients aged 60 years and older do not have a significantly different hospital course from that of patients less than 60 years old with regard to the need for intensive care, transfusion requirements, duration of hospital stay, or mortality.

We found also that the morbidity as the deterioration of conscious level and incidence of shock was higher in

Table 6 Comparing morbidity between both groups

Morbidity	Elderly group		Young group		P-value
	Number (total = 166)	Percent %	Number (total = 166)	Percent %	
Non	108	65.7%	65	39.2%	< 0.0001
Yes	58	34.9%	101	60.8%	
Re-bleeding	35	21.08%	43	25.9%	0.300
Deterioration of the conscious level	10	6.0%	22	13.3%	0.026
Shock	8	4.8%	27	16.3%	0.001
Aspiration	4	2.4%	6	3.6%	0.521
Infection	1	0.6%	3	1.8%	0.314

Table 7 Comparison between both groups regarding prognostic scores and days of hospital stay

	Groups				<i>P</i> value
	Elderly group		Young group		
	Mean	Standard deviation	Mean	Standard deviation	
Blatchford score	14.01	3.19	13.60	3.20	0.251
Rockwall score	3.90	1.68	2.56	1.74	< 0.001
Days of hospital stay	8.84	2.41	6.86	2.33	< 0.001

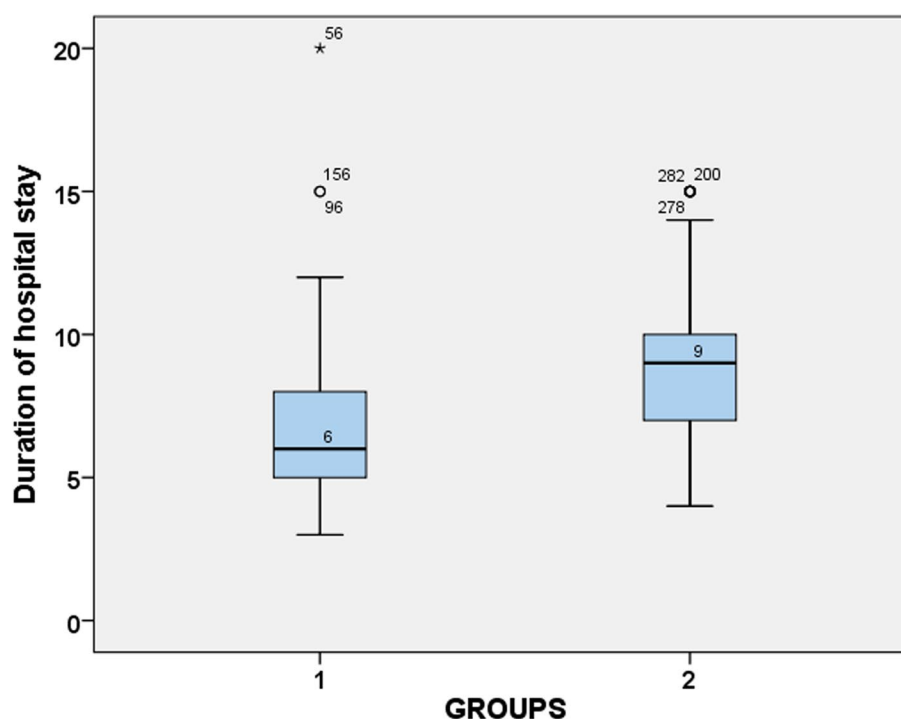
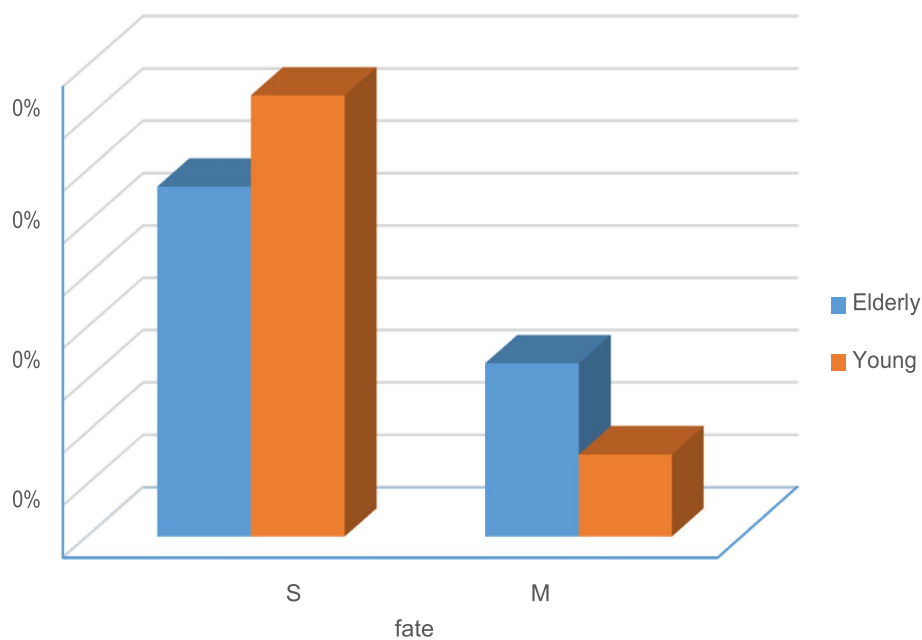
**Fig. 5** Duration of hospital stay between both groups

Table 8 Comparison between both groups regarding mortality

		Groups				P value
		Elderly group		Young group		
		Count	%	Count	%	
Fate S/M	S	111	66.9%	140	84.3%	< 0.001
	M	55	33.1%	26	15.7%	

**Fig. 6** Comparison between both groups regarding mortality

the elderly patients than in the young (P -value 0.026 and 0.001 respectively).

Our study also revealed higher mortality in the elderly than younger patients (33.1% vs 15.7%) with P -value (< 0.001). This was similar to the study of Gonzalez-Gonzalez et al. [16] and Kawaguchi et al. [9].

Conclusion

The elderly are vulnerable groups who are at high risk of adverse outcome and mortality following acute upper gastrointestinal bleeding. The incidence of bleeding in the elderly from peptic ulcer and GI malignancy is higher than in the young.

Recommendations

Special care should be directed to elderly patients presented with upper gastrointestinal bleeding through a multidisciplinary approach.

Abbreviations

UGIB: Upper gastrointestinal bleeding; NSAIDs: Non-steroidal anti-inflammatory drugs; CBC: Complete blood picture; LFTs: Liver function tests; KFTs: Kidney function tests; ICU: Intensive care unit; SPSS: Statistical Package for the Social Sciences; HTN: Hypertension; IHD: Ischemic heart disease.

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Authors' contributions

MH analyzed and interpreted the patients' data and general supervision of the research group. SE analyzed and interpreted the patients' data and statistical analysis. She was also the main endoscopist. YK participated in the data collection. SA analyzed and interpreted the data of the patients and helped in writing the manuscript. AA was a major contributor in writing the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

Not applicable

Declarations

Ethics approval and consent to participate

The study was approved by the institution ethical committee and form review board of the Kasr Al Ainy hospital. Oral and written informed consents were obtained from the patient or from his eligible relatives. The ethical approval number and date is not available.

Consent for publication

Oral and written informed consents were obtained from the patient or from his eligible relatives.

Competing interests

The authors declare no competing interests.

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