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Clinical outcome of early endoscopy in patients with acute upper gastrointestinal bleeding in Alexandria emergency department

Mina Montasser[a], Wael Nabil Abdel Salam[b], Amany Elbanna[c], Dina Magdy[a] and Ahmed A. Sabry[b]

[a]Department of Emergency Medicine, Faculty of Medicine, Alexandria University, Alexandria, Egypt; [b]Department of Surgery, Faculty of Medicine, Alexandria University, Alexandria, Egypt; [c]Department of Internal Medicine, Faculty of Medicine, Alexandria University, Alexandria, Egypt

ABSTRACT

Background: Upper gastrointestinal bleeding (UGIB) is a life-threatening emergency that causes considerable mortality and morbidity. The current study goal was to look at the endoscopic profile and clinical outcomes of patients with UGIB in Alexandria emergency department.

Patients and methods: 120 patients who had been admitted with acute UGIB were included in this study. All patients underwent upper gastrointestinal endoscopy. Outcomes that were determined included complications like re-bleeding, need for surgical intervention, mortality, hospital stay length, admission to intensive care units (ICUs), transfusion requirement, and re-admission.

Results: The majority of patients were males (69.2%) with a mean age of (45.47 ± 10.46). The most prevalent lesions causing UGIB were esophageal varices (65.8%) and (45.0%) presented with hematemesis. 51.7% were treated by band ligation. Death was reported in 5.00% and all patients who died had comorbidities, 6.7% re-bled and 50.0% of patients who re-bled were ≥ 60 years. 36.6% of patients had Rockall score (RS) ≥3. There was statistically significant relation between high RS and re-bleeding and mortality ($p < 0.001$).

Conclusion: We encountered that the timing of endoscopy was a good determinant of adverse outcomes in UGIB.

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KEYWORDS
Endoscopy; re-bleeding; Rockall score; upper gastrointestinal bleeding; varices

1. Introduction

Acute upper gastrointestinal bleeding (UGIB) is a prevalent emergency that necessitates hospitalization, quick assessment, and management. Hematemesis and/or melena are the most common presenting symptoms. UGIB is more common in elderly men [1]. Older age, Helicobacter pylori, medication, smoking, and a history of chronic liver disease are all risk factors. Patients at the highest risk should be identified using risk scores [2]. The causes of UGIB had been divided into two categories: variceal bleeding and non variceal bleeding [3]. The Rockall score (RS) Table 1 [4] and the Glasgow-Blatchford score (GBS) are the commonly used scores [5]. Endoscopy should be performed within 24 hours of presentation [6].

Early upper gastrointestinal endoscopy (UGIE) is linked to lower death rates and decreased length of hospital stay [7]. The purpose of this study was to assess the role of early UGIE and to determine the impact of early endoscopy on clinical outcomes in patients presenting with acute UGIB in emergency department (ED).

2. Patients and methods

This prospective study was conducted on 120 patients more than 18 years who were admitted to ED of Alexandria Main University Hospital with non-traumatic acute UGIB who underwent UGIE within 24 hours of admission. Every patient provided written and informed consent. Before beginning, we obtained approval from our institute's ethical committee. Patients were excluded if they did not give written consent, aged ≤18 years, pregnant, on anticoagulant medication, if UGIE was performed more than 24 hours from admission, and who were not stabilized after initial resuscitation. All patients were subjected to history taking and clinical evaluation. Laboratory tests were done with assessment of risk stratification by RS [8]. UGIE was performed and endoscopic findings were recorded. Figure 2 The primary outcomes as the mortality rate, re-breeding and the need for surgical or radiologic intervention and the secondary outcomes as hospital length of stay, admission to ICUs, transfusion requirement and re-admission within 1 month were reported. Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk,

CONTACT Dina Magdy dina.magdy@alexmed.edu.eg Department of Emergency Medicine, Faculty of Medicine, Alexandria University, Alexandria, Egypt

Table 1. The Rockall score.

Risk indicator	Score	
Age	<60	0
	60–79	1
	>80	2
Shock index	No shock	0
	Pulse >100, SBP > 100	1
	SBP <100	2
Comorbidity	No major comorbidity	0
	Major comorbidity	2
	Renal failure, liver failure, metastatic cancer	3
Endoscopic diagnosis	Mallory-weiss lesion	0
	All other diagnosis	1
	GI malignancy	2
Proof of hemorrhaging	None	0
	Blood, adherent clot, spurting vessel	2

NY: IBM Corp). Categorical data were represented as numbers and percentages. **Chi-square test** was applied to compare between two groups. Alternatively, **Fisher Exact or Monte Carlo correction** test was applied when more than 20% of the cells have expected count less than 5. For continuous data, they were tested for normality by the **Kolmogorov-Smirnov**. Quantitative data were expressed as range (minimum and maximum), mean, standard deviation and median for normally distributed quantitative variables **Student t-test** was used to compare two groups. On the other hand for not normally distributed quantitative variables **Mann Whitney test** was used to compare two groups. Significance of the obtained results was judged at the 5% level.

3. Results

In this study, the mean age was 45.5 ± 10.5 years with a male to female ratio 2.2:1 (M: 83, F: 37). Table 2

The most common presenting symptom was hematemesis (48.4%), and most common lesions causing UGIB were esophageal varices (65.8%), with a mean RS of 2.83 ± 1.59 (Figure 1).

In this study, 62 patients were managed by band ligation (51.7%), 20 patients were managed by

Table 2. Distribution of the studied cases according to different parameters ($n = 120$).

	No. (%)
Gender	
Male	83 (69.2%)
Female	37 (30.8%)
Male/Female ratio	2.2:1%
Age (years)	
<20	0 (0.0%)
20–39	44 (36.7%)
40–59	66 (55.0%)
≥60	10 (8.3%)
Mean ± SD.	45.5 ± 10.5
Median (Min. – Max.)	47 (24–66)
Comorbidities	
No	39 (32.5%)
Yes	81 (67.5%)
Chronic liver disease	66 (55.0%)
Chronic viral hepatitis	25 (20.8%)
Peptic ulcer disease	16 (13.3%)
DM	16 (13.3%)
HTN	9 (7.5%)
IHD	12 (10.0%)
CKD	8 (6.7%)
Risk factors	
NSAIDs	20 (16.7%)
Steroid	14 (11.7%)
Smoking	33 (27.5%)
Risk score	
Low risk (<3)	76 (63.3%)
Moderate risk (3–5)	37 (30.8%)
High risk (>5)	7 (5.8%)
Mean ± SD.	2.83 ± 1.59
Median (Min. – Max.)	2 (1–11)
Endoscopic treatment	
Band ligation	62 (51.7%)
Adrenaline injection	3 (2.5%)
Adrenaline + Band ligation	11 (9.2%)
Sclerotherapy	20 (16.7%)
Others	24 (20.0%)

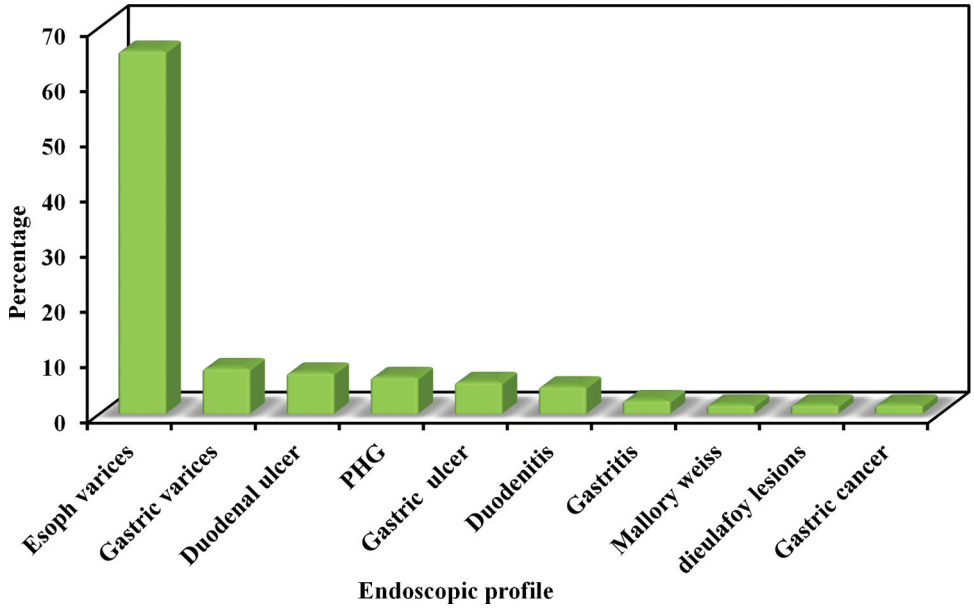

Figure 1. Distribution of the studied cases according to endoscopic profile ($n = 120$).

sclerotherapy (16.7%), 24 patients were managed by other methods (glue injection, hemospray) (20.0%), 11 patients were managed by Adrenaline injection+ Band ligation (9.2%), and 3 patients were managed by adrenaline injection (2.5%) (Table 2 and Figure 2).

In this study, 8 patients re-bled after endoscopy (6.7%), while 6 patients died (5.0%), 2 patients need surgery after endoscopy (1.7%), 4 patients were re-admitted to the hospital within 1 month (3.3%), and 18 patients received blood transfusion (15.0%) with a mean of 3.56 ± 1.10 units of blood. The mean of hospital stay was 2.05 ± 1.03 days, with a mean of ICU stay of 2.0 ± 0.73 days. Table 3.

There was statistically significant association between re-bleeding and comorbidities as chronic viral hepatitis, DM, HTN, IHD, and CKD

There was statistically significant association between re-bleeding and low Hb, low platelet count, high INR, prolonged PT, prolonged PTT, abnormal LFT, elevated RFT, high serum sodium level, high RBG, and high RS.

There was statistically significant association between mortality and increasing age, comorbidities, low Hb, low platelets count, high WBCs count, elevated INR, prolonged PT, prolonged PTT, abnormal LFT, elevated RFT, high serum sodium level, high RBG, and high RS (Table 4). After assessing multivariate analysis

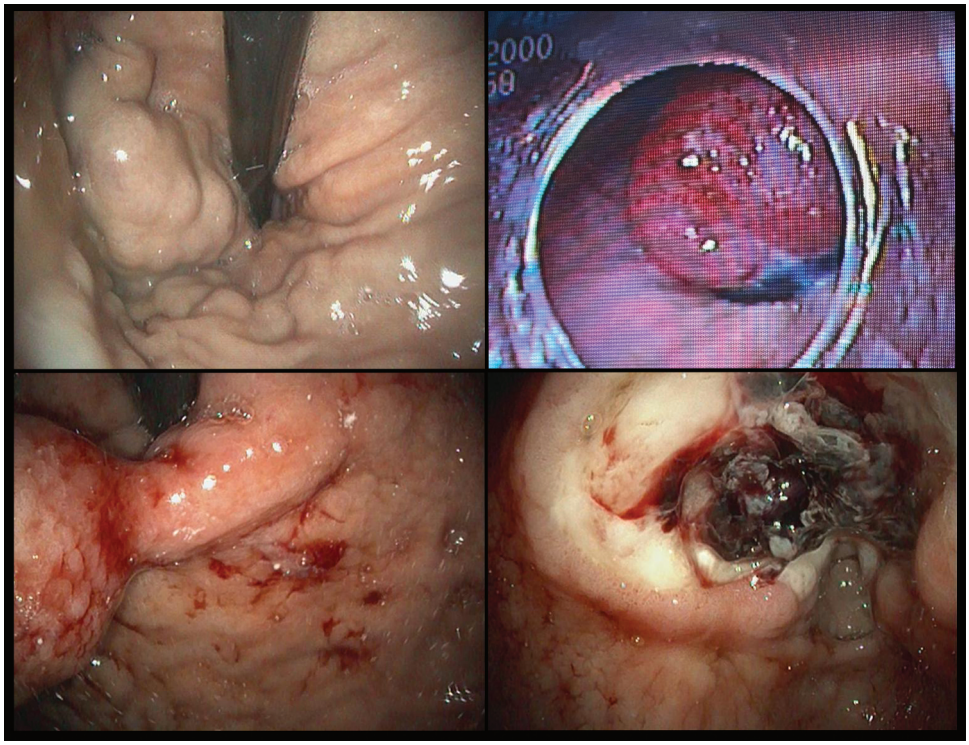

Figure 2. Endoscopic findings of UGIE.

Table 3. Distribution of the studied cases according to outcome ($n = 120$).

Outcome	No. (%)
Re-bleeding	8 (6.7%)
Surgery	2 (1.7%)
Mortality	6 (5.0%)
Hospital stay (days)	
Mean ± SD.	2.05 ± 1.03
Median (Min. – Max.)	2 (1–7)
ICU stay (days)	16 (13.3%)
Mean ± SD.	2 ± 0.73
Median (Min. – Max.)	2 (1–3)
Blood transfusion	18 (15.0%)
Mean ± SD.	3.56 ± 1.10
Median (Min. – Max.)	4 (2–6)
Re-admission	4 (3.3%)

for the most important predictors, it was found that viral hepatitis was significant after controlling for age, DM, IHD [OR = 9.184 (1.277–66.033), $P = 0.028$ for re-bleeding] and [OR = 21.084 (1.169–380.185), $P = 0.039$ for mortality].

4. Discussion

Majority of the patients (69.2%) were males, in a study by **Kumar et al;** 72% of patients were males [9]. The mean age in **Dewan et al's** study was (48.76 + 17.19) [10]. In **Alexandrino et al.'s** study the mean age was 67 years [11].

Regarding the presenting symptoms, our results agreed with **Gado et al;** hematemesis was much commoner than melena [12]. Regarding comorbidities, **Moledina et al.** found that 62.4% of patients had comorbidities [13]. Results of the present study agreed with a previous study, they found that (54%) of patients had history of chronic liver disease [9]. Our results disagreed with another study by **Minakari et al;** peptic ulcer was detected as the main reason for UGIB in 42.4% of patients [14]. Regarding the risk factors, a study by **Gokaket et al.** noted that 19% of patients reported the intake of NSAIDs, aspirins and smoking in 16% [15]. In the current study 30.8% of patients had moderate risk RS (3–5). **Rajan et al.'s** results found that 51.2% of the patients had a moderate risk RS of (3–4) [16].

In the current study, the majority of patients had esophageal varices and nearly half of patients were treated by band ligation. In a study by **Hafez et al.** 57% had esophageal varices [17]. In the study by **Karki et al.** Endotherapy was required in 50.59% of cases, which included esophageal band ligation in 47.06% cases [18]. Regarding the patients' outcomes in the current study, similar results were reported by **Alexandrino et al;** death was reported in 6.9% of patients, re-bleeding in 14.7%, while need for surgery in 5.9%, and ICU admission in 5.9% [11].

Our results showed statistically significant association between re-bleeding and low Hb, low platelet count, high INR, prolonged PT, PTT and re-bleeding. **Ramos et al.** found that an increased INR > 2 was a predictor of recurrent bleeding [19].

Our results showed statistically significant association between elevated liver enzymes, elevated RFT and re-bleeding. Low albumin level and high bilirubin were risk factors for early re-bleeding after esophageal variceal ligation [20]. Low albumin level was associated with increased risk of re-bleeding [21]. **Jiménez et al**. found that high creatinine level was independent risk factor for re-bleeding [22]. While elevated creatinine was not significantly associated with re-bleeding in study by **Parveen et al** [23]. In this study, all the patients who re-bled had high RS. An association was found between high clinical RS and re-bleeding in patients with non-variceal UGIB in **Frías-Ordoñez et al**. [24] Also, there was a significant association between high RS and re-bleeding in **Wang et al**; study [25]. In this study, the majority of dead patients were males, ≥60 years. According to study by **Minakari et al**; older patients had higher mortality rate [14].

Results showed that all patients who died had comorbidities. These results agreed with a study by **Corzo et al**; cirrhosis was related to increased mortality rate [26]. We noted statistically significant association between elevated INR, prolonged PT, PTT and mortality. Predictors of mortality in other study by **Ramos et al.** were INR > 2, aPTT >38 seconds [19]. In this study, all the patients who died had high RS, these agreed with research by **Corzo et al;** RS greater than 4 was related to increased mortality rate [26].

Table 4. Relation between mortality and different parameters ($n = 120$).

	Mortality			
	Alive ($n = 114$)	Dead ($n = 6$)	Test of Sig.	p
Gender				
Male	79 (69.3%)	4 (66.7%)	χ^2= 0.019	^{FE}p= 1.000
Female	35 (30.7%)	2 (33.3%)		
Age (years)				
<20	0 (0.0%)	0 (0.0%)	χ^2= 14.325*	^{MC}p= 0.001*
20–39	43 (37.7%)	1 (16.7%)		
40–59	65 (57.0%)	1 (16.7%)		
≥60	6 (5.3%)	4 (66.7%)		
Mean ± SD.	45 ± 10.2	55.2 ± 11.5	t= 2.376*	0.019*
Comorbidities				
No	39 (34.2%)	0 (0.0%)	3.041	$^{FE}p = 0.175$
Yes	75 (65.8%)	6 (100.0%)		
Chronic liver disease	61 (53.5%)	5 (83.3%)	2.049	$^{FE}p = 0.221$
Chronic viral hepatitis	20 (17.5%)	5 (83.3%)	14.958*	$^{FE}p = 0.001$*
Peptic ulcer disease	14 (12.3%)	2 (33.3%)	2.186	$^{FE}p = 0.182$
DM	12 (10.5%)	4 (66.7%)	15.547*	$^{FE}p = 0.003$*
HTN	6 (5.3%)	3 (50.0%)	16.444*	$^{FE}p = 0.005$*
IHD	7 (6.1%)	5 (83.3%)	37.739*	^{FE}p <0.001*
CKD	2 (1.8%)	6 (100.0%)	88.421*	^{FE}p <0.001*
Hb (g/dl)				
Mean ± SD.	9.37 ± 0.63	6.17 ± 0.26	t = 12.362*	<0.001*
Platelet (cell/mcl)				
Median (Min. – Max.)	200 (130–400)	125 (100–150)		
WBCs (*103/mm3)				
Median (Min. – Max.)	6.0 (4.0–9.0)	12.0 (4.0–15.0)		
INR				
Median (Min. – Max.)	1.10 (0.80–1.30)	1.30 (1.20–1.40)		
PT (second)				
Median (Min. – Max.)	14 (11–15)	16 (16–16)		
PTT (second)				
Median (Min. – Max.)	36.5 (25–45)	45 (40–45.0)		
AST (U/L)				
Median (Min. – Max.)	43.5 (15–87)	82.5 (25–88)		
ALT (U/L)				
Median (Min. – Max.)	55 (19–90)	90 (35–99)		
Bilirubin (mg/dl)				
Median (Min. – Max.)	0.80 (0.20–4)	3 (3–4)		
Albumin (g/dl)				
Median (Min. – Max.)	4.10 (1.40–5.20)	1.30 (1–1.60)		
Urea (mg/dl)				
Median (Min. – Max.)	40 (20–60)	80 (60–90)		
Creatinine (mg/dl)				
Median (Min. – Max.)	0.80 (0.70–3)	3 (2–4)		
Na+ (meq/l)				
Mean ± SD.	138.9 ± 7.41	148.7 ± 9.42	t = 3.121*	0.002*
K+ (meq/l)				
Median (Min. – Max.)	4.50 (3–6)	4.25 (3–6)		
RBG (mg/dl)				
Median (Min. – Max.)	133 (80–300)	275 (138–350)		
Rockall				
Low risk (<3)	76 (66.7%)	0 (0.0%)	χ^2= 37.464*	^{MC}p <0.001*
Moderate risk(3–5)	37 (32.5%)	0 (0.0%)		
High risk (>5)	1 (0.9%)	6 (100.0%)		
Median (Min. – Max.)	2 (1–6)	8 (7–11)		

SD: Standard deviation, t: Student t-test, U: Mann Whitney test, χ^2: Chi square test MC: Monte Carlo.
p: *p* value for Relation between mortality and different parameters.
*: Statistically significant at $p \le 0.05$.

5. Conclusion

In patients with acute UGIB, endoscopy performed within 24 hours was associated with improved clinical outcome in terms of in-hospital mortality, re-bleeding, transfusion requirements and need for surgery. Predictors that were significant for mortality included older age, comorbidities as (chronic viral hepatitis, DM, HTN, IHD, CKD), low Hb level, low platelet count, elevated INR, abnormal liver blood tests, renal impairment, hypernatremia, hyperglycemia and high RS.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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