Original Article

Endoscopy for Upper Gastrointestinal Bleeding Occurring in Hospitalized Patients: Findings and Impacts on Patient Management

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ABSTRACT

Background: The role and impact of esophagogastroduodenoscopy (EGD) on upper gastrointestinal bleeding (UGIB) occurring in hospitalized patients is unclear.

Material & Method: Consecutive inpatients with UGIB were enrolled. EGD was performed within 72 hours after the onset of UGIB. Patients were classified as having clinically significant bleeding or not. The impacts of EGD on patient management were assessed.

Results: Thirty patients (12 with clinically significant bleeding and 18 without) were included in the study. Definitive diagnosis of the bleeding causes was obtained in 100% and 72% of patients with and without clinically significant bleeding, respectively ($p = 0.046$). Acid-related disorders including stress-related mucosal disease (SRMD) were most common (57%) causes of bleeding (50% and 85% of patients with and without clinically significant bleeding respectively). Change of management was noted more often in patients with clinically significant bleeding than in those without (75% vs. 17%, $p = 0.002$), particularly in patients undergoing endoscopic therapy (67% vs. 6%, $p = 0.001$).

Conclusion: The most common causes of UGIB occurring in hospitalized patients were acid-related diseases including SRMD. EGD had an impact on the management mainly in patients with clinically significant bleeding, by providing a chance for endoscopic therapy.

Key words : Endoscopy, upper gastrointestinal bleeding, hospitalized, management

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INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is a common complication occurring in patients of varying disorders during hospitalization. However, most available information is related to the prophylaxis of stress-related mucosal disease (SRMD) in critically-ill patients[1-4], and not to the diagnostic work-up and patient management after the onset of UGIB has occurred[5]. Furthermore, data and recommendation on the appropriate use of esophagogastroduodenoscopy (EGD) and the management of UGIB in hospitalized patients are still limited[5]. Studies on the role of EGD in inpatient UGIB usually included only patients with clinically significant bleeding (e.g. presence of hemodynamic changes, or requirement of blood transfusion)[6,7], in whom endoscopy provided interventions and changes of management in 60% of cases[7]. Thus, endoscopy is likely beneficial in those with clinically significant bleeding.

On the other hand, information on patients without clinically significant bleeding, who are the majority, is bled scarce, assuming that most do not eventually undergo EGD. Most such patients are supposed to have bled from SRMD, which is believed to be self-limited and treated with acid suppression therapy. The caveat in this approach is that the real causes of UGIB may be serious conditions e.g. cancers or conditions that have specific therapy. The decision to perform EGD in these patients usually depends on the attending physician, without any standard recommendation.

The objective of this study is to assess the etiology of UGIB occurring in hospitalized patients by means of EGD, subgrouping patients according to the presence or absence of clinically significant bleeding, and to evaluate the impact of EGD on patient's management.

MATERIAL AND METHOD

Patients

Consecutive inpatients aged 18 over who were, admitted at the Internal Medicine wards, Siriraj Hospital Bangkok, with an acute UGIB (hematemesis, coffee ground emesis, blood/coffee ground by nasogastric lavage, melena, hematochezia) after 48 hours of admission were recruited for the study. Enrolled patients were those willing to participate in the study, and who underwent EGD within 72 hours after the onset of UGIB. Exclusion criteria included patients with unstable hemodynamics (from causes other than UGIB itself), acute myocardial infarction within the preceding 7 days, severe cardiac arrhythmias, severe valvular heart diseases or congestive heart failure.

Clinically significant bleeding

Patients were grouped into those with and without clinically significant bleeding, defined as GI bleeding accompanying one of the followings: decrease in blood pressure ≥ 20 mmHg, decrease in blood pressure ≥ 10 mmHg with an increase in pulse rate ≥ 20/min in the upright position, decrease of hemoglobin ≥ 2 g/dl in 24 hours, blood transfusion ≥ 2 unit/24 hours, or failure of hemoglobin to increase appropriately after transfusion as proposed by Cook, *et al*[1].

Esophagogastroduodenoscopy

Standard EGD was performed in every patient within 72 hours after the onset of UGIB. Findings were recorded and the decision whether to perform endoscopic intervention was up to the endoscopist.

Impact of EGD on patient management

Change of patient management was defined as the need for endoscopic intervention, or surgical intervention, or specific medical therapy other than blood transfusion and proton pump inhibitor infusion.

Statistical analysis

All collected variables were subjected to a descriptive analysis. For numerical variables, the results were expressed as a mean ± standard deviation. Quantitative variables are shown in percentages. The comparison of numerical variables between groups was accomplished by using the student's *t*-test or the Mann-Whitney test, as appropriate. For comparison of percentages, the chi-square test or the Fisher's exact test was chosen. The p value of < 0.05 was considered significant. The SPSS 17.0 for Windows was used for the statistical analysis.

RESULTS

Thirty patients were included in the study, 12 with clinically significant bleeding and 18 with non-significant bleeding. The demographic data of patients in both groups are shown in Table 1. In the group with clinically significant bleeding, there were more patients with liver cirrhosis, fewer patients with coronary

artery disease, and the mean hemoglobin level was lower.

EGD findings

EGD led to the definitive diagnosis more often in patients with clinically significant bleeding than in those without (100% vs. 72%, $p = 0.046$) Acid-related disorders including SRMD (peptic ulcer, gastroduodenitis and reflux esophagitis) were the most common causes of bleeding, (57%, 50% and 85% of all patients, patients with and patients without clinically significant bleeding, respectively (Table 2). Potentially

Table 1. Demographic data

Characteristics	Degree of UGIB		*p*-value
	Clinically significant (n = 12)	Non clinically significant (n = 18)	
Age (years), mean ± SD	64 ± 11	67 ± 16	0.612
Male gender, n (%)	5 (42)	11 (61)	0.296
Presence of co-morbidities	11 (92)	16 (89)	1.000
Mechanical ventilation	1	4	0.622
Cirrhosis	4	0	0.018
Renal failure	1	6	0.193
Sepsis	4	4	0.678
Coronary artery disease	0	6	0.025
Coagulopathy	5	5	0.429
Thrombocytopenia	2	0	0.152
Drugs			
Antiplatelets	2	9	0.121
Anticoagulant	3	6	0.704
Corticosteroids	0	2	0.231
NSAIDs	2	1	0.320
Onset after admission (days), mean ± SD	10 ± 8	8 ± 7	0.626
Hemoglobin (g/dl), mean ± SD	7.8 ± 0.8	9.8 ± 1.1	<0.001

Table 2. EGD findings and patient outcomes

	Degree of UGIB		*p*-value
	Clinically significant (n = 12)	Non clinically significant (n = 18)	
Positive findings, n (%)	12 (100)	13 (72)	0.046
Clean base ulcers	2	1	
Ulcers with high risk stigmata	3	1	
Erosive gastritis	1	5	
Erosive duodenitis	0	2	
Esophagitis	0	2	
Mallory Weiss tear	1	0	
Esophageal varices	3	0	
Tumors	2	0	
Change of management, n (%)	9 (75)	3 (17)	0.002
Endoscopic interventions	8	1	0.001
Surgery	1	0	0.152
Specific medications	0	2	0.503

serious lesions were all found in patients with clinically significant bleeding, notably esophageal varices and tumors.

Impact on patient management

Change of management was noted more frequently in patients with clinically significant bleeding than in those without clinically significant bleeding (75% vs. 17%, $p = 0.002$). The main change of management was the opportunity to provide an endoscopic intervention (67% vs. 6% $p = 0.001$), as shown in Table 2 and Figure 1.

DISCUSSION

In the present study, we demonstrated that the most common causes of UGIB occurring in hospitalized patients were acid-related diseases including SRMD, and the EGD impacted the management of patients with clinically significant bleeding by providing the opportunity for an endoscopic therapy.

Acid-related disorders including SRMD were the most common causes of inpatient UGIB in this study (57%), which was similar to the 60-71% frequencies reported in other studies[6-8]. Likewise, EGD failed to detect the source of bleeding in 17% of our patients compared to 13-26%[6-8] in other studies. An explanation of bleeding in the endoscopy-negative patients might be related to coagulopathy or thrombocytopenia, which already resolved following replacement therapy before performing EGD. Potentially serious lesions, e.g. varices or cancers, were uncommon, and were found only in patients with clinically significant bleeding.

The main message of this study was that EGD impacted patient management mainly in those patients with clinically significant bleeding, by providing the opportunity of endoscopic therapy (67%), while patients without clinically significant bleeding benefited from EGD (17%). This was in keeping with finding by Kethu *et al*[7] showing that EGD changed management in 60% of their patients with clinically significant bleeding but only 1% of those without[7]. This data, together with the information that most serious lesions of concern usually presented with clinically significant bleeding, indicated that EGD should be recommended only in patients with clinically significant bleeding.

The strength of this study was the prospective design, as many previous studies were retrospective[7,8]. The weakness is related to the small sample size due to rarity of patients without clinically significant bleeding. One main problem was presence of serious underlying disease(s) that met exclusion criteria. Also some patients, or their relatives, and even the attending physicians declined to participate in the study.

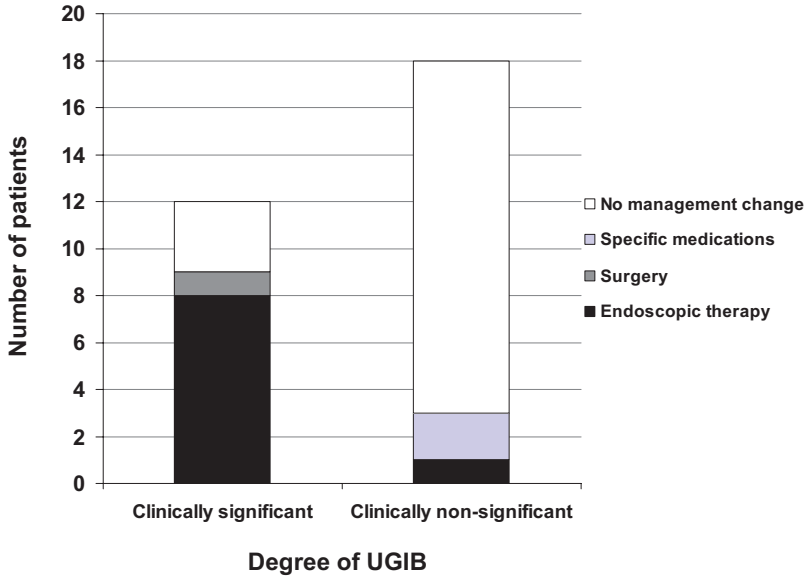

Figure 1. Proportions of patients with and without clinically significant bleeding who had management changes after EGD. Patients with clinically significant bleeding had significantly greater management changes ($p = 0.002$), particularly endoscopic interventions ($p = 0.001$) compared with those without clinically significant bleeding.

Another limitation was that most patients critically-ill with multiple co-morbidities and with risk factors of SRMD[1]. Thus, the application of the study results to other non ICU patients should be made with caution.

In conclusion, the most common causes of UGIB occurring in hospitalized patients were acid-related diseases including SRMD. EGD impacted the management mainly of patients with clinically significant bleeding, by providing a chance for endoscopic intervention.

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