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 onset of UGIB. Patients were classified as having clinically significant bleeding or not. Impacts of EGD on the management of patients were assessed.

Results: Thirty patients (12 with clinically significant bleeding and 18 without) were included in the study. Diagnosis of the bleeding cause 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 the most common (57%) causes of bleeding. It causes 50% and 85% of patients with and without clinically significant bleeding. Management were noted frequently more in patients with clinically significant bleeding than in those without (75% vs 17%, $p = 0.002$), particularly regarding endoscopic therapy (67% vs 6%, $p = 0.001$).

Conclusion: The most common causes of UGIB in hospitalized patients were acid-related diseases including SRMD. EGD impacted on the management mainly of the patients with clinically significant bleeding by providing the chance for endoscopic therapy at proper timing.

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

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INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is a common complication occurring in patients during hospitalization for various disorders. However, most of the available information is usually related to the prophylaxis of stress-related mucosal disease (SRMD) in critically-ill patients[1-4], not the work-up nor the management after UGIB has occurred[5]. Furthermore, data and recommendation on the appropriate use of EGD and the management of UGIB in hospitalized patients are still limited[5]. Study on the role of EGD in inpatient with UGIB usually included only patients with clinically significant bleeding (e.g. presence of hemodynamic changes or blood transfusion)[6,7]. In such setting, endoscopy was found to provide appropriate intervention and to change the clinical management in up to 60% of patients[7]. Endoscopy was thus likely to be of benefit in those with clinically significant bleeding.

On the other hand, information on patients without clinically significant bleeding, which constitute the majority, is very scarce, assuming that most do not undergo EGD. Most such patients were often supposed to have been bleeding from SRMD, believed to be self-limited and treatable with acid suppression therapy. The caveat in this approach is that the real causes of the bleeding may well be serious conditions, such as cancer, or conditions that potentially have specific therapy. The decision to perform EGD in these patients usually is up to the attending physician without any standard recommendation.

The objective of this study is to evaluate by EGD the etiology of UGIB occurring in hospitalized patients, according to the presence or absence of clinically significant bleeding, as well as to evaluate the impact of EGD on the management of these patients.

MATERIAL AND METHOD

Patients

Consecutive inpatients aged 18 and over who were admitted to the Internal Medicine wards, Siriraj Hospital, and who developed acute UGIB (defined as hematemesis, coffee-ground emesis, blood/coffee ground via nasogastric lavage, melena, hematochezia) 48 hours or more after hospital admission were enrolled in the study. All patients consented to participate in the study and underwent EGD within 72 hours after the bleeding onset. Exclusion criteria were patients

with unstable hemodynamics (not from the bleeding per se), evidence of acute myocardial infarction within the preceding 7 days, severe cardiac arrhythmia, severe valvular heart diseases, or congestive heart failure.

Clinically significant bleeding

Patients were classified into those with and those without clinically significant bleeding. Clinically significant bleeding was defined as GI bleeding accompanying with one of the followings: a decrease in BP ≥ 20 mmHg, a decrease in BP ≥ 10 mmHg with an increase in pulse ≥ 20 beat/min in the upright position, a decrease of Hb ≥ 2 g/dL in 24 hours, blood transfusion requirement ≥ 2 unit/24 hours, or failure of Hb to increase appropriately after transfusion (unit transfused - 2) as proposed by Cook, *et al*[1].

Esophagogastroduodenoscopy

Standard EGD was performed in all patients within 72 hours after onset of UGIB. Findings were recorded and the decision whether to perform an endoscopic intervention was made by the endoscopists.

Impact of EGD on patient management

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

Statistical analysis

All the variables collected were subjected to a descriptive analysis. For numerical variables, the results were expressed as a mean $\pm$ SD. 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 were shown in Table 1. In the clinically significant bleeding group, there were more patient with

Table 1. Demographic data of patients

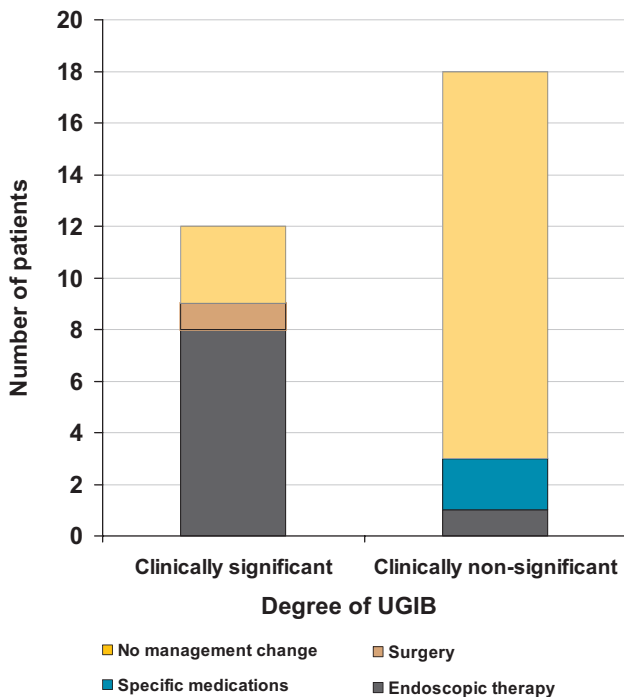| Characteristics	Degree of UGIB		*p*-value
	Clinically significant bleeding (n = 12)	Non clinically significant bleeding (n = 18)	
Age (years), mean ± SD	64 ± 11	67 ± 16	0.612
Male gender, n (%)	5 (42)	11 (61)	0.296
Presence of co-morbidities, n (%)	11 (92)	16 (89)	1.000
Mechanical ventilation	1	4	0.622
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
On medication			
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. Findings from EGD and patient outcomes

Characteristics	Degree of UGIB		*p*-value
	Clinically significant bleeding (n = 12)	Non clinically significant bleeding (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

liver cirrhosis, fewer patients with coronary artery disease, and lower hemoglobin levels than in the group with non-significant bleeding.

EGD findings

EGD provided definitive diagnosis in patients with clinically significant bleeding more often than in those with non-significant bleeding (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% of all patients, 50% in patients with clinically significant bleeding and 85% in those without clinically significant bleeding) (Table 2). Potentially serious lesions were found in patients with clinically significant bleeding, including esophageal varices and tumors.

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

Impact on patient management

Change of management occurred 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%, respectively, $p = 0.001$), as shown in Table 2 and Figure 1.

DISCUSSION

In the present study, it was evident that the most common causes of UGIB in hospitalized patients were acid-related diseases including SRMD, and EGD impacted mainly on the management of those patients with clinically significant bleeding by providing the 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]. Similarly, EGD could not detect the source of bleeding in 17% of our patients compared to 13-26%[6-8] in other studies. Bleeding in the endoscopy-negative patients might be related to underlying coagulopathy or thrombocytopenia, which could have been corrected by replacement therapy prior to EGD. Potentially serious lesions such as varices or cancers were uncommon, and were detected only in those with clinically significant bleeding.

In this study, EGD was found to impact on patient management mainly those in patients with clinically significant bleeding by providing the opportunity for endoscopic therapy (67%). In those without clinically significant bleeding, EGD was seldom of benefit (17%). Our finding was similar to that by Kethu *et al*[7] who reported that EGD changed management in 60% of their patients with clinically significant bleeding but only in 1% of those without[7]. Such observation, together with the finding that most potentially serious lesions are usually associated with clinically significant bleeding support a notion that EGD should be recommended only in patients with clinically significant bleeding.

The present study was prospectively conducted. Many past studies were retrospective[7,8]. A weakness in our study was the small sample size which was partly due to difficulty in enrolling patients without clinically significant bleeding. The presence of serious underlying diseases excluded many cases. Many patients or their relatives refused to participate in the study. Another limitation was that many ICU patients were critically ill with multiple co-morbidities and risk factors of SRMD[1]. Generalization of the study results for non-ICU patients should therefore be made with caution.

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

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