UPPER GASTROINTESTINAL BLEEDING IN A BRAZILIAN HOSPITAL:
a retrospective study of endoscopic records

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ABSTRACT – *Background* – Upper gastrointestinal bleeding is a frequent and potentially severe complication of most digestive diseases of the upper gastrointestinal tract. Upper endoscopy has a crucial role in the diagnosis and treatment of upper gastrointestinal bleeding, however epidemiological studies are still limited in our country. *Aims* - To assess the clinical characteristics, endoscopic accuracy, treatment efficiency and clinical outcome of patients admitted to the endoscopic unit with upper gastrointestinal bleeding. *Methods* - A retrospective study of consecutive records from patients who underwent emergency endoscopy for upper gastrointestinal bleeding was performed during a period of 2 years. *Results* - Most patients were male 68.7%, with a mean age of 54.5 ± 17.5 years. A bleeding site could be detected in 75.6% of the patients. Diagnostic accuracy was greater within the first 24 hours of the bleeding onset, and in the presence of hematemesis. Peptic ulcer was the main cause of upper gastrointestinal bleeding (35%). The prevalence of variceal bleeding (20.45%) indicates a high rate of underlying liver disease. Endoscopic treatment was performed in 23.86% of the patients. Permanent hemostasis was achieved in 86% of the patients at the first endoscopic intervention, and in 62.5% of the patients after rebleeding. Emergency surgery was seldom necessary. The average number of blood units was 1.44 ± 1.99 per patient. The average length of hospital stay was 7.71 ± 12.2 days. Rebleeding was reported in 9.1% of the patients. The overall mortality rate of 15.34% was significantly correlated with previous liver disease. *Conclusions* - Diagnostic accuracy was related to the time interval between the bleeding episode and endoscopy, and to clinical presentation. Endoscopic therapy was an effective tool for selected patients. The resulting increased duration of hospitalization and higher mortality rate in the patients submitted to therapeutic endoscopy were attributed to a higher prevalence of variceal bleeding and underlying liver disease.

HEADINGS – Gastrointestinal hemorrhage. Endoscopy, gastrointestinal. Hemostasis, endoscopic.

INTRODUCTION

Acute upper gastrointestinal (GI) bleeding is considered as a major complication of most digestive diseases of the upper GI tract. Although a large number of admissions to Brazilian hospitals are attributed to upper GI bleeding, epidemiological surveys are still limited, what render data imprecise.

In the last 30 years endoscopy has become the method of choice in the diagnostic approach of upper GI bleeding[14]. However, despite the development of new therapeutic weapons such as the proton pump inhibitors, endoscopic interventions and surgical approaches, the overall clinical outcome of the patients has not changed significantly and mortality rate remains around 10% in most international studies in the last 10 years[3, 12, 18].

The aim of this study was to obtain information on the clinical characteristics, accuracy of endoscopy in diagnosis, and determining the efficacy of treatment in patients with acute upper gastrointestinal bleeding in the Federal University Hospital of Rio de Janeiro.

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MATERIALS AND METHODS

We retrospectively analyzed 324 consecutive records of patients who underwent emergency endoscopy for upper GI bleeding, during a period of 2 years at the Federal University Hospital of Rio de Janeiro.

Data were collected from medical records of all patients on a standard form, including demographic characteristics, clinical presentation of the bleeding event, history of previous GI and/or liver disease, coexisting medical conditions, drug history, laboratory tests, time interval between the bleeding episode and endoscopy, endoscopic findings, endoscopic intervention, medical and/or surgical management, transfusion requirements, length of hospital stay, rebleeding rate, and causes of death.

Stigmata of active or recent bleeding were defined according to the FORREST Classification[6], whenever peptic ulcer was the bleeding source. Active bleeding was defined by the presence of a spurting vessel (Forrest Ia) or oozing of blood (Ib); recent bleeding was defined by the presence of a visible vessel (IIa); an overlying clot (IIb); or hematin on ulcer base (IIc). Active bleeding from varices was defined when either spurting or oozing of blood from varices were identified. Recent bleeding from varices was defined by the presence of cherry red spots, red whale marks, white nipple sign or hematocystic spots, when no other possible source of hemorrhage was identified[1]. Gastritis was defined as the active bleeding source whenever either diffuse or focal subepithelial hemorrhages or oozing of blood from erosions were present. Gastric erosions with a hematin base were considered as recent bleeding source.

Endoscopic diagnosis was considered to be accurate, if stigmata of active or recent bleeding were present, independently of the nature of the bleeding lesion. A presumptive diagnosis was attributed to a patient if either a single lesion without stigmata of bleeding, or varices with stigmata of recent bleeding were found. Undetermined diagnosis was defined by: 1) the inability to identify the bleeding source, because of technical problems as incomplete examination, impaired view due to obstructive process, large clots or excessive residues; 2) when more than one possible source without stigmata of bleeding were identified; or 3) when only non-erosive lesions, without any sign of recent bleeding were present. Normal examination was defined by the absence of any endoscopic abnormality.

Shock was defined as a systolic blood pressure below 90 mm Hg.

Rebleeding was characterized as a new bleeding episode during the first 72 hours of hospitalization after the initial bleeding has stopped.

Statistical analysis

Sigma-Stat (Version 1.0, Jandel Corporation, 1994) was used for all data management and statistical analysis. Descriptive analysis, Chi-square with Yates correction, Fisher's exact test and Mann-Whitney rank sum test, were carried out as appropriate. In this study, only the results with $P < 0.05$ were considered as statistically significant.

RESULTS

Only 176 of the 324 patients were considered for the analysis. Lacking of important information in the hospital records was the main reason for exclusion of the patients.

Clinical characteristics of the patients

Most patients were male, 121 (68.7%), with a mean age of 54.5 (± 17.5) years. Shock was present in 30 patients (17.0%). Concomitant hematemesis and melena were the presenting manifestations of 72 patients (41%). Hematemesis alone was reported in 53 patients (30.1%), while melena was reported in 46 patients (26.1%), and hematochezia in 5 patients (2.8%). Previous history of peptic ulcer disease was found in 27 patients (15.3%). Underlying medical illnesses were detected in 113 patients (64.2%). Liver disease was present in 39 patients (22.1%); alcohol abuse in 18 (10.2%); schistosomiasis in 8 (4.5%); renal disease in 6 (3.4%); acquired immunodeficiency syndrome in 5 (2.8%); and other coexisting illnesses in 35 patients (19.9%). Use of nonsteroidal anti-inflammatory drugs (NSAIDs) was reported in 25 patients (14.2%); corticosteroids were being administered to 4 patients (2.3%); 2 were taking anticoagulants (1.1%) and 2 were on oral antibiotics (1.1%).

Endoscopic diagnosis

Endoscopy was performed within 24 hours of the bleeding episode in 93 patients (52.8%). The bleeding site could be detected in most patients (75.6%). An accurate diagnosis was established significantly more often in patients who presented with hematemesis ($P < 0.01$), and in patients who underwent endoscopy within 24 h of the bleeding onset ($P < 0.006$). Peptic ulcer disease was the most frequent cause of bleeding (62/176), followed by esophageal or gastric varices (36/176), secondary to portal hypertension. The main bleeding lesions identified at upper GI endoscopy are shown in Table 1.

Treatment

Most patients were submitted to a conservative medical treatment only (72.7%) consisting of fluid replacement with intravenous normal saline or lactated Ringer's solution, parenteral H2 receptor antagonists or proton pump inhibitors, and eventually blood transfusions. The

TABLE 1 – Bleeding lesions identified at upper GI endoscopy

Endoscopic finding	Incidence (%)
Duodenal ulcer	37 (21.02)
Esophageal varices	33 (18.75)
Gastric ulcer	25 (14.20)
Erosive/hemorrhagic gastritis	15 (8.52)
Mallory-Weiss syndrome	7 (3.97)
Esophageal erosions	4 (2.27)
Gastric varices	3 (1.70)
Others*	9 (5.11)
No localization**	43 (24.43)

* Others: bulbitis/erosions (3); gastric cancer (2); esophageal ulcer (2); gastric polyps (1); angiodysplasia (1)

** No localization: undetermined diagnosis or normal examination, as previously defined

majority of patients with hemodynamic instability were admitted to the intensive care unit.

Endoscopic treatment

Endoscopic treatment was performed in 42 patients (23.8%), of which 26 (61.9%) had esophageal varices, 8 (19%) gastric ulcers, 5 (11.9%) duodenal ulcers, 2 (4.7%) Mallory-Weiss and 1 (2.4%) gastric cancer. Most patients who underwent endoscopic treatment had active bleeding or stigmata of recent bleeding at endoscopy. Injection sclerotherapy of esophageal varices was performed with ethanolamin oleate and of non-variceal lesions with 98% alcohol, and eventually epinephrine (1:10,000). Permanent hemostasis was achieved at the first endoscopic intervention in 87.5% of the patients with non-variceal bleeding and in 84.6% of the patients with variceal bleeding. After rebleeding, only 50% of the patients with non-variceal

bleeding and 75% of the variceal bleeders had a successful endoscopic hemostasis.

Surgical treatment

Emergency procedure was carried out in 6 patients, of which 3 had bleeding gastric ulcers. Two of them had no previous endoscopic intervention, and the 3rd one had a treatment failure with injection sclerotherapy. The other indications for emergency surgical intervention were perforated duodenal ulcer in two patients, and bleeding gastric varices in one patient. Seven patients were submitted to elective surgical procedures, because of esophageal varices (two), duodenal ulcer (two), concomitant gastric and duodenal ulcers (two), and esophageal and gastric varices (one).

Clinical outcome

The clinical outcome of the different subgroups of patients was defined by the amount of transfused blood units, length of hospital stay, the need for emergency surgery, the rebleeding and mortality rates, as shown in Table 2.

Blood transfusion

The average number of transfused packed red cells was 1.44 (± 1.99) per patient, with a maximum of 9.00 units, required by a patient with hemorrhage from esophageal and gastric varices.

Rebleeding

Rebleeding was reported in 9.1% of the patients (16/176). The presence of a non-bleeding visible vessel was significantly correlated with the rebleeding occurrence as shown in Table 3.

TABLE 2 – Clinical outcome of upper GI bleeding according to endoscopic diagnosis

Diagnostic group (n)	BTU/patient (mean)	Rebleeding n = 16	Mortality n = 27*	Emergency surgery n = 6
Peptic ulcer (62)	1.56	7	12	5
Varices (36)	2.08	4	5**	1
Gastritis (15)	1.72	2	5	-
Others (20)	2.10	-	2	-
No localization (43)	1.08	3	9	-

BTU - blood transfusion units

Varices - esophageal and/or gastric varices

Gastritis - erosive/hemorrhagic gastritis

* Six patients had more than one lesion

** $P = 0.04$

TABLE 3 – Rebleeding rate on the basis of endoscopic findings

Endoscopic findings (n = 16)		Rebleeding rate (%)	P value
Gastric or duodenal ulcer			
(Rebleeding/total)			
Active oozing	(1/4)	25.00	NS
Non-bleeding visible vessel	(2/3)	66.66	<0.02
Red or black spot	(2/23)	8.70	NS
Clean ulcer base	(2/32)	6.25	NS
Esophageal or gastric varices			
Active bleeding	(1/8)	12.50	NS
Red color signs	(3/19)	15.78	NS

NS = not significant

Length of hospital stay

The average length of hospital stay was 7.71 (± 12.2) days. Patients in either the injection-sclerosis or the surgical therapy group had significantly greater lengths of hospital stay when compared to the medical treatment group only (Table 4).

Mortality

The overall mortality rate was 15.34% (27/176). Patients submitted to either injection-sclerosis or surgical treatment presented significantly greater mortality rates than the medical treatment group (Table 4). Among those patients, 59.1% were noted to have underlying medical conditions. Previous liver disease was significantly correlated with greater mortality rate (Table 5).

DISCUSSION

Acute upper gastrointestinal bleeding is a common life-threatening emergency resulting in a large number of hospital admissions. Despite the advent of endoscopy and endoscopic therapy, the accessibility of the patients to medical centers with experienced medical staff and adequate equipment is still limited in Brazil. Moreover, it is possible that many patients be admitted late in the course of the bleeding episode, while others may never reach the hospital. The present study was carried out in an academic center of Rio de Janeiro as a pilot project intended to obtain information on demographic, management and outcome from records of patients with upper gastrointestinal hemorrhage. Most patients with GI bleeding admitted to the Endoscopic Unit consisted of in-patients and individuals followed in the outpatients unit.

Comparisons of the present retrospective study with previous studies from other cities or countries may be confounded by variations in methodology, definitions and entry criteria used as well as by the heterogeneity of the different populations analyzed.

In contrast to other surveys, the age of the patients was not significantly associated with increased incidence or a higher mortality rate in our series. The almost two-fold increase in male cases of upper gastrointestinal bleeding found in our series is similar to other studies[22, 29] and might be explained by the higher prevalence of underlying illnesses among males, such as liver disease and alcohol consumption.

TABLE 4 – Clinical outcomes of patients with upper GI bleeding according to treatment modality

Clinical outcome	All treatment groups (n = 176)	Medical therapy (n = 128)	Endoscopic therapy (n = 42)	Emergency surgical therapy (n = 6)
Length of hospital stay (days)	7.71 ± 12.2	6.33 ± 11.4	11.0 ± 14.2*	19.9 ± 19.9**
Mortality rate (%)	15.34	14.13	30.77***	66.66***

Data are presented as mean ± SDEV or %

Comparisons were performed with the whole group

* $P <0.02$; ** $P <0.006$; *** $P <0.05$

TABLE 5 – Analysis of the mortality rate according to underlying medical conditions

Underlying medical condition (n = 104)	Mortality rate (%)	P value
Liver disease (12/38)	31.58	<0.03
Alcohol (7/22)	31.82	NS
AIDS (2/5)	40.00	NS
Renal disease (2/7)	28.57	NS
Others (3/35)	11.11	NS

NS = not significant

Although the use of NSAIDs is a well-established risk factor for upper gastrointestinal bleeding, we did not find any significantly correlation with the etiology of the hemorrhagic episode. Interestingly, in our series the previous use of NSAIDs was lower than that reported by others[10, 21]. It is possible that this finding actually represents distinct characteristics of the populations, or that a bias may have occurred during retrospective data collection.

Although the consumption of alcohol has been emphasized as a risk factor for upper GI bleeding[21], we did not find any correlation between alcohol abuse and specific bleeding lesions or a higher mortality rate.

By the other hand, underlying liver disease was usually higher in our series as compared with others[4, 10, 28]. It is possible that the prevalence of alcohol related liver disease and schistossomotic liver disease with portal hypertension might be increased in the population studied. Previous history of peptic ulcer disease was somewhat lower than that reported by others[10, 28]. It is difficult to interpret the relevance of this latter finding because information about previous diseases also depends on the accessibility of the patients to the local health care system.

Similarly to other surveys[8, 10, 17, 22, 27, 28] the most common bleeding lesion identified at upper GI endoscopy was peptic ulcer disease, duodenal ulcer being more common than gastric ulcer. Nevertheless, when compared to American studies[10, 23], we found fewer patients with gastritis (8.5% vs 13% and 23%, respectively). In respect to the diagnosis of gastritis, our diagnostic profile is similar to that found in European studies, but the prevalence of bleeding from varices is greater among our patients[17, 22, 28]. This finding may be explained by the fact that a quarter of our patients presented previous evidence of portal hypertension, and that in agreement with other studies[19, 26], varices were the most common source of bleeding in such patients.

As the prevalence of the infection by *H. pylori* is higher in developing countries, it would be interesting to evaluate its possible influence on the etiology of upper GI bleeding. However, we could not determine the prevalence of the infection in this retrospective study, because tests for *H. pylori* status were not routinely made in patients with acute upper GI bleeding during the period studied in our institution.

The accuracy of endoscopy as a diagnostic procedure in our study was similar to that reported in international studies[22, 28]. Other methods eventually used in the investigation of the etiology of upper of GI hemorrhage were not analyzed in this study. Different results concerning the sensitivity of the endoscopic examination could be attributed to different definitions used for the diagnosis of the bleeding lesion[25]. In addition, the possibility of inter-observer variation among endoscopists suggests the need for a standardization of the criteria for stigmata of hemorrhage[16]. Moreover, different time intervals between the bleeding episode and the endoscopic procedure are known to influence the endoscopic diagnosis. The clinical presentation of the bleeding episode was also found to be correlated with the accuracy of the endoscopic diagnosis. Patients who presented with hematemesis were significantly more likely to obtain a diagnosis than the others with different clinical presentations. Hematemesis is probably a most threatening event to patients, that may contribute to an earlier seek for medical attention. Similar to other studies, hematochezia was reported as an uncommon form of presentation for upper GI bleeding. In the present study, all patients who presented with hematochezia had an upper GI source of bleeding identified by upper endoscopy.

Endoscopic therapy is a well-established procedure in the management of GI bleeding and can be used as an effective tool for selected patients[3, 24]. Nevertheless, in the present study the patients who underwent endoscopic therapy seem to have had both increased duration of hospitalization and mortality rate, compared to the group under medical treatment only. However, the comparison between treated and untreated groups is almost impossible because the endoscopically treated patients were sicker individuals with more than half of them being variceal bleeders, with underlying liver disease. In fact, the presence of co-morbidity is a well-known cause of increased mortality in GI bleeding[12, 22, 23]. Similarly to other studies, permanent hemostasis was obtained at a first attempt in most patients who underwent endoscopic therapy[13, 28]. In contrast to others, long-term hemostasis was achieved in only half of the patients submitted to endoscopic re-treatment[13, 20]. However, it might be crucial to notice that most studies analyze upper GI bleeding in two major groups: variceal and non-variceal hemorrhage. Obviously, patients with bleeding varices usually have underlying severe medical disease, and often coagulation disorders. By the other hand, specific endoscopic techniques for bleeding varices cannot be compared together with other endoscopic therapies for distinct lesions. Even different causes of non-variceal bleeding should be considered separately. Peptic ulcer disease, the major cause of upper GI bleeding in most studies, has been classified according to defined stigmata of bleeding which are good predictors of either the risk of rebleeding or mortality rate. However, reports of endoscopic treatment for non-variceal bleeding other than those of peptic ulcer are still limited, probably because of the wide range of etiologies. Hence, the current management of those patients is consequently not well established and suggests the need to analyze more defined subgroups.

The success of endoscopic re-treatment depends on several factors such as the local characteristics of the bleeding lesion, general health status of the patient, techniques employed, skill of the endoscopic team, and the combination medical treatment[5, 7, 11]. It is likely, however, that endoscopic re-treatment may be considered as an alternative means of reducing the need for emergency surgery without increasing significantly the morbidity and mortality rates.

An overall rebleeding rate similar to that found in previous studies[10, 12, 15], could be attributed either to a comparable efficacy of endoscopic hemostasis, or to possible coincidental clinical characteristics of the different groups of patients. However, the analysis of the rebleeding rate according to endoscopic findings seemed to provide paradoxical results. The limited numbers of patients analyzed could have accounted for unexpected correlation between the rebleeding rate and the Forrest classification.

As it occurs in other retrospective studies, loss of data is frequent and sometimes blunts the retrieval of fundamental information. Failing or losing information in the emergency or endoscopy records resulted in a significant reduction of the study population and served as an advise to the need for improving the quality of data collection and recording in different units.

On the other hand, a concomitant higher mortality rate, which was significantly correlated to coexisting illnesses such as in other studies[2, 9], may suggest a pre-selection of high-risk patients with significant underlying medical conditions, to an academic medical center. Coexisting liver disease was the main factor associated with the poor outcome of the patients. It seems that an appropriate analysis of rebleeding and mortality rates should consider the heterogeneity of the patients with upper GI hemorrhage.

Emergency surgery was seldom necessary. A surgical procedure was undertaken only in a few patients with ulcer perforation or ongoing bleeding peptic ulcer or gastric varices, despite attempts at endoscopic therapy. The greater mortality rate observed with the urgent surgery might be explained by the selection of severe cases or of those patients who proved to be refractory to the medical or endoscopic therapies.

Accessibility of the patients to the hospital could influence in the time interval between the bleeding event and the admission to the emergency unit, and may also explain delays in clinical and endoscopic intervention. Nevertheless, the sensitivity of endoscopy as a major diagnostic tool in upper GI bleeding was similar to that observed by others.

CONCLUSIONS

In this retrospective study we confirmed that endoscopy contributed to identify the bleeding site in most patients and provided prognostic data concerning rebleeding and clinical outcome. Diagnostic accuracy of endoscopy was related to the form of clinical presentation and to the time lapse between the bleeding episode and endoscopy.

Therapeutic endoscopy proved to be an efficient tool in the management of variceal and non-variceal upper GI bleeding. The high prevalence of variceal bleeding and underlying chronic liver disease might explain the increased length of hospital stay and the higher mortality rate found in patients submitted to therapeutic endoscopy.

Further identification of subsets of patients with a high-risk, based on a standardized protocol, may contribute to an improved management of upper GI bleeding, including early definition of the most appropriate therapeutic intervention according to local conditions.

Zaltman C, Souza HSP, Castro MEC, Sobral MFS, Dias PCP, Lemos Jr V. Sangramento digestivo alto em um hospital brasileiro: estudo retrospectivo de registros endoscópicos. Arq Gastroenterol 2002;39(2):74-80.

RESUMO – *Racional* – A hemorragia digestiva alta é complicação comum e grave da maioria das doenças do trato gastrointestinal superior. A endoscopia tem papel fundamental no diagnóstico e no tratamento da hemorragia digestiva, mas os dados epidemiológicos a esse respeito ainda são precários em nosso meio. *Objetivos* - Determinar as características clínicas, a acurácia endoscópica, a eficácia do tratamento e a evolução clínica dos pacientes admitidos no setor de endoscopia digestiva do Hospital Universitário da Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, com sangramento digestivo alto. *Pacientes e Métodos* - Estudo retrospectivo de registros consecutivos de pacientes com hemorragia digestiva alta submetidos a endoscopia de urgência, em período de 2 anos. *Resultados* - A maioria dos pacientes era do sexo masculino (68.7%) com idade média de 54,5 ± 17,5 anos. O sítio de sangramento foi identificado em 75.6% dos pacientes. A acurácia diagnóstica da endoscopia foi maior quando realizada nas primeiras 24 horas do início do sangramento e quando da presença de hematêmese. A úlcera péptica foi a principal causa de hemorragia digestiva alta (35%). A prevalência de sangramento varicoso (20,45%) indica freqüência alta de hepatopatia subjacente. O tratamento endoscópico foi realizado em 23,86% dos pacientes. Hemostasia permanente foi alcançada em 86% dos pacientes após a primeira intervenção endoscópica e em 62,5% dos pacientes após ressangramento. Cirurgia de emergência foi raramente necessária. A quantidade de unidades de sangue utilizada foi em média 1,44 ± 1,99 por paciente. O tempo médio de internação hospitalar foi de 7,71 ± 12,2 dias. Ressangramento foi observado em 9,1% dos pacientes. A taxa de mortalidade de 15,34% foi significativamente relacionada com a presença de doença hepática prévia. *Conclusões* - A acurácia diagnóstica foi correlacionada tanto com o intervalo de tempo entre o episódio de sangramento e a realização da endoscopia, como com a forma de apresentação clínica. A terapêutica endoscópica mostrou-se eficaz num grupo selecionado de pacientes. O aumento do tempo de hospitalização e a maior taxa de mortalidade nos pacientes submetidos a terapêutica endoscópica foram atribuídos a maior prevalência de varizes esofagianas e à presença de hepatopatia subjacente.

DESCRITORES – Hemorragia gastrointestinal. Endoscopia gastrointestinal. Hemostase endoscópica.

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