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Original Research Article **Hepatology and Gastroenterology**

Hemorrhagic Bulbar Ulcer Correlation between Topography and Clinical Severity

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Abstract

Bulbar ulcer bleeding remains a frequent cause of upper gastrointestinal hemorrhage, although its incidence has decreased with the use of proton pump inhibitors and the eradication of *Helicobacter pylori*. The aim of this study was to evaluate the correlation between bulbar ulcer topography and clinical severity. This was a prospective analytical study conducted over a 28-month period, from April 2020 to August 2022, including patients admitted on an emergency basis for upper gastrointestinal bleeding secondary to a bulbar ulcer. The use of non-steroidal anti-inflammatory drugs and tobacco consumption were the main identified risk factors. A marked male predominance was observed, and anterior localization of the bulbar ulcer was significantly associated with an increased risk of hemodynamic instability.

Keyword: Upper Gastrointestinal Hemorrhage, Bulbar Ulcer, Proton Pump Inhibitors, Helicobacter Pylori.

INTRODUCTION

Bulbar ulcer hemorrhage remains a frequent and life-threatening disease, because of its anatomical situation and its proximity to the gastro-duodenal artery. Upper gastrointestinal endoscopy must be performed as quickly as possible, in the best possible technical conditions. The development of proton pump inhibitors and the eradication of Helicobacter pylori have contributed to a reduction in this pathology. Through clinical, endoscopic, and therapeutic analysis, we aim to explore the correlation between ulcer topography and clinical severity, and compare our findings with data from the current literature

MATERIALS AND METHODS

This is a prospective analytical study covering a 28-month period from April 2020 to August 2022, including all adult patients admitted in an emergency setting for upper digestive hemorrhage resulting from UB, whose clinical severity was assessed by hemodynamic instability and the extent of hemorrhagic shock

Patients admitted for upper digestive hemorrhage UDH secondary to an etiology other than UB were excluded from our study, notably upper UHD of varicose origin and UHD secondary to an ulcer of non-bulbar localization. Excluded from our study the pediatric population.

All patients had oeso-gastro-duodenal fibroscopy (FOGD). The stage of the ulcer was according to the FORREST classification.

All our patients received standardized initial medical management in the emergency department, including fluid resuscitation, proton pump inhibitors (PPIs), and blood transfusion, if necessary, before undergoing EGD, and the time taken to perform the procedure was the same for all patients.

Data were collected using an Excel document, which facilitated their transfer to SPSS for statistical analysis and comparison study of quantitative variables using Student's T test. with a significance threshold of p less than 0.05. Multivariate analysis was not performed due to the limited sample size.

RESULTS

70 cases of hemorrhagic bulbar ulcer were reported during our study period out of a total of 231 cases of upper digestive hemorrhage, with a prevalence of 30.30%.

The mean age of our patients was 57.6 years, with ages ranging from: 22 to 86 years.

The study population was predominantly male.

A history of smoking was found in 16 patients (23%), ulcer disease or digestive hemorrhage in 8 (11%), the use of non-steroidal anti-inflammatory drugs in 7 (10%) and HP in 4 (6%).

Our patients were admitted with various presentations of upper digestive hemorrhage, consisting of: hematemesis in 24% of cases, melena alone in 34% of cases, hematemesis associated with melena in 34% of cases, and rectorrhagia in 08% of cases.

Endoscopic evaluation revealed that the anterior wall of the duodenal bulb was the most frequently involved site, accounting for 44% of the cases.

Table 1: Forrest classification by UB location

Location of UB	Forrest 3 43(61.42%)	Forrest 2c 10(14.28%)	Forrest 2b 7(10%)	Forrest 2a 4(5.71%)	Forrest 1b 6(8.57%)	Forrest 1a 0%
Front side 31 (44%)	23(74%)	3(10%)	2(6.45%)	2(6.45%)	1(3%)	0
Posterior side 12 (17%)	4(33.33%)	4(33.33%)	3(12%)	1(8%)	0	0
Floor 11 (16%)	8(73%)	1(9%)	0	0	2(18%)	0
Roof 16 (23%)	8(50%)	2(12.5%)	2(12.5%)	1(6%)	3(19%)	0

34 patients (48.5%) had a hemoglobin level below 8g/dl on admission, requiring blood transfusion. Of these, 10 patients (30%) had UB located on the anterior surface, 9 (26%) on the roof, 8 (23%) on the posterior surface and 7 (21%) on the floor.

17 patients (24%) had hemorrhagic shock with hemodynamic instability, of whom 5 patients (29.5%) had UB located on the anterior surface, and on the floor, roof and posterior surface in 23.5% of patients.

Patients with a UB localization on the anterior face presented more severe clinical forms (29.5%) than patients with another localization, with a p=0.049

Therapeutically, all patients received medical treatment with PPI 80mg bolus then 8mg/h SAP for 72h. Endoscopic treatment based on injection of adrenaline serum and placement of a hemostatic clip was effectuated to 16 patients (22.85%). The clinical outcome was favorable in all cases, with successful cessation of bleeding achieved in the entire cohort. No cases of rebleeding or mortality were observed during the acute management phase.

DISCUSSION

Hemorrhagic gastroduodenal ulcer disease remains a frequent and potentially life-threatening condition, particularly when complicated by acute upper digestive bleeding. Its pathogenesis is multifactorial, resulting from an imbalance between aggressive factors such as gastric acide, Helicobacter pylori infection, and NSAID use and mucosal defense and repair mechanisms. (1)

In our study, we observed a marked male predominance, with 77% of cases occurring in men. This finding aligns with existing epidemiological data, which consistently report a higher incidence of bulbar ulcer-related upper gastrointestinal bleeding (UGIB) in males compared to females. Several hypotheses have been proposed to explain this sex difference, including a higher prevalence of risk factors such as smoking, alcohol consumption, and NSAID use among males, as well as possible hormonal influences that may confer mucosal protection in females. (2) (3)

The optimal timing for upper gastrointestinal endoscopy (FOGD) in the setting of upper digestive hemorrhage remains a topic of debate. While most international guidelines and studies support performing endoscopy within the first 24 hours of bleeding onset, earlier intervention, within 6 to 12 hours, may be warranted in cases of persistent hemodynamic instability or ongoing active bleeding requiring urgent hemostasis. (4)

In our study, all patients underwent endoscopy within a standardized timeframe, with the procedure systematically performed after initial resuscitation and stabilization in the emergency setting. This uniformity helped reduce the variability in therapeutic delay and allowed better comparison of outcomes between topographic subgroups. Importantly, despite the severity of some clinical presentations, particularly in patients with anteriorly located ulcers, early endoscopic intervention combined with standardized pre-endoscopy proton pump inhibitor therapy led to bleeding control in all cases. (5)

Patients presenting with UDH from duodenal ulcer need to be stratified into high-risk and low-risk groups, to adapt management and evaluate the risk of mortality. (6) (7)

Two prognostic scores should be specified:

- The Rockall score: which can be performed before and after endoscopy, this score takes into account clinical and endoscopic criteria to assess the risk of recurrence and, above all, to evaluate the mortality rate.

- Glasgow-Blatchford score: used to decide on the orientation and performance of endoscopy.

According to data from the literature, anterior localization of bulbar ulcers is the most frequently encountered, with a reported prevalence of 53.4%, followed by the posterior face (23.86%), the roof (14.7%), and the floor (9.09%) of the duodenal bulb.

Our findings are consistent with these results: in our series, the anterior surface was the most frequent site, representing 44% of cases, while posterior ulcers accounted for only 17%. Although our observed proportion of anterior ulcers is slightly lower than that reported in the literature, the predominance of this localization is confirmed.(4)

We did not found any similar studies in the literature focusing on the correlation between bulbar hemorrhagic ulcer topography and clinical severity.

In our series, we observed that ulcers located on the anterior surface of the duodenal bulb were significantly more associated with clinical severity, particularly hemodynamic instability and hemorrhagic shock. This contrasts with the established findings in the literature, where posteriorly located ulcers are more commonly associated with a higher risk of bleeding recurrence and failure of endoscopic hemostasis, primarily due to their close anatomical relationship with large-caliber vessels, especially the gastroduodenal artery.

These findings suggest that while posterior ulcers carry a high anatomical risk of rebleeding due to their vascular proximity, anterior ulcers may provoke more acute and severe clinical presentations, possibly due to more superficial vessel erosion, larger exposed surface, or delayed presentation. Further studies are warranted to explore this potential correlation and its implications for early risk stratification and therapeutic decision-making.

According to the literature, severity in UDH caused by BU is essentially assessed by the Forrest classification, which differentiates ulcers according to the risk of hemorrhagic recurrence and the mortality rate: Forrest Ia jet bleeding, Forrest Ib sheet bleeding, IIa visible non-hemorrhagic vessel, IIb adherent clot, IIc black spot, III clean fundus.

In our analysis, Forrest stage III predominated, with a frequency of 61.4%, in line with the literature. (7)

The general objectives of treatment of hemorrhagic bulbar ulcers are:

- Rapid healing of the ulcer, shortening the duration of the painful period.
- Prevention of recurrence and complications. (8)

The data in the literature do not allow us to formally determine the most effective way of administering PPI prior to endoscopy, as there are no randomized studies comparing different administration regimens. The practice is to start PPI administration intravenously with the classic 80 mg bolus followed by a constant rate infusion of 8 mg/hour for 72 h. (9)

Two combined endoscopic haemostasis techniques, most often by injection of dilute adrenaline and placement of clips, achieve haemostasis in most situations, such is the case in our study. (9)

According to the literature, the risk of haemorrhagic recurrence in the absence of endoscopic treatment varies from 55% for stage Ia, to 5% for stage III (10).It is important to know the determining factors in order to adapt management.

These risk factors can be divided into two groups: on the one hand, the characteristics of the ulcer, with its location on the posterior surface of the bulb, small gastric curvature (often difficult to access for a high-quality endoscopic procedure), size > 2 cm, presence of active bleeding at the time of endoscopy; on the other, patient-related risk factors, mainly hemodynamic instability (11) (12). A recent study carried out in 2021 in UGD patients at high risk of recurrence (Forrest I, IIa and IIb) identified NSAID use, transfusion of at least 5 units of packed red blood cells and absence of endoscopic control as risk factors. (13)

CONCLUSION

Bulbar hemorrhagic ulcer remains a fairly frequent cause of upper digestive hemorrhage, for which NSAID use and smoking are the main risk factors in our context. A predominance of males was noted, and a location on the anterior face was associated with a higher risk of hemodynamic instability. Treatment is based on infusion of proton pump inhibitors as soon as the diagnosis is suspected. Upper endoscopy should be performed as quickly as possible, under the best possible technical conditions.

BIBLIOGRAPHIE

1. Angate Y . A, Khouri J, Ehua et all. *L'UGD en cote d'ivoire: etude de 303 cas.* Med afrique noire : s.n., 2001. pp. 643-650.
2. Barkun AN, Bardou M, Kuipers EJ, et al. *International consensus recommendations on the management of patients with nonvariceal upper gastrointestinal bleeding.* 2010.
3. Elmunzer BJ, Young SD, Inadomi JM, Schoenfeld P, Laine L. *Systematic review of the predictors of recurrent hemorrhage after endoscopic hemostatic therapy for bleeding peptic ulcers.* 2018. pp. 103:2653-32.
4. Fiore FD, Lecleire S, Merle V, Hervé S, Duhamel C, Dupas JL, et all. *Changes in characteristics and outcome of acute upper gastrointestinal*

haemorrhage: a comparison of epidemiology and practices between 1996 and 2000 in a multicentre French study. Eur J Ga. france : s.n., 2005. p. 641.

5. Gralnek IM, Barkun AN, Bardou M. *Management of acute bleeding from a peptic ulcer. N Engl J Med.* 2008. pp. 928-37.
6. Gralnek IM, et al. *Diagnosis and management of nonvariceal upper gastrointestinal hemorrhage: European Society of Gastrointestinal Endoscopy (ESGE) Guideline. .* 2015.
7. —. *Diagnosis and management of nonvariceal upper gastrointestinal hemorrhage: European Society of Gastrointestinal Endoscopy (ESGE) Guideline. .* 2015.
8. Hernández-Díaz S, Rodríguez LAG. *Incidence of serious upper gastrointestinal bleeding/perforation in the general population: review of epidemiologic studies.* 2012. pp. 157-63.
9. Julien Branche, Marion Khaldi. *Prise en charge diagnostique et thérapeutique des ulcères gastroduodénaux hémorragique.*
10. K, ibtissam. *LA MALADIE ULCEREUSE GASTRODUODENALE 2009.* 2019.
11. Kim J., Park SM, Kim B-W. *Endoscopic management of peptic ulcer bleeding.* 2015. pp. 106-11.
12. Kim SB, et al. Risk. *Factors Associated with Rebleeding in Patients with High Risk Peptic Ulcer Bleeding: Focusing on the Role of Second Look Endoscopy.* 2021.
13. Maggio, D. et a. *Predictors of early rebleeding after endoscopic therapy in patients with nonvariceal upper gastrointestinal bleeding secondary to high-risk lesions.* 2013. pp. 454-8.
14. julien branche, khaldi marion. *Prise en charge diagnostique et thérapeutique des ulcères gastroduodénaux hémorragiques.* 2016.