



Predictors of mortality in patients with acute upper gastrointestinal hemorrhage who underwent endoscopy and confirmed to have variceal hemorrhage



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KEYWORDS

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Abstract *Background:* Variceal hemorrhage (VH) is a major complication of chronic liver disease. Several factors have been validated for the prediction of the outcome of an acute VH. The clinical risk characteristics reported in developed countries may be different from developing countries.

Aim: The aim of this study was to determine the predictors of mortality in patients admitted to our hospital with acute upper gastrointestinal (UGI) hemorrhage who underwent endoscopy and confirmed to have VH.

Patients and methods: This was a cross sectional hospital based study performed over a seven-year period between January 2006 and January 2013.

Results: A total of 224 patients were analyzed. Nineteen patients (8%) died within the first two weeks of their hospital admission. Eighteen variables were studied and included in a multivariate analysis using a logistic regression model. Five variables were predictors of death. Hemodynamic instability at admission (AOR = 5.5, 95% CI = 22.3 + 1.4, $P = 0.017$), Child class C (AOR = 5.9, 95% CI = 24 + 1.5, $P = 0.013$), blood in upper gastrointestinal (UGI) tract at the

Abbreviations: UGI, upper gastrointestinal; VH, variceal hemorrhage; OR, odds ratio; AOR, adjusted odds ratio; CI, confidence interval; COPD, chronic obstructive pulmonary disease; EV, esophageal varices; GV, gastric varices; GEV, gastroesophageal varices; IGV, isolated gastric varices.

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index endoscopy (AOR = 12.8, 95% CI = 126.5 + 1.3, $P = 0.03$), rebleeding within five days of endoscopy (AOR = 25.4, 95% CI = 109.2 + 5.9, $P = 0.000$), and in-hospital complications (AOR = 23.4, 95% CI = 122.5 + 4.5, $P = 0.000$) were independent predictors of mortality after the acute VH episode.

Conclusion: Patients with acute VH and hemodynamic instability at admission, Child class C, blood in UGI tract at the index endoscopy, rebleeding within five days of endoscopy and in-hospital complications are at an increased risk of mortality after the acute VH episode. Rebleeding within five days of endoscopy and in-hospital complications are the most significant independent predictors of mortality.

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1. Introduction

Variceal hemorrhage (VH) is a major complication of chronic liver disease and is associated with significant morbidity and mortality.^{1,2} Although overall survival may be improving over the past 40 years, mortality is still closely related to failure to control bleeding or early rebleeding and this is not uncommon during the first days to 6 weeks after admission.^{2–5}

A variety of clinical risk characteristics have been adopted to assist with patient assessment and a number of them have been applied for use in prognostic scoring algorithms (e.g. Rockall score). These are used to evaluate risk of death and/or re-bleeding in upper gastrointestinal (UGI) hemorrhage patients, and also to screen for and to select high risk patients for intervention within an appropriate time. Several factors have been specifically validated for the prediction of the outcome of acute VH.^{5,6}

Prognostic factors of mortality in acute VH included presentation with hematemesis, failure to control bleeding within five days, raised bilirubin, presence of ascites, encephalopathy, shorter interval to admission to hospital, plasma urea, bleeding starting in hospital, prothrombin time < 40%, recent use of steroid drugs within seven days of bleeding, age > 60 years, hepatic venous pressure gradient, concomitant hepatocellular cancer and transfusion need.⁶

The clinical risk characteristics reported in developed countries may be different from those in developing countries.

Egypt has a large burden of chronic liver disease. Schistosomiasis and hepatitis C virus are common diseases in Egypt. The overall prevalence positive for antibody to hepatitis C virus was 14.7%.⁷ Despite the advent of endoscopy and endoscopic therapy, access to medical centers with experienced medical staff and adequate equipment in Egypt is still limited. Most government hospitals refer patients with acute UGI hemorrhage to teaching hospitals, academic institutes, insurance hospitals and private hospitals. Many patients never reach hospital. A plan for management of UGI hemorrhage was designed in a governmental hospital to be within the available resources and was formulated in two stages. Stage one, 2000–2004, was the training of staff and preparation. During this time we assessed the capability of the hospital for dealing with these cases. Following the assessment we went to stage two. Stage two started in 2004 and all patients presenting with acute UGI hemorrhage have been assessed and managed in house.^{8–10}

The aim of this study was to determine the predictors of mortality in patients admitted to our hospital with acute

UGI hemorrhage who underwent endoscopy and confirmed to have VH.

2. Patients and methods

This was a cross sectional hospital based study. The study was performed in a secondary-care governmental hospital (Bolak Eldakror Hospital, Giza, Egypt) on cirrhotic patients presenting with acute UGI hemorrhage who underwent endoscopy and confirmed to have VH over a seven-year period between January 2006 and January 2013.

A management plan for acute UGI hemorrhage composed of five steps (assessment, resuscitation, diagnosis, stoppage of bleeding and prevention of rebleeding) was designed. A management protocol, based on international standards, was established with the intention of improving the quality and efficiency of our health care delivery (Table 1).^{11,12} Clinical guidelines and a clinical care pathway were developed within the availability of local therapeutic options in order to provide a stand-alone practical guide for the team (Table 1). The care pathway was developed to improve patient management and resource utilization. The guidelines and care pathway were disseminated to house officers, residents, physicians, and nursing staff. This was accomplished via medical rounds and conferences for the medical staff. Printed sheets were posted in the emergency room, intensive care and medical department that outlined the care pathway. A consultant gastroenterologist was on-call 24/7 days a week to attend resuscitation when bleeding was detected. The gastroenterologist served as a facilitator for the medical staff caring for the patients, often monitoring intravenous hydration and delivering blood/blood products.

Stratification of patients in low and high-risk categories for rebleeding and mortality was performed using the Rockall score. Patients with a low risk were discharged home and subsequently underwent diagnostic endoscopy on the next available list. Those at high risk were admitted to hospital for intensive monitoring and early, energetic resuscitation. Endoscopy was performed on the morning of the second day to establish diagnosis, to control bleeding and to prevent rebleeding if considered appropriate. All patients presenting with acute UGI hemorrhage and a confirmed diagnosis of liver cirrhosis were admitted, assessed and resuscitated in a three-bed intensive-care unit. Liver cirrhosis was diagnosed on the basis of clinical and laboratory data and ultrasonography. Child classification was used to assess hepato-cellular function in

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