

Factors Found on the First Variceal-Bleeding Episode in Liver Cirrhosis Patients with Portal Hypertension

*Arnold Hasahatan Harahap**, *Dadang Makmun***, *Irsan Hasan****

* Division of Gastroentero-hepatology, Department of Internal Medicine
Fatmawati General Hospital, Jakarta

** Division of Gastroenterology, Department of Internal Medicine, Faculty of Medicine
University of Indonesia, Dr. Cipto Mangunkusumo General National Hospital, Jakarta

*** Division of Hepatology, Department of Internal Medicine, Faculty of Medicine
University of Indonesia, Dr. Cipto Mangunkusumo General National, Jakarta

ABSTRACT

Background: First episode of variceal bleeding as a complication to liver cirrhosis has produced a high mortality rate and can obscure the prognosis of the disease. The objective of this study is to determine the factors on early gastroesophageal variceal bleeding in patients with liver cirrhosis with portal hypertension.

Method: The study was based on gastroesophageal endoscopy data in the endoscopic center as well as from medical record in Cipto Mangunkusumo hospital, during January 2007-July 2008. Patients included in this study were liver cirrhosis patients that had presented with hematemesis and/or melena for the very first time caused by variceal rupture. Variceal bleeding was diagnosed based on endoscopic examination, whereas liver cirrhosis was determined from abdominal ultrasonography. Other patient's data incorporated to the work, including history of the first-time bleeding, physical examination and laboratory findings, were collected from the medical records.

Results: Out of 157 patients with variceal esophagus or fundus bleeding, 28 patients had experience bleeding for the very first time. The highest bleeding were found consecutively in those with Child-Pugh B and C, esophageal varices grade II-III, and the occurrence of red color sign (RCS) in the case of esophageal varices (92.9%, 82.1%, 71.4%) respectively.

Conclusion: Factors found on the first time-bleeding episode in patients with liver cirrhosis were the Child-Pugh B and C criteria, esophageal varices grade II-III, and the occurrence of RCS.

Keywords: liver cirrhosis, variceal, bleeding

INTRODUCTION

By the time liver cirrhosis are diagnosed, gastroesophageal varices are apparently found 30-40% of patients with compensated liver cirrhosis and 60% of patients with uncompensated ones.^{1,2,3} In patients who had not indicated gastroesophageal varices when diagnosed with liver cirrhosis, gastroesophageal varices shall develop about 7% each year.³

Variceal bleeding is a serious complication,

with 42% mortality rate. In the last 2 decades it has decreased to 15-20% through better treatment combination.^{4,5,6} In addition, the incidence of variceal bleeding is a factor which significantly worsen the prognosis for liver cirrhosis patients.³

Several factors frequently found in variceal bleeding are: severity of liver dysfunction abnormalities based on Child-Pugh criteria, size of varices, and the presence of red color sign (RCS) through endoscopic examination.^{3,7,8,9} The mortality rate for esophageal varices increases in individuals with liver function abnormalities which classified severe based on Child-Pugh criteria.^{10,11}

Correspondence:
Arnold Hasahatan Harahap
Division of Gastroentero-hepatology
Department of Internal Medicine
Fatmawati General Hospital
Jl. RS Fatmawati, Jakarta 12430 Indonesia
Phone/fax: +62-21-7657822
E-mail: arnold_harahap@yahoo.co.id

METHOD

Data of the patients included as this study's subjects were taken from the endoscopy procedure room of Cipto Mangunkusumo hospital retrospectively, patients with liver cirrhosis who is hematemesis bleeding and or melena caused by varices from January 2007 to July 2008. Diagnosis were established based on endoscopic examination; while the liver cirrhosis one was established based on abdominal ultrasonography (USG) examination and laboratory data to determine the Child-Pugh criteria. All the data needed as well as diagnosis of the first bleeding were obtained from the patients' medical records in Cipto Mangunkusumo hospital.

RESULTS

From January 2007 to July 2008, 157 patients with variceal bleeding were identified. Of all of the patients, 28 patients with first time bleeding episode had complete medical records. From these 28 patients, 21 (75%) patients male, 15 (53.6%) patients > 50 years old, with hematemesis and melena as the chief complaint in admission in 24 (85.7%) patients only melena in 4 (14.3%) patients altered consciousness in 7 (25%) patients and fever in 4 (14.3%) patients.

From a physical examination on admission showed hypovolemic shock with systolic blood pressure < 100 mmHg and pulse rate > 100 x/minutes occurred in 8 (28.6%) patients, ascites 20 (71.4%) patients, splenomegaly 11 (39.3%) patients, hepatomegaly 5 (17.9%) patients, palmar erythema 7 (25%) patients and spider nevi 2 (7.1%) patients.

From laboratory examination on admission found 17 (60.7%) patients were found with hemoglobin < 8 g%, thrombocytes < 80,000 μ L in 13 (46.4%) patients albumin < 3 g% in 20 (71.4%) patients, total bilirubin > 2 g% in 16 (57.1%) patients, AST > twice the normal upper limit in 9 (32.1%) patients, cholinesterase < 2,000 IU/L in 5 (17.9%) patients, prolonged prothrombin time (PT) of > 4 seconds from each control in 14 (50%) patients, prolonged activated partial thromboplastin time (APTT) of > 4 seconds from each control in 24 (85.7%) patients, positive HbsAg in 11 (39.3%) patients, positive anti-HCV in 5 (17.9%) patients, while in 12 (49.2%) patients, the cause remains unidentified. Based on the Child-Pugh criteria, 2 (7.1%) patients were categorized in Child A, 18 (64.3%) patients in Child B, 8 (28.6%) patients Child C.

From the endoscopic examination results, 26 patients with esophageal varices were identified, 2 (7.1%) patients of grade 1 with RCS in one patient, 7 (25%) patients of grade 2 with RCS in 4 patients, 17 (60.7%) patients of grade 3 with RCS in 15 patients, while in 2 (7.1%) patients' fundal varices

Table 1. Patient characteristics

Variable	n (%)
Male	21 (75)
Age > 50 years old	15 (53.6)
Chief complaint	
Hematemesis and melena	24 (85.7)
Melena	4 (14.3)
Altered consciousness	7 (25)
Fever	4 (14.3)
Physical examination	
Hypovolemic shock (systole < 100 mmHg, heart rate > 100 x/minutes)	8 (28.6)
Ascites	20 (71.4)
Splenomegaly	11 (39.3)
Hepatomegaly	5 (17.9)
Palmar erythema	7 (25.0)
Spider nevi	2 (7.1)
Laboratory examination	
Hemoglobin < 8 g%	17 (60.7)
Thrombocytes < 80,000 μ L	13 (46.4)
Albumin < 3 g%	20 (71.4)
Total bilirubin > 2 g%	16 (57.1)
AST > 2 UNL	9 (32.1)
ALT > 2 UNL	9 (32.1)
Cholinesterase < 2,000 IU/L	5 (17.9)
PT > 4 seconds	14 (50)
APTT > 4 seconds	24 (85.7)
Causes	
Positive HbsAg	11 (39.3)
Positive anti HCV	5 (17.9)
Unidentified	12 (49.2)
Child-Pugh criteria	
Child-Pugh A	2 (7.1)
Child-Pugh B	18 (64.3)
Child-Pugh C	8 (28.6)

were found. During hospital care, the bleeding stopped within < 24 hours in 9 (32.1%) patients, blood transfusion of more than 500 cc was required by 23 (82.1%) patients, and the average length of stay was over 10 days.

Table 2. Distribution of patients based on the size of varices

	n (%)	RCS (%)
Grade 1	2 (7.1)	1 (3.6)
Grade 2	7 (25.0)	4 (14.3)
Grade 3	17 (60.7)	15 (53.6)
Varices fundus	2 (7.1)	

RCS: red color sign

Table 3. Factors with a frequency > 50% in patients with first gastroesophageal variceal bleeding

Factor	%
Child-Pugh B & C	92.9
Prolonged APTT > 4 second	85.7
Esophageal varices grade II-III	82.1
Sex (male)	75.0
Ascites	71.4
Albumin < 3 g%	71.4
Red color sign	71.4
Total bilirubin > 2g%	57.1
Age > 50 years	53.6
PT > 4 seconds	50.0

DISCUSSION

Variceal bleeding is a serious complication. Mortality rate due to bleeding was relatively high about 42%, and in the last 2 decades decreased to 15-20% through a combination of treatment and better anticipation.^{4,5,6} Variceal bleeding will stop spontaneously in 40-50% of cases and increase to 80% with a combination of good treatment.³

In this study, all data obtained from the Endoscopy Digestive Center, Cipto Mangunkusumo hospital. There were 28 data obtained on patients with first bleeding out of 157 patients with bleeding due to esophageal varices or ruptured fundus based on endoscopic examination from January 2007 to July 2008. Neither patients with non-bleeding esophageal varices nor non-bleeding fundus was studied as the controls, which is one weakness of this study. However, seeing the existing data, several factors with > 50% frequency were found, which may be used as the factors for predicting the occurrence of variceal bleeding.

From this study data, factors such as Child-Pugh of B and C, the size of esophageal varices, and the presence of RCS in endoscopic examination were the ones frequently found in variceal bleeding. This finding is similar to previous study.^{3,7,8,9}

The severity of liver function abnormalities described by Child-Pugh classification, which consisted of disturbance consciousness, albumin level, bilirubin level, prothrombin time, and ascites. In this study, 92.9% of patients were classified as Child-Pugh B and C. Endoscopic examination has never been performed in all patients prior to bleeding occurred. Endoscopic examination for each was just performed after the first time bleeding episode of gastroesophageal varices occurred. From the existing data, it was unclear known whether the diagnosis of liver cirrhosis was established before bleeding, since all patients were seeking hospital care for the first time.

It has long been known that esophageal varices had been identified in 30-40% patients with compensated liver cirrhosis and 60% of those with decompensated ones as the diagnosis of liver cirrhosis itself was established.³ Based on the Baveno IV consensus, endoscopic examination should be immediately performed after the diagnosis of liver cirrhosis was established, and no examinations could replace the role of endoscopy in ensuring the presence of varices.¹² The mortality rate in variceal bleeding in decompensated liver cirrhosis patients is quite high that approximately 57% when compared to that of non-bleeding patients, which is about 20%.³ With this data, endoscopic examination should be performed in all decompensated liver cirrhosis patients, and should be followed by therapeutic endoscopic procedure, such as variceal ligation to prevent bleeding.¹²

Variceal size and description of RCS are reflections of the pressure increased and narrowing of blood-vessels walls, so that the potential for rupture. In this study, esophageal varices grade II-III was found in 82.1% patients, and RCS was found in 71.4% patients. Study by Dong Kyu Park et al, categorized patients based on the degree of varices, the presence of RCS, and alcohol drinkers.¹⁰ Patients who have variceal size medium and large, RCS and alcohol drinkers were included a very high risk group, the only two components were included in high risk groups, while those with only one component were included as the low risk group. The very high risk group demonstrated a highly significant difference in comparison to the low risk group, which was 34.9% vs. 1% for the occurrence of first variceal bleeding within a year, with 3.4% mortality rate at very high risk group and 0% in low risk group, when the occurrence of bleeding.

Due to the high mortality rate on the first bleeding or on the recurrent bleeding, preventive measures should be performed to prevent or to slower the occurrence of the first bleeding. The consensus which suggests endoscopic examination in patients diagnosed with liver cirrhosis should be socialized to be applied especially in liver cirrhosis patients within B and C Child-Pugh categories. If in endoscopic examination esophageal varices grade II-III with RCS are identified, ligation procedure combined with beta-blocker administration should be performed, even though bleeding has not yet occurred.

CONCLUSION

Factors found on the first time-bleeding episode in patients with liver cirrhosis were the Child-Pugh B and C criteria, esophageal varices grade II-III, and the occurrence of RCS.

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