

# Portal hypertensive gastropathy: association with Child-Pugh score in liver cirrhosis

T Sungkar<sup>1\*</sup>, L H Zain<sup>1</sup> and G A Siregar<sup>1</sup>

<sup>1</sup>Division of Gastroenterology and Hepatology, Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, Indonesia

\*Corresponding author: taufik.sungkar@usu.ac.id

**Abstract.** Portal Hypertensive Gastropathy (PHG) occurs as a complication of cirrhotic or non-cirrhotic portal hypertension. The association between the severity of portal hypertensive gastropathy and the hepatic function, as assessed by the Child-Pugh score in patients with liver cirrhosis are poorly defined. We evaluated association between PHG and Child-Pugh score in patients with liver cirrhosis. Adults liver cirrhosis patients admitted at Adam Malik Hospital Medan during January 2016-December 2016, were included in this study. Endoscopic PHG grade, Child-Pugh score were assessed. A total of 49 patients were enrolled. Majority of cases of liver cirrhosis are due to chronic viral hepatitis B infections (65.3 %). Portal hypertensive gastropathy were observed in 46 cases; twenty-five patients (51%) showed severe portal hypertensive gastropathy. The overall prevalence of PHG and the proportion of patients with severe PHG differ about the Child-Pugh classification. PHG was present in 66.7 % of patients from Child-Pugh class A, 96 % of patients with class B, and 95.2 % of those from class C, and severe forms were present in 0 %, 36 %, and 76.2 %, respectively ( $P < 0.000$ ). In conclusions, the present data suggest that the severity of portal hypertensive gastropathy is related to Child-Pugh score.

## 1. Introduction

Portal hypertensive gastropathy (PHG) is most common due to cirrhotic portal hypertension, but can also occur due to complications of non-cirrhotic portal hypertension. PHG is clinically significant because it may cause acute (and even) massive, or insidious, blood loss. It was characterized by an endoscopic abnormality of the gastric mucosa that was classically described as a mosaic-like pattern that resembles the skin of a snake, with or without red spots.[1] The prevalence of PHG in patients with cirrhosis varies from 20% to 98%. Overall, PHG sufferers have a mild degree of disease. In previous studies, it was reported that mild PHG was present in 60% of patients, whereas a severe PHG in more than 46% of cases.[2]

The Child-Pugh score is a substantial component of the prognostic evaluation of cirrhotic patients; Child-Pugh score has been widely used to assess the severity of liver dysfunction in clinical work.[3] The relation of hepatic functional status to the development of PHG has been debated, and there is no consensus on the relationship between liver function and PHG.[4] We evaluated association between PHG and Child-Pugh score in patients with liver cirrhosis.

## 2. Methods

We retrospectively studied 49 cirrhotic patients (35 males and 14 females) at Adam Malik General Hospital Medan, Indonesia, between January 1, 2016 to December 30, 2016. All sample were



conducted by consecutive sampling. Patients medical records were reviewed for patient demographics, cause of their cirrhosis, first screenings upper endoscopy and liver helical CT. Exclusion criteria for the study were: previously diagnosed varices or PHG, prophylactic  $\beta$ -blocker therapy, hepatocellular carcinoma, portal vein or splenic vein thrombosis, and hematologic disorders. Patient demographics such: age, gender, etiology of liver disease, prothrombin time (PT), serum albumin, total serum bilirubin, presence and degree of ascites and encephalopathy assessed according to the Child-Pugh classification were recorded from medical records.

All endoscopic images are reviewed in consensus by endoscopy technician. According to the Japanese Research Society of Portal Hypertension, the severity of esophageal varices is divided into 3 grade (Grade 1 to 3). The severity PHG was evaluated according to the classification suggested by the 1992 New Italian Endoscopic Club Consensus. The severity of PHG was subdivided into two classes, mild and severe. A mosaic-like pattern was classified as a mild PHG with a low bleeding risk, while red marks were classified as a severe PHG with a high tendency to bleed.

### 2.1. Statistical analysis

Analysis of data was done using SPSS. Quantitative variables were described as mean and SD, while qualitative variables were represented as percentages. Chi-square test was performed on parameters which were significantly different in a univariate analysis between groups of patients with and without PHG. A p-value <0.05 was considered statistically significant.

## 3. Results

For the study, 49 patients were included who met the inclusion and exclusion criteria. The baseline characteristics of the study are shown in Tables 1. There were 35 (71.4%) males and 14 (28.6%) females. The etiology of underlying liver cirrhosis was related to hepatitis B in 32 (65.3%), hepatitis C in 15 (30.6%), non B and C in 2 (4.1%). Three patients (6.1%) were Child A, 25 (51%) Child B, and 21 (42.9%) were Child C. Three patients (6.1%) were F0, 3 (6.1%) F1, 28 (57.2%) F2, and 15 (30.6%) were F3. Twenty-one patients belonged to mild Portal hypertensive gastropathy, and 25 (51%) to severe portal hypertensive gastropathy.

**Table 1.** Baseline characteristics of liver cirrhosis patients.

Variable	Liver cirrhosis (n=49)
Sex	
• Male	35 (71.4%)
• Female	14 (28.6%)
Etiology	
• Hepatitis B Viral	32 (65.3%)
• Hepatitis C Viral	15 (30.6%)
• Non B and C	2 (4.1%)
Child-Pugh Score	
• A	3 (6.1%)
• B	25 (51%)
• C	21 (42.9%)
Esophageal varices	
• F0	3 (6.1%)
• F1	3 (6.1%)
• F2	28 (57.2%)
• F3	15 (30.6%)
Portal hypertensive gastropathy	
• None	3 (6.1%)
• Mild	21 (42.9%)
• Severe	25 (51%)

Features of PHG (Table 2) were found in 46 out of the 49 patients. The overall prevalence of PHG and the proportion of patients with severe PHG differ about the Child-Pugh classification. PHG was present in 66.7 % of patients from Child-Pugh class A, 96 % of patients with class B, and 95.2 % of those from class C, and severe forms were present in 0 %, 36 %, and 76.2 %, respectively ( $P < 0.000$ ).

**Table 2.** Association of portal hypertensive gastropathy (PHG) with Child-Pugh score.

Variables	No PHG ( n = 3 )	Mild PHG ( n = 21 )	Severe PHG ( n = 25 )	p value
Child-Pugh Score				
A	1 (33.3%)	2 (66.7%)	0 (0%)	0.000
B	1 (4.0%)	15 (60.0%)	9 (36.0%)	
C	1 (4.8%)	4 (19.0%)	16 (76.2%)	

#### 4. Discussion

Portal hypertensive gastropathy (PHG) is a painless condition of gastric mucosal ectasia and impaired mucosal defense, commonly seen in patients with elevated portal pressures.[5] PHG occurs in up to 65% of all patients with cirrhosis and portal hypertension. Approximately 65–90% of those patients have mild PHG whereas 10–25% of patients have severe PHG.[6] The occurrence of PHG is likely to depend on the cause of portal hypertension and the severity of liver disease.[7] In this study, portal hypertensive gastropathy was observed in 46 cases; twenty-five patients (51%) showed severe portal hypertensive gastropathy.

The Child-Pugh score is a substantial component of the prognostic evaluation of cirrhotic patients; Child-Pugh score has been widely used to assess the severity of liver dysfunction in clinical work.[3] The relation of hepatic functional status to the development of PHG has been debated and there is no consensus on the relationship between liver function and PHG.[4] Sarin et al. reported an 87% prevalence of PHG in patients with Child-Pugh stage C, vs. only 13% prevalence in patients with Child-Pugh stage A. Another study suggested that purely Child-Pugh stage C was independently associated with PHG (OR=2.68; 95%CI: 1.16-6.20,  $P=0.021$ ).[8] In this study, the overall prevalence of PHG and the proportion of patients with severe PHG differ about the Child-Pugh classification. PHG was present in 66.7 % of patients with Child-Pugh class A, 96 % of patients from class B, and 95.2 % of those from class C, and severe forms were present in 0 %, 36 %, and 76.2 %, respectively ( $P < 0.000$ ).

#### 5. Conclusions

The present data suggest that the severity of portal hypertensive gastropathy is related to Child-Pugh score.

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