

Clinical correlation between Child Pugh's score and oesophageal varices in upper gastrointestinal endoscopy in cirrhotic patient

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ABSTRACT

Background: Bleeding oesophageal varices are a major complication of portal hypertension following liver cirrhosis. Child Pugh's score has been used as a prognostic tool while managing a patient with liver cirrhosis.

Objective: To clinically correlate Child Pugh's score and oesophageal varices in upper gastrointestinal endoscopy in cirrhotic patient.

Methods: This is a prospective descriptive study done from January 2014 to January 2015. Cirrhotic patients who were referred for upper gastrointestinal endoscopy with or without history of upper GI bleeding were included. Patients were categorized according to Child Pugh's score into A, B, C and correlated with their endoscopic finding of grading of varices.

Results: A total of 50 cirrhotic patients underwent upper gastrointestinal endoscopy during one year. Out of which 60 % were in Child Pugh's category A, 30 % in category B and 10 % in category C. Among them 62% had grade I varices, 20% had grade II varices and 18 % had grade III varices. Those who presented with history of hematemesis had higher grades of oesophageal varices in comparison to those without hematemesis.

Conclusion: Cirrhotic patients with higher Child Pugh's score had higher grades of oesophageal varices leading presentation with hematemesis. Hence, routine screening of cirrhotic patient is necessary before the development of varices.

Key words: Child Pugh's score, Cirrhosis, Oesophageal varices

INTRODUCTION

Bleeding oesophageal varices are a major complication of portal hypertension following liver cirrhosis. Portal hypertension develops in cirrhosis because of an increase in splanchnic blood flow secondary to vasodilation within the splanchnic vascular bed and because of increased resistance to the passage of blood through the liver¹. Child Pugh grading correlates with presence of gastro-oesophageal varices as 40% of Child Pugh A patients have varices while they are present in 85% of Child Pugh C patients². The mortality of an episode of variceal bleeding varies from 30% - 50% depending on the Child Pugh grade and co-morbidities^{3,4}. Endoscopic band ligation (EBL) is

the treatment of choice for acute variceal bleeding. It is also performed for primary and secondary prophylaxis of bleeding from oesophageal varices⁵⁻⁸.

Hence, our objective is to clinically correlate Child Pugh's score of these cirrhotic patients referred for endoscopy with grade of oesophageal varices in terms of history of hematemesis.

METHODS

This was a prospective cross sectional descriptive observational study conducted from January 2014 to January 2015 in Unit III, department of Surgery, Kathmandu Medical College Teaching Hospital (KMCTH), Sinamangal, Nepal. Ethical clearance for the study was obtained from the Institutional Review Committee at KMCTH.

Only diagnosed cirrhotic patients on history, clinical examinations, haematological and radiological

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investigations referred from department of Medicine for upper gastrointestinal (GI) endoscopy were included in this study. Haemodynamically unstable cirrhotic patients with hematemesis were excluded.

Informed consent was obtained from the stable patients. Consent was taken from the spouse/parents or immediate close relative in situations where the patient was unable to give consent.

Cirrhotic patients were categorized according to Child Pugh's score⁹. The score employs five clinical measures of liver disease as in table 1. The cirrhosis class is based on the total score the prognosis is directly related to the score (table 2):

Class A: Total score 5 or 6

Class B: Total score 7–9

Class C: Total score 10 or higher

ENDOSCOPIC PROCEDURE:

Oesophageal varices were graded as absent, grade 1, 2 and 3 according to De Franchiset al¹¹:

Grade 1: Oesophageal varices occupied less than a third of the lumen and flatten with air insufflation.

Grade 2: Oesophageal varices occupied less than a third and did not flatten with air insufflation.

Grade 3: Oesophageal varices occupied at least a third of the lumen and did not flatten with air insufflation.

Oesophageal variceal haemorrhage was diagnosed by:

- Presence of hematemesis or coffee ground vomitus and melena
- Signs of active bleeding on endoscopy, adherent clots, erosions on varices and white nipple signs
- Red-colour sign over large varices without other bleeding sources.

Endoscopic variceal ligation was performed in patient with grade II (medium) and grade III (large) using Saeed's six-shooter multiband ligator (Cook Medical Inc., Bloomington, IN, USA). Around six bands or less were applied in a single session.

As a part of post endoscopic therapy, patients were kept nil per oral and on intravenous fluids for at least 24 hours.

Descriptive statistics of mean, standard deviation, percentage were obtained from the data. Statistical analysis was by SPSS statistical package version 10.1.

RESULTS

A total of 845 patients underwent upper GI endoscopy in the study period. Among them, 50 patients with diagnosis of cirrhosis, referred from the department of Medicine were included. Those who presented with history of hematemesis had higher grades of oesophageal varices in comparison to those without hematemesis.

Table 1: Child Pugh's score system¹⁰

Measure	1 point	2 points	3 points
Total bilirubin, $\mu\text{mol/l}$ (mg/dl)	<34 (<2)	34-50 (2-3)	>50 (>3)
Serum albumin (g/dl)	>3.5	2.8-3.5	<2.8
Prothrombin time, prolongation (sec)	<4.0	4.0-6.0	>6.0
Ascites	None	Mild	Moderate to Severe
Hepatic encephalopathy	None	Grade I-II (or suppressed with medication)	Grade III-IV (or refractory)

Table 2: Prognostic indicator of Child Pugh's score

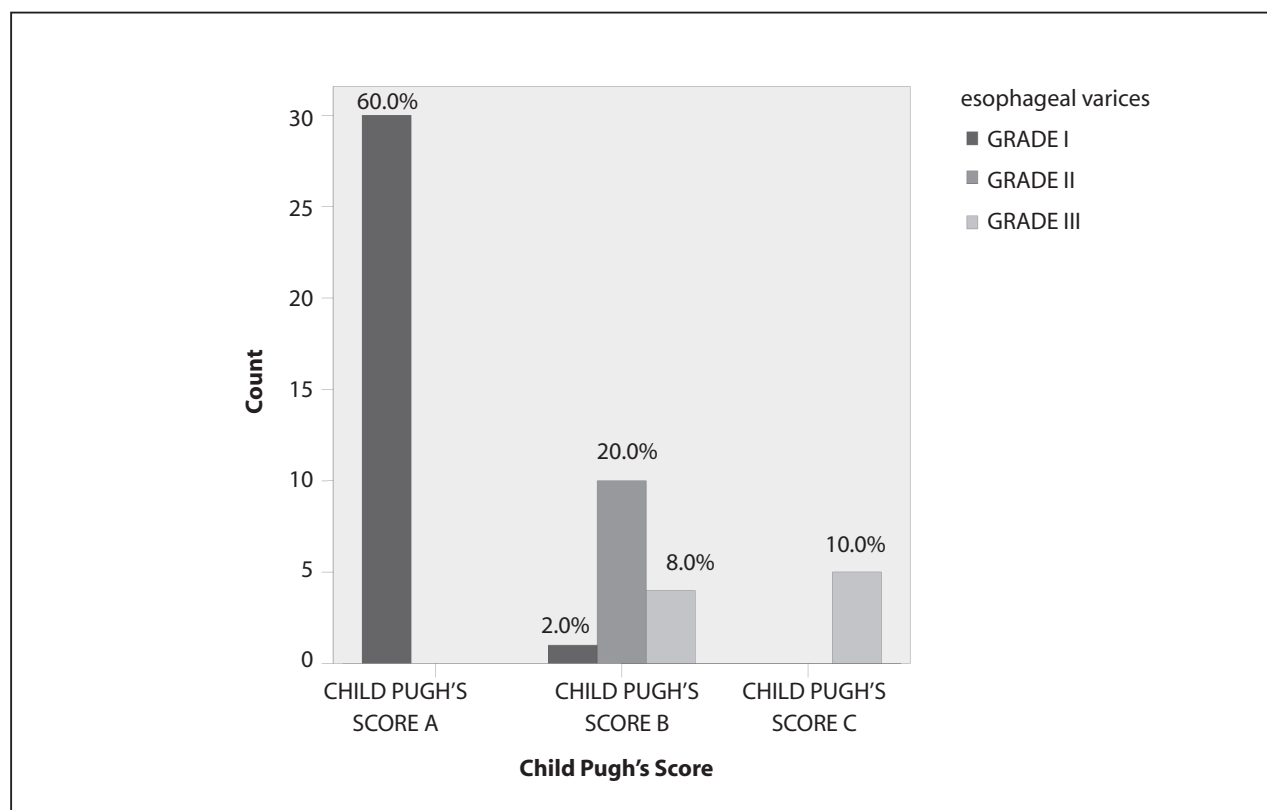
Points	Class	One year survival	Two years survival
5-6	A	100%	85%
7-9	B	81%	57%
10-15	C	45%	35%

Table 3: Demographic representation

Mean age \pm SD	41.4 \pm 11.7 years
M:F ratio	43:7 (86% vs. 14%)
Child Pugh's score	A: 30 (60%) B: 15 (30%) C: 5 (10%)
Grading of oesophageal varices	Grade I: 31 (62%) Grade II: 10 (20%) Grade III: 9 (18%)

Table 4: Child Pugh's score and grading of oesophageal varices in relation with history of hematemesis

History	Child Pugh's score	Oesophageal Varices			Total
		Grade I	Grade II	Grade III	
Without history of hematemesis	A	24	0		24
	B	0	1		1
	Total	24	1		25
With history of Hematemesis	A	6	0	0	6
	B	1	9	4	14
	C	0	0	5	5
	Total	7	9	9	25



DISCUSSION

Esophagogastroduodenoscopy (EGD) is generally indicated for the management of patients admitted to intensive care units (ICUs) with upper gastrointestinal (GI) haemorrhage. In our study, patient with high grade of Child Pugh's score had higher grade of oesophageal varices. Our result was similar with Sumon SM et al where they had similar correlation between Child Pugh's score where grade B and C were associated with higher grade of varices¹².

However, the relationship between Child Pugh score and oesophageal varices is not consistent. Some studies fail to show a relationship between oesophageal varices and Child Pugh score¹³⁻¹⁵. Hence, parameters like platelet count and white cell count have been used to predict the presence of significant oesophageal varices and therefore increase the yield of endoscopy¹⁶⁻¹⁸.

The prevalence of oesophageal varices in cirrhosis is estimated at 9-36%¹⁹⁻²². Variceal bleeding in cirrhotic patients is associated with high morbidity and mortality. Primary prophylaxis can reduce the risk of bleeding. Hence, all cirrhotic patients should undergo endoscopy to detect varices. If significant oesophageal varices are found (grade 2 and above), a beta blocker or endoscopic variceal ligation are effective prophylactic measures.

Study done by Cales et al²³ has shown that after univariate analysis, a longer duration of cirrhosis and grade 1

oesophageal varices at entry were predictive factors for the occurrence of large oesophageal varices, whereas, multivariate analysis showed that the initial size of the oesophageal varices, a high initial Child Pugh score, and a smaller improvement in Child Pugh score during the study were independent risk factors. Among patients with grade 0 and 1 oesophageal varices at the start of the study, the proportions with large oesophageal varices at two years were 31% and 70% respectively.

In a study done by Chalasani N et al in screening process of cirrhotic patients who had no variceal bleeding before, had the prevalence of large oesophageal varices of 20%. In their study, patients with a platelet count of $\geq 88,000/\text{mm}^3$ and no splenomegaly by physical examination had a risk of large oesophageal varices of 7.2% where as those with splenomegaly or platelet count $< 88,000/\text{mm}^3$ had a risk of large oesophageal varices of 28% ($p < 0.0001$). Hence, they recommend for stratifying with clinical parameters for use of upper GI endoscopy as a screening tool. However, limitation of this study was observational descriptive with small study sample.

CONCLUSION

Cirrhotic patients with higher Child Pugh's score had higher grades of oesophageal varices leading presentation with hematemesis. Hence, routine screening of cirrhotic patient is necessary before the development of varices.

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