ORIGINAL RESEARCH

Utility of Child-Pugh score in prediction of large oesophageal varices in patients with cirrhosis of liver

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ABSTRACT
Background: The lower portion of the oesophagus, the tube that joins the throat and stomach, has enlarged, bulging veins called oesophageal varices. The present study was evaluated prediction of large oesophageal varices in patients with cirrhosis of liver. **Materials & Methods:** 70 patients with cirrhosis of liver of both genders were selected. The existence and severity of encephalopathy and ascites were evaluated using the Child-Pugh criteria. EV's size and presence were noted. The parameters put forward at the Baveno I Consensus Conference were used to classify the size of varices into two classes: small and large. **Results:** Out of 70 patients, 38 were males and 32 were females. Causes of cirrhosis of liver was alcohol in 49, hepatitis B in 16 and others in 5 cases. The difference was significant (P< 0.05).Child Pugh score was 7.5, albumin was 34.6 g/L, ALT was 42.3 IU/L and total bilirubin level was 28.4 µmol/L. The mean age was 55.1 years and 56.2 years, there were 70.2% male and 68% male, Child- Pugh score was 7.3 and 9.2, albumin level was 32.5 g/L and 34.8 g/L, ALT was 44.1 IU/L and 45.9 IU/L and total bilirubin level was 29.3 µmol/L and 34.6 µmol/L in patients with no or small varices and in patients with large varices respectively. The difference was non- significant (P> 0.05). **Conclusion:** Large oesophageal varices may be predicted by the Child-Pugh score, total bilirubin, and albumin level in patients with liver cirrhosis. Therefore, the estimation of patients with liver cirrhosis may yield valuable information, guaranteeing their occurrence is prevented.

Keywords: Bilirubin, Child- Pugh score, varices

INTRODUCTION

The lower portion of the oesophagus, the tube that joins the throat and stomach, has enlarged, bulging veins called oesophageal varices. Increased pressure in the blood capillaries supplying the liver might cause these veins to dilate. The most frequent cause of oesophageal varices is liver cirrhosis, a disorder marked by widespread liver tissue damage.[1] The liver is essential for the production of proteins required for blood coagulation, the digestion of nutrients, and the detoxification of toxic chemicals. Blood flow to the liver may be restricted when liver function is compromised, as in cirrhosis instances. This can raise the pressure in the portal vein, which transports blood from the digestive organs to the liver. Varices may form in places like the oesophagus as a result of blood finding other ways to avoid the liver due to this high pressure.[2]

Oesophageal varices and gastrointestinal hemorrhage are most likely to occur in patients with portal hypertension and liver cirrhosis.[3] About 40% of patients with compensated disease and 60% of patients with decompensated disease and ascites at the time of liver cirrhosis diagnosis have oesophageal varices.[4] Approximately 5% of patients with hepatic cirrhosis who do not have any visible varices will develop oesophageal varices annually. Patients with cirrhosis should undergo an endoscopic examination for oesophageal varices (EV) at the time of diagnosis.[5] Endoscopy should be done annually in individuals with decompensated cirrhosis and again after three years if no varices are observed in patients with compensated cirrhosis. Considering that variceal hemorrhage still has a high death rate.[6]The present study was evaluated prediction of large oesophageal varices in patients with cirrhosis of liver.

MATERIALS & METHODS

The present study comprised of 70 patients with cirrhosis of liver of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients had upper abdominal ultrasonography examinations. The existence and severity of encephalopathy and ascites were evaluated using the Child-Pugh criteria. EV's size and presence were noted. The parameters put forward at the Baveno I Consensus Conference were used to classify the size of varices into two classes: small and large. Results thus obtained were assessed statistically. The level of significance was set below 0.05.

RESULTS

Table I Distribution of patients

Total- 70		
Gender	**Male**	**Female**
Number	38	32

Table I shows that out of 70 patients, 38 were males and 32 were females.

Table II Etiology of cirrhosis of liver

Etiology	Number	P value
Alcohol	49	0.05
Hepatitis B	16	
Other	5	

Table II, graph I shows that causes of cirrhosis of liver was alcohol in 49, hepatitis B in 16 and others in 5 cases. The difference was significant (P< 0.05).

Graph I Etiology of cirrhosis of liver

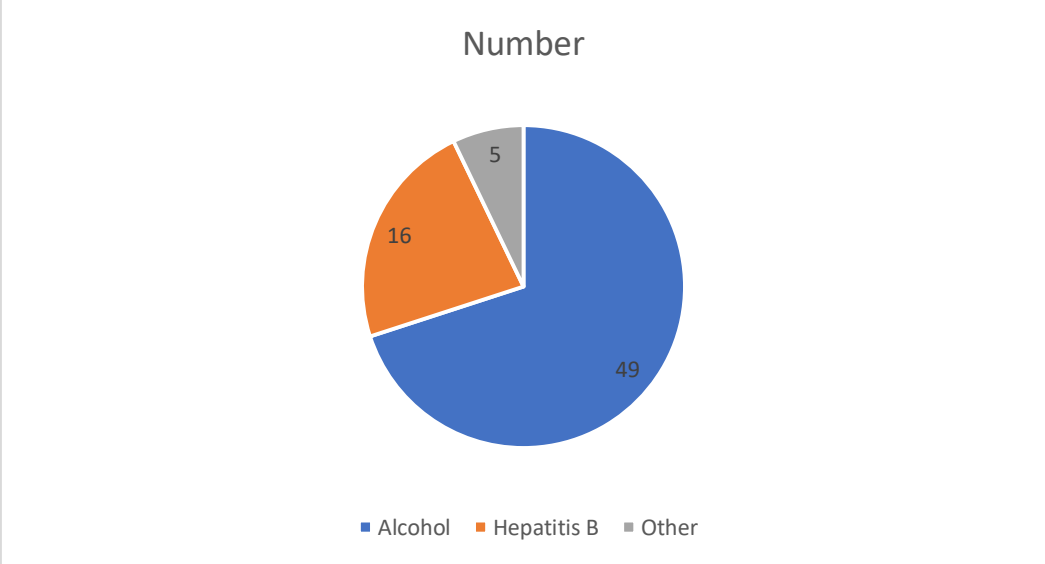

Table III Assessment of parameters

Parameters	Mean	SD
Child Pugh score	7.5	1.2
Albumin (g/L)	34.6	4.8
ALT (IU/L)	42.3	11.5
Total bilirubin (µmol/L)	28.4	6.1

Table III shows that Child Pugh score was 7.5, albumin was 34.6 g/L, ALT was 42.3 IU/L and total bilirubin level was 28.4µmol/L.

Table IV Univariate analysis of predictive factors of large oesophageal varices

Variables	Patients with no or small varices (37)	Patients with large varices (33)	P value
Age	55.1	56.2	0.67
Male (%)	70.2%	68%	0.84
Child–Pugh score	7.3	9.2	0.01
Albumin (g/L)	32.5	34.8	0.52

ALT (IU/L)	44.1	45.9	0.37
Total Bilirubin (μmol/L)	29.3	34.6	0.05

Table IV shows that mean age was 55.1 years and 56.2 years, there were 70.2% male and 68% male, Child-Pugh score was 7.3 and 9.2, albumin level was 32.5 g/L and 34.8 g/L, ALT was 44.1 IU/L and 45.9 IU/L and total bilirubin level was 29.3μmol/L and 34.6μmol/L in patients with no or small varices and in patients with large varices respectively. The difference was non- significant (P> 0.05).

DISCUSSION

Variceal hemorrhage is the primary cause of morbidity and death in cirrhosis. Nonselective beta-blockers and endoscopic band ligation can stop variceal bleeding in its early phases. Endoscopic screening is recommended for cirrhosis patients at the time of diagnosis to identify oesophageal varices (EV).[7] Endoscopy should be done annually in individuals with decompensated cirrhosis and again after three years if no varices are observed in patients with compensated cirrhosis. Because endoscopic screening is costly and invasive, there is interest in developing a non-invasive predictor of the presence and progression of varices that would decrease the number of endoscopies performed. Only those with a high risk of developing oesophageal cancer would have endoscopies.[8] Numerous studies have addressed the issue of non-invasively diagnosing individuals with varices in order to avoid endoscopy in those who are at low risk of developing them. Researchers also investigated other prediction models, such as spleen breadth and portal vein diameter, platelet count and splenomegaly, and combinations of platelet count and Child-Pugh class.[9,10]The present study was evaluated prediction of large oesophageal varices in cases with cirrhosis of liver.

We found that out of 70 patients, 38 were males and 32 were females. Causes of cirrhosis of liver was alcohol in 49, hepatitis B in 16 and others in 5 cases. Merkel et al[11] enrolled a total of 627 patients. Using Cox's regression analysis, size of varices, severity of red wale marks, and Child-Pugh score were significant and independent predictors of first bleeding. However, coefficients and standard errors were markedly different, and the importance of size of esophageal varices in the regression was much larger, whereas that of Child-Pugh score was much lower. According to these data, a revised index was developed (Rev-NIEC). Using receiver operating characteristic (ROC) curve analysis, the revised index showed a larger efficiency, and the area under the curve was significantly larger (0.80 +/- 0.02 vs 0.74 +/- 0.02; $p < 0.01$). In particular, the curve showed that for a specificity of 75%, the new index had a sensitivity of 72% compared to that of 55% of the NIEC index. Validation in an independent sample of 84 patients showed good agreement between predicted and observed risk for bleeding. Validation with the bootstrap technique also showed adequate stability of the results.

We found that Child Pugh score was 7.5, albumin was 34.6 g/L, ALT was 42.3 IU/L and total bilirubin level was 28.4 μmol/L. The mean age was 55.1 years and 56.2 years, there were 70.2% male and 68% male, Child- Pugh score was 7.3 and 9.2, albumin level was 32.5 g/L and 34.8 g/L, ALT was 44.1 IU/L and 45.9 IU/L and total bilirubin level was 29.3 μmol/L and 34.6 μmol/L in patients with no or small varices and in patients with large varices respectively. Hong et al[12]aimed to develop a decision model based on classification and regression tree analysis for the prediction of large esophageal varices in cirrhotic patients.309 cirrhotic patients (training sample, 187 patients; test sample 122 patients) were included. Within the training sample, the classification and regression tree analysis was used to identify predictors and prediction model of large esophageal varices.The prevalence of large esophageal varices in cirrhotic patients was 50.8%. A tree model that was consisted of spleen width, portal vein diameter and prothrombin time was developed by classification and regression tree analysis achieved a diagnostic accuracy of 84% for prediction of large esophageal varices. When reconstructed into two groups, the rate of varices was 83.2% for high-risk group and 15.2% for low-risk group. Accuracy of the tree model was maintained in the test sample and different Child-Pugh classes.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that large oesophageal varices may be predicted by the Child-Pugh score, total bilirubin, and albumin level in patients with liver cirrhosis. Therefore, the estimation of patients with liver cirrhosis may yield valuable information, guaranteeing their occurrence is prevented.

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