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Original Research

Prediction of large esophageal varices in cases with cirrhosis of liver- A non- invasive approach

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***ABSTRACT*:**
Background: Development of esophageal varices and gastrointestinal bleeding represents a serious consequence in patients with cirrhosis of the liver and portal hypertension. The present study was conducted to assess prediction of large esophageal varices in cases with cirrhosis of liver. **Materials & Methods:** 40 cirrhotic patients of both genders underwent ultrasonographic examination of the upper abdomen. The presence and degree of ascites and encephalopathy were assessed according to Child- Pugh criteria. **Results:** There were 30 males and 10 females. Alcohol was Cause of cirrhosis in 18, hepatitis B in 16 and others in 6. Child Pugh score was 7, total bilirubin was 28.1 µmol/L, albumin was 32.4 g/L and ALT was 41.2 IU/L. The difference was significant (P< 0.05). Child- Pugh score, total bilirubin and albumin level were significantly associated with the presence of LEV (P< 0.05). **Conclusion:** Child- Pugh score, total bilirubin and albumin level may be predictor of large esophageal varices in cases with cirrhosis of liver.
Key words: albumin, Child- Pugh score, total bilirubin

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INTRODUCTION

Development of esophageal varices and gastrointestinal bleeding represents a serious consequence in patients with cirrhosis of the liver and portal hypertension.[1] At the time of diagnosis of liver cirrhosis, esophageal varices are present in about 40% of patients with compensated disease and in 60% of those with decompensated disease and ascites. In patients with liver cirrhosis who do not have detectable esophageal varices, the latter appear at a rate of nearly 5% per year.[2]

Patients with cirrhosis should undergo endoscopic screening for esophageal varices (EV) at the time of diagnosis. If no varices are observed on initial endoscopy in patients with compensated cirrhosis, endoscopy should be repeated in 3 years; in decompensated cirrhotic patients, it should be repeated annually.[3] As a result of the cost and invasive nature of endoscopic screening, there is interest in developing a non-invasive predictor of the presence and development of varices that would decrease the number of endoscopies performed.[1] Predicting the presence of esophageal varices by non- invasive means would restrict the performance of endoscopy to those patients with a high probability of having varices.[4]

One of the major complications of portal hypertension is the development of esophageal varices, which occur in approximately 30%–70% of patients with cirrhosis and have been shown to be correlated with the severity of liver disease. Considering that the mortality rate of variceal bleeding remains high, screening endoscopy for esophageal varices is recommended for all patients with established cirrhosis.[5] The present study was conducted to assess prediction of large esophageal varices in cases with cirrhosis of liver.

MATERIALS & METHODS

The present study was conducted among 40 cirrhotic patients of both genders. All were involved with the written consent.

Data such as name, age, gender etc. was recorded. Biochemical parameters were recorded. All patients underwent ultrasonographic examination of the upper abdomen. The presence and degree of ascites and encephalopathy were assessed according to Child- Pugh criteria. The presence and size of EV were recorded. The size of varices was subdivided into two classes – small and large – according to the criteria proposed at the Baveno I Consensus Conference. Diuretics therapy was not commenced before endoscopy and ultrasonography was performed. Results thus obtained were assessed statistically.

RESULTS

Table I Clinical characteristics

Variable	Parameters	Value	P value
Gender	Male	30	0.01
	Female	10	
Cause	Alcohol	18	0.04
	Hepatitis B	16	
	Other	6	
Child Pugh score		7	-
Total Bilirubin (µmol/L)		28.1	-
Albumin (g/L)		32.4	-
ALT (IU/L)		41.2	-

Table I, graph I shows that there were 30 males and 10 females. Alcohol was Cause of cirrhosis in 18, hepatitis B in 16 and others in 6Child Pugh score was 7, total bilirubin was 28.1 µmol/L, albumin was 32.4 g/L and ALT was 41.2 IU/L. The difference was significant (P< 0.05).

Graph I Clinical characteristics

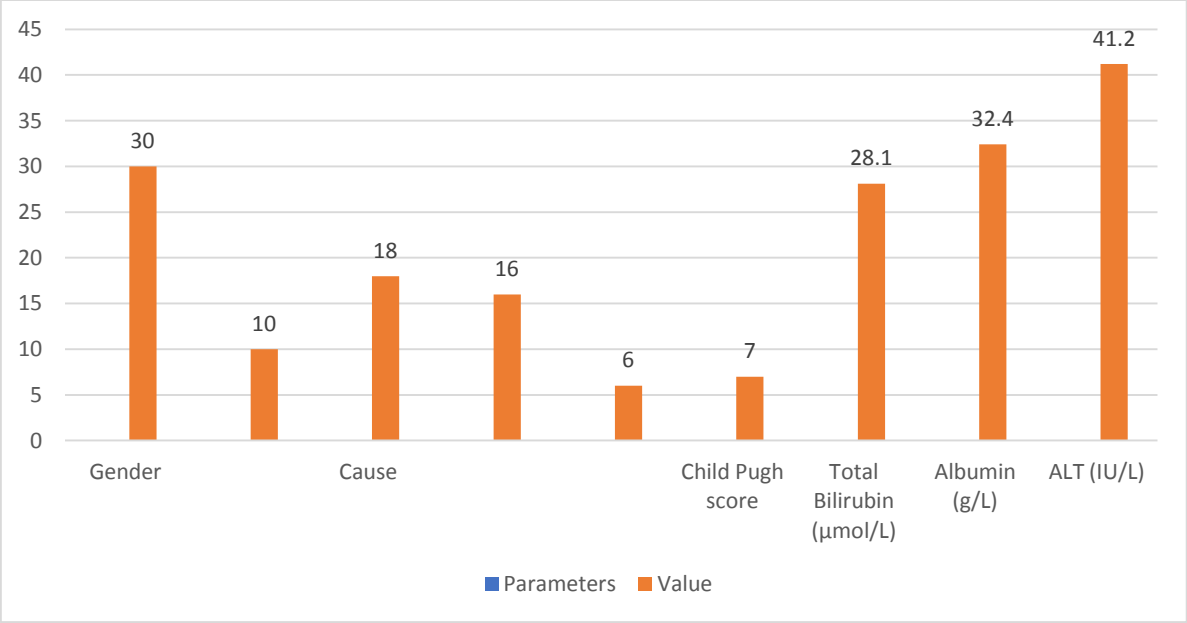

Table II Univariate analysis of predictive factors of large esophageal varices

Variables	Patients with no or small varices (22)	Patients with large varices (18)	P value
Age	54.2	54.6	0.91
Male (%)	70.2%	65%	0.87
Child–Pugh score	7	9	0.03
Total Bilirubin (µmol/L)	26.2	34.2	0.05
Albumin (g/L)	32.4	35.5	0.04
ALT (IU/L)	41	42	0.95

Table II shows that child- Pugh score, total bilirubin and albumin level were significantly associated with the presence of LEV (P< 0.05).

DISCUSSION

Variceal hemorrhage is a leading cause of morbidity and mortality in cirrhosis.[1] Primary prophylaxis with nonselective beta- blockers and endoscopic band ligation may reduce the risk of variceal bleeding.[6] Therefore, it is recommended that patients with cirrhosis should undergo endoscopic screening for esophageal varices (EV) at the time of diagnosis. If no varices are observed on initial endoscopy in patients with compensated cirrhosis, endoscopy should be repeated in 3 years; in decompensated cirrhotic patients, it should be repeated annually.[7] As a result of the cost and invasive nature of endoscopic screening, there is interest in developing a non-invasive predictor of the presence and development of varices that would decrease the number of endoscopies performed. Predicting the presence of esophageal varices by non- invasive means would restrict the performance of endoscopy to those patients with a high probability of having varices.[8] A number of studies have addressed the issue of identifying patients with varices by non- invasive means with the aim of avoiding endoscopy in those at low risk of having varices. Several prediction models such as combination of platelet count and Child- Pugh class, platelet count and splenomegaly, and spleen width and portal vein diameter were also investigated.[9] The present study was conducted to assess prediction of large esophageal varices in cases with cirrhosis of liver.

In present study, there were 30 males and 10 females. Cause of cirrhosis was alcohol was 18, hepatitis B was 16 and others was 6. Child Pugh score was 7, total bilirubin was 28.1 µmol/L, albumin was 32.4 g/L and ALT was 41.2 IU/L. Hong et al[10] 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. 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.

We found that child- Pugh score, total bilirubin and albumin level were significantly associated with the presence of LEV (P< 0.05). Shin et al[11] found that there were significant positive linear correlations between HS, SS, and spleen length and the grade of esophageal varices. HS and SS values showed better performance than did spleen length in the association with esophageal varices (P = .0306 and P = .0064, respectively). Diagnostic performance of HS and SS in predicting high-risk varices was comparable to that of DCE MR imaging (P = .1282 and P = .1371, respectively). When MR elastography and DCE MR imaging were combined, sensitivity improved significantly (P = .0004). MR elastography was highly reproducible.

Sharma et al[12] found that of the 101 patients, 46 had LEVx. On univariate analysis, five variables were significantly associated with the presence of LEVx. These included pallor (P = 0.026), palpable spleen (P = 0.009), platelet count (P < 0.002), total leukocyte count (P < 0.0004) and liver span on ultrasound (P = 0.031). On multivariate analysis, two of these parameters, namely low platelet count and presence of palpable spleen, were found to be independent predictors of the presence of LEVx. A receiver-operating characteristics curve using the predictor function arrived at from this analysis had an area under the curve of 0.760.

CONCLUSION

Authors found that Child- Pugh score, total bilirubin and albumin level may be predictor of large esophageal varices in cases with cirrhosis of liver.

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