



NONINVASIVE PREDICTION OF ESOPHAGEAL VARICES IN CHRONIC LIVER DISEASE PATIENTS

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KEYWORDS :

INTRODUCTION

Portal hypertension commonly accompanies the presence of liver cirrhosis, and the development of esophageal varices (EV) is one of the major complications of portal hypertension. The prevalence of EV in patients with liver cirrhosis may range from 60% to 80%, and the reported mortality from variceal bleeding ranges from 17% to 57%. Large EVs (LVs) are more likely to bleed than small EVs (SVs). The American Association for the Study of Liver Disease and the Baveno IV Consensus Conference on portal hypertension recommended that all cirrhotic patients should be screened for the presence of EV when liver cirrhosis is diagnosed. However subjecting all patients with cirrhosis to screening endoscopy may not be cost effective. A more affordable approach for screening would be possible if patients with low or high risk of having EV could be identified from easily obtainable clinical variables. If the noninvasive methods can be used for predicting the presence or absence of large varices we can avoid unnecessary endoscopy for patients with low risk and start early treatment of portal hypertension and prevention of massive bleeding in those with high risk of large varices. In this study we are trying to identify biochemical, clinical and ultrasonographic parameters that noninvasively predict the presence of varices such as splenomegaly, thrombocytopenia, Childs score, ascites, portal flow pattern and platelet count/splenic size ratio.

AIMS

1. To identify noninvasive factors predicting the presence of varices in patients with chronic liver disease.
2. To assess the predictive value of platelet count/splenic diameter ratio in predicting esophageal varices in chronic liver disease patients.

MATERIALS AND METHODS

The study was a prospective study including newly diagnosed 100 patients with chronic liver disease attending Govt. Medical College, Kozhikode, between the months of November 2010 and November 2011 without history of upper GI bleeding. All patients in the study underwent a full clinical evaluation. Clinical history and physical examination findings were recorded. All patients underwent biochemical tests, like liver function tests, complete blood counts, renal function tests, prothrombin time, ultrasonography of the abdomen to confirm the presence of cirrhosis and to record the spleen bipolar diameter, portal vein size, ascites and presence of collaterals and ascetic fluid analysis in patients with ascites. Upper GI endoscopy was done in all patients to confirm the presence of varices and also to grade them. Data were collected in the predetermined proforma and results were analyzed using Software Statistical package student version 15.0. Continuous variables were analyzed using t-tests and categorical variables by Chi square test. Pearson Correlation was used to find correlation between two variables.

RESULTS

Our study sample consisted of hundred patients of whom sixty seven were males and thirty three were females. The mean age was 41.8 (SD = 12.72). Distribution of grades of varices was studied in various age groups and no significant correlation was detected. No significant gender difference in the distribution of grade of varices

was found in our study. We studied the frequency of distribution based on Conn's grading of varices and found that Grade II predominated (32%). 20% of the study population did not have varices. Our study could not find any significant association between hepatic encephalopathy and varices. Patients were grouped according to Child Pugh Classification of cirrhosis. The relationship between Child Pugh grade and the grade of varices was studied and significant correlation noted ($p = 0.001$). Thus as patients progress to decompensated liver disease (CP grade B & C), it is noted that the presence of varices increases. Relationship between noninvasive parameters like Serum Bilirubin, Serum Albumin, Hemoglobin, Platelet count and spleen bipolar diameter to presence of varices were studied. Among these only platelet count ($p = 0.001$) and spleen bipolar diameter ($p = 0.01$) had statistical significance. Significance was noted between portal vein size (cm) and presence of varices. Patients were categorized into two groups based on cut off value of 909 for platelet count / splenic diameter ratio and its relation to the grade of varices was studied. A significant difference between the presence or absence of esophageal varices and platelet count to spleen diameter ratio of 909 was observed ($p = 0.001$). Our study does not demonstrate a statistically significant correlation between presence and grade of varices and ascites. We grouped patients based on range of SAAG values. Of the study sample SAAG was less than 1.1 in 38.9% of the patients and more than 1.1 in 61.1%. 81% of the study population had varices when SAAG value was more than 1.1. All the patients in whom varices were absent had SAAG value less than 1.1. The two groups showed statistically significant difference ($p = 0.001$) based on presence and absence of varices. The sensitivity of platelet count/ Spleenic diameter ratio of ≤ 909 in predicting presence of esophageal varices was 88% with 95% CI (79-94%). Its positive predictive value is 93% with 95% CI (84-97%). The sensitivity of SAAG > 1.1 g/dl in predicting the presence of varices in the subgroup of patients with ascites was 81% with 95% CI (62-94%) and its positive predictive value is 100% with 95% CI (85-100%). Thus use of these parameters may help identify patients with a low probability of esophageal varices who may not need endoscopy. This may help reduce cost and discomfort for these patients and the burden on endoscopy units.

CONCLUSIONS

1. Presence of varices increases as patients progress to decompensated liver disease. (Child pugh grade B & C).
2. Decrease in platelet count was found to be a predictor of esophageal varices in patients with cirrhosis.
3. Ultrasound parameters like spleen bipolar diameter and portal vein size also predict the presence of esophageal varices.
4. When a cut off value of platelet count / splenic diameter ratio of ≤ 909 was applied in order to take into consideration the decrease in platelet count due to hypersplenism; it was found to be a good predictor of presence and grade of esophageal varices.
5. The sensitivity of PC/SD ratio of ≤ 909 in predicting the esophageal varices was 88% with a positive predictive value of 93%.
6. Value of serum ascetic albumin gradient (SAAG) more than 1.1 g/dl is found to be a predictor for presence and grade of esophageal varices.

7. The sensitivity of SAAG > 1.1 g/dl in predicting the presence of varices in the subgroup of patients with ascites was 81% with 95% CI (62-94%) and its positive predictive value is 100%.
8. Combining these non invasive parameters in subgroup with ascites can increase the reliability of predicting esophageal varices. So these parameters can be used to regularly follow up the cirrhotic patients with ascites for the progression of grade of varices at specific intervals.
9. The use of platelet count /splenic diameter ratio, SAAG, portal vein diameter and Child Pugh score and combination of these non invasive parameters in appropriate subgroups of cirrhotic patients for screening and follow up of esophageal varices can substantially reduce the cost of health care and discomfort for the patients as well as reduce the burden on endoscopy units.

DISCUSSION

Severe upper gastrointestinal bleeding as a complication of portal hypertension develops in about 30-40% of patients with cirrhosis. Due to the increasing prevalence of chronic liver diseases, variceal hemorrhage is associated with significant morbidity, mortality, and health care costs. Numerous studies have demonstrated the efficacy of beta-blockers for primary prevention of variceal bleeding in patients with high-risk varices indicating the importance of screening for the presence of EVs. Therefore, there is a particular need for a noninvasive predictor for the presence of EVs to ease the medical, social and economic burden of the disease. Many previous studies have documented good predictive value of various non-endoscopic variables for the presence or absence of varices, but available data in our part of the country is limited.

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