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A STUDY OF PLATELET COUNT TO SPLENIC DIAMETER AS A PREDICTOR OF OESOPHAGEAL VARICES OF LIVER

General Medicine

Dr Ramakrishna Mr — Professor, Department Of General Medicine, Navodaya Medical College Hospital And Research Centre, Raichr, Karnataka , 584103, India

Dr Shubham Bhagat — Final Year Post Graduate, Department Of General Medicine, Navodaya Medical College Hospital And Research Centre, Raichr, Karnataka , 584103, India

Dr Pallavi Mishra — Second Year Postgraduate, Department Of General Medicine, Navodaya Medical College And Research Centre, Raichr, Karnataka , 584103, India

Dr Manjunath M Nuchhi — Final Year Postgraduate, Department Of General Medicine, Navodaya Medical College And Research Centre, Raichr, Karnataka , 584103, India

ABSTRACT

Background : cirrhosis is defined by the World health organisation as a diffuse process characterised by the fibrosis and conversion of normal architecture into structurally abnormal nodules .multiple studies have shown that parameters directly or indirectly linked to portal hypertension , such as splenomegaly and reduced platelet count ,were associated with the presence of oesophageal varices. **Objectives :** To study the platelet count to splenic ratio in patients with cirrhosis of liver and its corelation with the presence of oesophageal varices. **Methodology:** hospital based , cross sectional study of 114 patients confirmed case of cirrhosis of liver admitted at Navodaya medical college and research centre , Raichur during the period of one year. **Results:** The total number of 114 patients diagnosed to have liver cirrhosis were taken up for the study , fulfilling the inclusion and exclusion criteria of our study protocol who got admitted in the hospital. Taking a cut off of ratio of platelet count ,splenic diameter and platelet count /splenic diameter ratio were 0.984,0.783,0.986 respectively **Conclusion:** The current consensus is that all, all patients with cirrhosis should be screened for development of varices. Endoscopy is an invasive and costly diagnostic procedure. Therefore , introduction of non-invasive parameters for assessment of presence and size of oesophageal varices is a major goal of numerous studies to minimize early endoscopic intervention as a screening procedure.

KEYWORDS

Chronic liver disease , platlet count, splenic diameter , oesophageal varices

INTRODUCTION

Cirrhosis is defined by the world health organisation as a diffuse process characterised by the fibrosis and conversion of normal architecture into structurally abnormal nodules.[1,2]The progression of liver injury to cirrhosis may occur over weeks to years .[3]

Cirrhosis is a condition that has a variety of clinical manifestations and complications ,some of which can be life threatening.The clinical course of patients with advanced cirrhosis of liver is often complicated by a number of sequelae .These include portal hypertension and its consequences of gastroesophageal variceal bleed ,splenomegaly ,ascites ,hepatic encephalopathy ,spontaneous bacterial peritonitis ,hepatorenal syndrome and hepatocellular carcinoma .[4]

Portal hypertension is a common complication of hepatic cirrhosis .cirrhotic patients with portal hypertension develop oesophageal varices and a very high risk of variceal bleeding [5]

The incidence of oesophageal varices is approximately 5 percent per year in patients with cirrhosis and progression from small to large varices occurs in 20 % after one year .[7,8]

Oesophageal varices development is among the major complications of liver cirrhosis with an estimated prevalence of approximately 50 %. The risk of rebleeding from varices is 25% - 35% with majority within 1st year.the mortality from each episode of oesophageal bleeding is 17-57%.[9,10]

Studies have shown that biochemical ,clinical and ultrasonographic parameters alone or together have good predictive value for non invasively assessing the presence of oesophageal varices .bleeding episodes can be predicted by the presence of red signs (red cherry spots)on the varices ,and by the variceal size.

The incidence of bleeding can be reduced with non- selective beta blockers. It is also suggested that prophylactic endoscopic variceal ligation can decrease the incidence first variceal bleeding and mortality in patients with the liver cirrhosis who have large varices .[6]

Therefore , annual endoscopic screenings highly recommended for patients with small oesophageal varices while the screening should be conducted once every two years for patients suffering from liver cirrhosis without diagnosed varices.

Nevertheless ,repeated endoscopic examinations are unpleasant for patients ,and have cost impact ,while only half of cirrhotic patients have oesophageal varices, and 30 % have large varices.

Multiple studies have shown that parameters directly or indirectly linked to portal hypertension ,such as splenomegaly and reduced platelet count , were associated with the presence of oesophageal varices.

Review Of Literature

Noninvasive diagnosis of esophageal varices in cirrhotic patients is useful because it allows us to select the subgroup of patients that are more likely to require endoscopy, at the same time it minimizes the cost and the potential complications related to the procedure.[11]

The predictors may be of help to the physicians practising in the rural areas where endoscopy facilities are not available ,in helping them to initiate appropriate primary pharmacological prophylaxis in these patients. In the urban setting where the endoscopy workload is high ,a non invasive predictor as in this study can help one to initiate drug therapy while waiting for the endoscopy procedure[12]

MATERIALS AND METHODS

Study Design : Hospital based ,cross sectional study

Source Of Data : The patients were admitted under the department of general medicine of Navodaya Medical college hospital and research centre, Raichur with diagnosed chronic liver disease were the source for the data collection and duration for one year.

Incusion Criteria

Consecutive patients of aged 18 years and above diagnosed to have cirrhosis of liver as per diagnostic criteria ,admitted in medicine ward in Navodaya medical college,Raichur.

Exclusion Criteria

Patients with hepatocellular carcinoma .

Patients with portal vein thrombosis

Patients under treatment with beta blockers ,diuretics or vasoactive drugs(in the last 3 weeks)

Patients with Budd Chiari Syndrome and non - cirrhotic portal hypertension
Patients with previous history of abdominal surgery .
Patients who underwent sclerosant therapy or endoscopic variceal ligation for varices
Patients with hemoglobinopathies and primary coagulopathies .
Patients who are not willing to participate in the study .

Sample Size

The sample size was calculated based on the formula used for sample size calculation for case control study .
n = z2 pq/d2
where z = 1.96 (confidence limit at 95%)
p= prevalence 74 %(incidence of oesophageal varices among chronic liver disease from previous study)
q= 100-p(100- 74)=26
d = allowable error (absolute error of 10) and n is sample size by substituting the values in the above formula ,sample size obtained was 114

Sampling Procedure

All chronic liver disease patients who are diagnosed by clinical examination, ultrasound abdomen ,portal vein doppler and other necessary investigations falling under the inclusion and exclusion criteria were selected.

Statistical Analysis

Receiver operating characteristics curve was used to find the platelet count/spleen diameter ratio with best sensitivity and specificity for predicting oesophageal varices. The p values obtained < 0.05 were considered statistically significant .

RESULTS/DISCUSSION

The present study was conducted in the department of medicine ,Navodaya medical college and hospital ,Raichur .A total number of 114 patients diagnosed to have liver cirrhosis were taken up for the study protocol who got admitted in the hospital . The details of each case were studied and consolidated into the results.

Taking a cut off value of ratio of platelet count to splenic diameter1052,Areas under ROC curve for the platelet count, splenic diameter and platelet count / splenic diameter ratio were 0.984,0.783 and 0.986 respectively.

Test parameter	Cut off points	Area under curve	Sensitivity (1%)	Specificity (1%)	Standard error	95% confidence interval
Platelet count	<120 10X3 /µl	0.984	96.15	100	0.010	0.941-0.998
Splenic diameter	>134mm	0.783	79.81	60.00	0.097	0.696-0.854
Platelet count/splenic diameter ratio	≤1052.63	0.986	97.12	100.00	0.010	0.943-0.999

Area under curve is maximum (0.986) for platelet count/splenic diameter ratio with best sensitivity (97.12) and specificity (100.00%) which is very much significant .

Therefore platelet count /splenic diameter ratio is a best predictor of severity of oesophageal varices in cirrhosis patients.

The study also shows that as the ratio decreases ,the grade of the varices increases .

CONCLUSION

Platelet count / splenic ratio may serve as a predictor of oesophageal varices in patients who need frequent endoscopies. However due to geographical variations in platelet count or spleen size the cut off may differ accordingly. More studies may be required in a larger populations of cirrhosis patients for validation of the ratio and to determine a cut off value that can be safely recommended for the non invasive diagnosis of oesophageal varices.

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