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Research Article

DIAGNOSTIC ACCURATENESS OF SPLEEN DIAMETER/ PLATELET COUNT RATIO FOR RECOGNITION OF ESOPHAGEAL VARICES IN PATIENTS WITH LIVER CIRRHOSIS TAKING ENDOSCOPY AS GOLD STANDARD

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Abstract:

Introduction: Esophageal varices are common in patients with cirrhosis of the liver, and their frequency is estimated at 50%. Presumably, various non-invasive radiographic and ultrasound (US) indicators have been demonstrated, including spleen size, portal vein velocity (PVV), portal vein diameter, hepatic impedance indices, spleen impedance indices, and esophageal multi-slice computed tomography results. esophageal varices worsening

Aim: To determine the diagnostic accuracy of the platelet count to spleen diameter in the detection of esophageal varices in patients with liver cirrhosis.

Study design: A cross-sectional study

Place and Duration: In the Medicine department of Mayo Hospital Lahore for one-year duration from March 2019 to March 2020.

Results: In our study, 23 (10.70%) were 12-30 years old, 93 (43.25%) 31-50 years old, and 99 (46.05%) 51-80 years old, mean \pm standard deviation was calculated as 46.93 ± 13.22 years, 124 (57.67%) are women, and 91 (42.33%) are men, the incidence of esophageal varices in patients with cirrhosis (in endoscopic examination) reveals 131 (60.93%), while 84 (39.07%) were not reported with this morbidity and the diagnostic accuracy of the platelet count to spleen diameter in the detection of esophageal varices in patients with cirrhosis, we recorded 124 (57.67%) true positive, 4 (1.86%) false positive, 80 (37.21%) true negative and 7 (3.26%) false negative, the sensitivity, specificity, positive predictive value, negative predictive value and the accuracy factor were calculated to be 96 respectively. 95%, 95.24%, 96.88%, 91.95% and 94.88%.

Conclusion: We found that the diagnostic accuracy of the platelet count to spleen diameter ratio in detecting esophageal varices in patients with cirrhosis is significantly higher, and we have recommended its use in our clinical practice as part of the diagnosis of patients with cirrhosis in order to reduce the financial and sanitary burden endoscopy department and medical costs related to screening of electric vehicles.

Keywords: liver cirrhosis, esophageal varices, platelet count to spleen diameter ratio.

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INTRODUCTION:

In the clinical context, cirrhosis of the liver is a disease process of the liver involving the progressive destruction and regeneration of the liver parenchyma leading to fibrosis and, ultimately, cirrhosis [1-2]. Many conditions are associated with portal hypertension, and cirrhosis of the liver is the most common cause of this disorder. Normal portal pressure is usually defined between 5- and 10-mm Hg. When portal pressure rises to 12 mmHg or more, complications such as varicose veins, splenomegaly, and ascites may develop. Indeed, esophageal varices have been reported to be the major complication of portal hypertension and massive upper gastrointestinal hemorrhage [3-4].

The incidence of esophageal varices ranges from 30% to 70% in patients with cirrhosis. About 50% of all patients with cirrhosis develop esophageal varices. People with cirrhosis of the liver and esophageal varices may not have any symptoms. If the bleeding is minor, the only symptom may be dark or black streaks in your stools. Tests for bleeding include two invasive procedures: endoscopy and a nasogastric tube through the nose into the stomach to detect bleeding. The non-invasive diagnosis of esophageal varices in patients with cirrhosis of the liver is useful as it allows the selection of the patients most likely to require endoscopy; at the same time, it minimizes the costs and potential complications associated with the procedure. The platelet count to spleen diameter (PC / SD ratio) appears to be the best noninvasive predictor of esophageal varices to date [5-6]. The sensitivity and specificity of the platelet count to spleen diameter ratio (cut-off of 909) were 80% and 89%, respectively.

These values were lower than in the study by Giannini *et al.*, Which reported sensitivity and specificity of 91.5% and 67%, respectively. Local data are also available, but they are controversial as one study demonstrated the sensitivity and specificity of PC / SD with a cutoff of 909, 96.07, and 93.75%, respectively. However, according to another local study, the sensitivity and specificity of the PC / SD ratio were 13% and 77%, respectively, with a cut-off of 909 [7-8]. We designed this study to establish the diagnostic accuracy of the platelet count / spleen diameter ratio for esophageal detection. varicose veins in patients with cirrhosis of the liver. The PC / SD ratio may function as non-invasive and cost effective, but there is controversy in the results as well as in local data that misleads clinicians whether to rely on the PC / SD ratio or not.

MATERIAL AND METHODS:

This cross-sectional study was conducted at the Medicine department of Mayo Hospital Lahore for one-year duration from March 2019 to March 2020. The study included patients aged 12 to 80 years with a diagnosis of cirrhosis.

RESULTS:

A total of 215 cases meeting the inclusion / exclusion criteria were included in the study to establish the diagnostic accuracy of platelet count to spleen diameter in detecting esophageal varices in patients with cirrhosis. The age distribution of the patients was made which shows that 23 (10.70%) were in the range of 12-30 years, 93 (43.25%) 31-50 years, and 99 (46.05%) 51-80 years, mean 6 standard deviation was calculated as 46.93 13.22 years (Table 1).

Table 1: Age distribution (n=215)

Age (in years)	n	%age
12-30	23	10.70
31-50	93	43.25
51-80	99	46.05

The gender distribution shows that the majority of patients were women 124 (57.67%) and 91 (42.33%) were men (Table 2).

Table 2: Gender Distribution (n=215)

Gender	n	%age
Male	91	42.33
Female	124	57.67

The prevalence of esophageal varices in patients with cirrhosis (in endoscopic examination) is 131 (60.93%), while 84 (39.07%) were not reported with this morbidity (Table 3).

Table 3: Frequency of Esophageal Varices in Patients of Cirrhosis (on endoscopy) (n=215)

Esophageal varices	n	%age
Yes	131	60.93
No	84	39.07

Regarding the diagnostic accuracy of the platelet count to spleen diameter in the detection of esophageal varices in patients with cirrhosis, we recorded 124 (57.67%) true positive, 4 (1.86%) false positive, 80 (37.21%) true negative and 7 (3.26%) were false

negative, the sensitivity, specificity, positive predictive value, negative predictive value and the accuracy ratio were calculated at 96.95%, 95.24%, 96.88%, 91.95% respectively and 94.88% (Table 4).

Table 4: Diagnostic accuracy of platelet count/spleen diameter ratio for detection of esophageal varices in patients of cirrhosis

Plate let count/ spleen diameter	Esophageal varices on Endoscopy (gold standard)		Total
	Positive	Negative	
Positive	True +ve(a) 124(57.67%)	False +ve(b) 4 (1.86%)	a + b 128(59.53%)
Negative	False -ve(c) 7 (3.26%)	True -ve (d) 80 (37.21%)	c + d 87(40.47%)
Total	a + c 131 (60.93%)	b + d 84(39.07%)	215(100%)

DISCUSSION:

Esophageal varices are common in patients with cirrhosis of the liver, and their frequency is estimated at 50%. Although screening endoscopy for esophageal varices is recommended for all patients with established cirrhosis. An ideal non-invasive way to diagnose esophageal varices prior to invasive screening endoscopy is needed in these patients. Presumably, various non-invasive radiographic and ultrasound (US) indicators have been shown to be found, including spleen size, portal vein velocity (PVV), portal vein diameter, hepatic impedance indices, spleen impedance indices, and multi-slice computed tomography of the esophagus. worsening of esophageal varices or risk of bleeding from varices in patients with cirrhosis of the liver [9-10]. However, most of these studies were retrospective and lacked further validation, and the results were controversial as well. However, we planned this prospective study to establish the diagnostic accuracy of the platelet count to spleen diameter in detecting esophageal varices in patients with cirrhosis. The use of the PC / SD ratio may be proposed in clinical practice as part of the diagnosis of patients with cirrhosis in order to reduce the financial and sanitary burden of the endoscopy ward and the medical costs related to EV screening. In our study, 23 (10.70%) were 12 to 30 years old, 93 (43.25%) 31 to 50 years old, and 99 (46.05%) 51 to 80 years old, mean + standard deviation calculated as 46.93 ± 13.22 years. , 124 (57.67%) and 91 (42.33%) are men, the incidence of esophageal varices in patients with cirrhosis (in endoscopic examination) reveals 131 (60.93%), while 84 (39.07%) there was

no such morbidity and diagnostic accuracy of platelets, the ratio of the number / diameter of the spleen to the detection of esophageal varices in patients with cirrhosis was found 124 (57.67%) true positive, 4 (1.86%) false positive, 80 (37.21%) true negative and 7 (3.26%) were false negative, the sensitivity, specificity, positive predictive value, negative predictive value and the accuracy factor were calculated to be 96.95%, 95.24%, 96.88%, 91, respectively. 95% and 94.88% [11-12]. The study results are consistent with a local study which shows the sensitivity and specificity of PC / SD with a cutoff of 909, 96.07 and 93.75%, respectively. In another study using the platelet-to-spleen diameter cut-off of 909, Giannini E et al. In Genova, Italy, to predict the presence of esophageal varices, the sensitivity was 100% and the specificity was 93%. Positive and negative predictive values for the ratio of platelet count to spleen diameter 909 were considered normal. The diagnostic accuracy of this platelet count to spleen diameter ratio with a cutoff of 909 is 94.88% in the present study. All results differ slightly from the results of the study by Giannini E et al, which may be due to human error in identifying esophageal varices during endoscopy, geographic and ethnic differences of the population studied, and the selected patients were only those who had cirrhosis secondary to the hepatitis virus type C, such as Giannini E et al. selected subjects for the study who were affected by any virus. Another local study by Sarwar S et al. Z Shaikh Zayed Medical Complex Lahore demonstrated the sensitivity and specificity of the platelet count to spleen diameter in centimeters to predict oesophageal varices with a

cutoff of 909 of 13% and 77% respectively, which is far from significant [13-14]. The results of Sarwara S et al. Differ from this study, and also from Giannini E et al. However, the diagnostic accuracy of the platelet count to spleen diameter in detecting esophageal varices in patients with cirrhosis at a cutoff value of 909 is defined as a much more accurate method of detecting varicose veins esophagus and the use of this technique in our clinical practice as part of the diagnosis of patients with cirrhosis would help reduce the financial and sanitary burden of the endoscopy department and the medical costs related to EV screening in our country [15].

CONCLUSION:

We found that the diagnostic accuracy of the platelet count to spleen diameter ratio in detecting esophageal varices in patients with cirrhosis is significantly higher, and we have recommended its use in our clinical practice as part of the diagnosis of patients with cirrhosis in order to reduce the financial and health burden of the patient.

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