

PLATELET COUNT TO SPLEEN DIAMETER RATIO AS A NON-INVASIVE PREDICTOR OF ESOPHAGEAL VARICES IN CIRRHOTIC PATIENTS – A DIAGNOSTIC ACCURACY STUDY

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ABSTRACT

Introduction

Aims: To assess the diagnostic accuracy of platelet count to spleen diameter ratio in identifying the varices and to determine an optimal PC/SD cut off value for predicting high risk esophageal varices.

Methods: The study was carried out at Saveetha Medical College, Thandalam with a sample size of 100 patients with cirrhosis. This was a cross-sectional study. Statistical analysis was performed using SPSS version 16. Frequency table, statistical analysis , t test and chi square test were analysed and $p < 0.05$ was considered statistically significant.

Results: A significant difference of ≤ 1014 was found between the platelet count to spleen diameter ratio and the presence or absence of esophageal varices. The association between the existence of varices and non-invasive markers such as spleen diameter and platelet count was investigated. The only statistically significant factors were the spleen diameter ($p < 0.001$) and platelet count ($p < 0.001$). Having varices and having a platelet count/spleen diameter ratio of ≤ 1014 were statistically correlated.

Conclusion: The ratio of platelet count to spleen diameter was the most accurate non-invasive metric for EV diagnosis. The data supporting the non-invasive diagnosis is still insufficient, though, to take the role of endoscopy as the diagnostic screening method for EVs in all cirrhotic patients. When endoscopic facilities are not available, the platelet count to spleen diameter ratio may be a helpful non-invasive method for EV diagnosis in liver cirrhosis.

KEYWORDS: Liver cirrhosis, Platelet count, Spleen diameter.

INTRODUCTION

In cirrhotic patients, non-invasive identification of Esophageal varices (EVs) is helpful since it enables us to identify the subgroup of patients most likely to need endoscopy; concurrently, it reduces the expense and the possible side effects associated with the process. Because of advancements and improvements in healthcare, the incidence of cirrhosis is rising along with the survival rate of cirrhosis patients. In the future, the disease's medical and societal impact is probably going to grow. The characteristics that can predict the presence of EVs noninvasively have been the subject of numerous investigations. The majority of research have demonstrated a direct or indirect relationship between the presence of EVs and spleen diameter and platelet count. According to Giannini et al. (1), the platelet count to spleen diameter ratio is currently the most accurate non-invasive indicator of EVs. The current investigation aims to prospectively assess the validity of the ratio of platelet count to spleen diameter by contrasting it with additional non-invasive metrics that can be used to check for EVs in liver cirrhosis patients.

METHODS

A sample of 100 patients with liver cirrhosis participated in this study, which was conducted at Saveetha Medical College in Thandalam. A cross-sectional study approach was used. Patients over the age of 18 with liver cirrhosis were included in this study. Participants with hematological disorders were not allowed to participate in the trial. In SPSS, statistical analyses were computed. Frequency tables, graphs, t test, and chi square test were analysed, and $p < 0.05$ was considered statistically significant.

Statistical analysis

The SPSS 16.0 version was used to do statistical analysis once the data was imported into Microsoft Excel. SPSS version 16 was utilized to analyze the frequency table, graphs, t test, chi square test, and correlation.

Mean age of the patients in the study was 41.43 and SD = 15.7. Distribution of grade 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. Based on Conn's Grading, the grading of the varices in study population was done. Grade

III had highest frequency of 26 patients followed by grade I and II with 21 patients, grade 0 with 20 patients and grade IV with 12 patients.

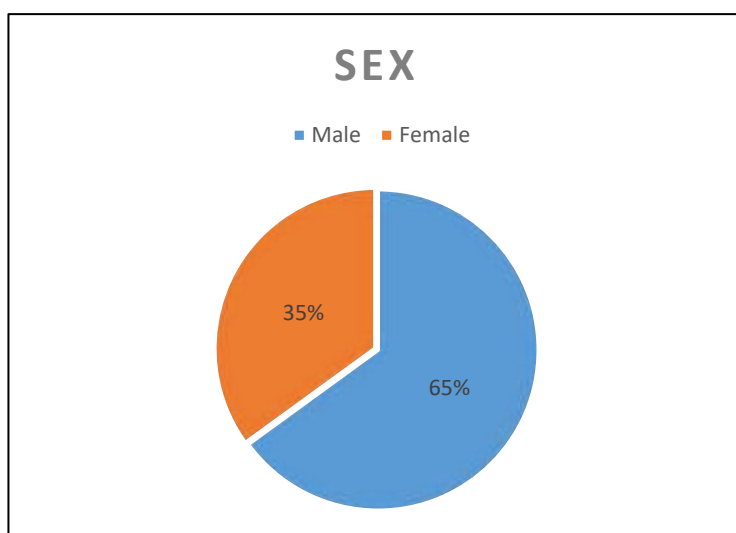
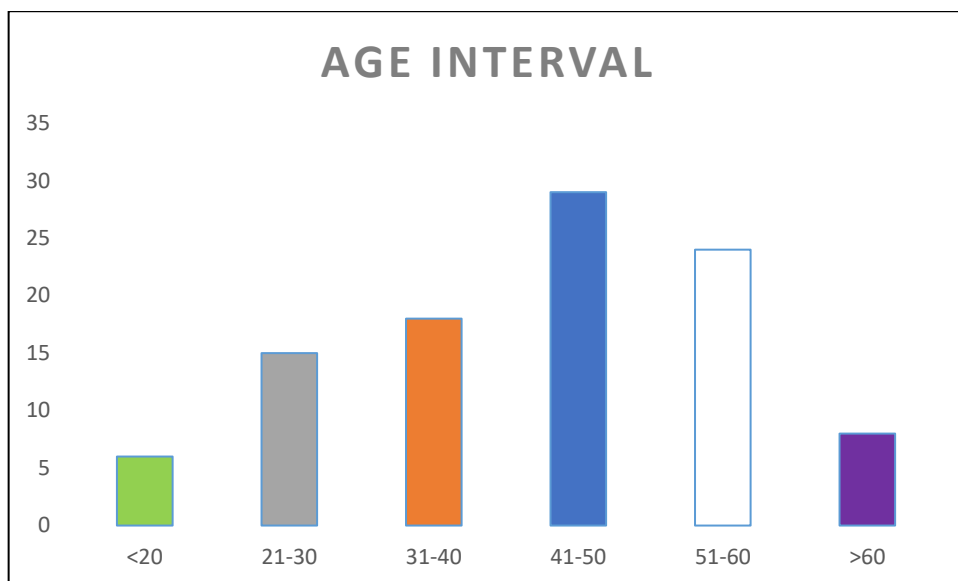


Table 2 Association between Varices and other variables

Variables		Varices grade					p value
		I	II	III	IV	0	
Age Interval	<20	1	1	1	0	3	0.101
	21-30	3	3	5	1	3	
	31-40	5	4	6	0	3	
	41-50	6	6	5	7	5	
	51-60	4	5	7	4	4	
	>60	2	2	2	0	2	
Sex	Male	13	12	14	8	13	0.54
	Female	8	9	12	4	7	

Table 3 Mean comparison between Varices and other variables

Variables	Varices	N	Mean	SD	p value
Hemoglobin	Present	80	10.1	2.41	0.19
	Absent	20	10.5	2.76	
Platelet Count	Present	80	121023	24678.3	<0.001*
	Absent	20	157214	25541.4	
Spleen diameter	Present	80	139.94	9.73	<0.001*

	Absent	20	127.71	16.72	
	Present	80	3.844	2.01	
Serum Bilirubin	Absent	20	3.764	1.62	0.91
	Present	80	2.78	0.61	
Serum Albumin	Absent	20	2.69	0.41	0.285

Relationship between non-invasive parameters like Hemoglobin, Platelet count, Spleen Bipolar diameter, Serum Bilirubin and Serum albumin to presence of varices was studied. Of this only Platelet Count ($p<0.001$) and Spleen Bipolar diameter ($p<0.001$) had statistical significance. There was statistically significant correlation between presence of varices and a platelet count/ splenic bipolar diameter ratio $r=-0.310$, $p<0.001$.

Table 4 Association between PC/SD Ratio and Varices

Varices grade	PC/SD Ratio		p value
	≤ 1014	> 1014	
I	18	3	$<0.001^*$
II	18	3	
III	25	1	
IV	11	1	
0	9	11	

Based on a cutoff value of 1014 for the platelet count/splenic diameter ratio, patients were divided into two groups. Its relationship to the grade of varices was analysed. The presence or absence of esophageal varices was significantly correlated with a platelet count to spleen diameter ratio of ≤ 1014 . The PC/SD ratio demonstrated a sensitivity of 90%, specificity of 55%, positive predictive value of 88.9%, and negative predictive value of 57.9% in predicting esophageal varices.

CONCLUSION

The platelet count to spleen diameter ratio was the most accurate non-invasive metric for EV diagnosis. But as a diagnostic screening method for EVs in all cirrhotic patients, the evidence supporting the non-invasive diagnosis is still insufficient to take the place of endoscopy. When endoscopic facilities are unavailable, the platelet count to spleen diameter ratio may be a helpful non-invasive method for EV diagnosis in liver cirrhosis. Additionally, lessen the load on endoscopic units, patient pain, and expenses.

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