

CORRELATION BETWEEN SEVERITY OF THROMBOCYTOPENIA AND PORTAL HYPERTENSIVE GASTROPATHY IN PATIENTS WITH CHRONIC LIVER DISEASE

Srinivasa Guptha L.R , Sachin K. Dhande , Rajalakshmi K.V ,
Dayanandan Y, Jagadeesan M*

ABSTRACT

Background: Portal hypertensive gastropathy (PHG) is known but under detected complication of cirrhosis of liver. Patients with stable liver disease are more prone to internal bleeding due to portal hypertension. Thrombocytopenia is a common complication associated with chronic liver disease and it is associated with poor prognosis.

Aim: The aim of this study is to find out the association between correlation between severity of thrombocytopenia and portal hypertensive gastropathy in patients with chronic liver disease.

Materials and Methods: This cross-sectional analytical study was conducted in a tertiary care centre at Saveetha Medical College Hospital and Research Centre. A total of 80 consecutive subjects were included in this study. All adult patients admitted with diagnosis chronic liver disease underwent upper GI endoscopy; those with portal hypertensive gastropathy (PHG) were included. Platelet count was estimated and severity of gastropathy was classified. Correlation of thrombocytopenia and severity of gastropathy was studied. Statistical analysis was done using SPSS 21. Statistical analysis was done by t test and chi-square test.

Results: Patients with mild PHG category had normal platelet count between 1.5-4.5 lakhs/mm³. But in patients with severe PHG, almost 80% of patients had thrombocytopenia, in which 8% had severe thrombocytopenia <50,000 cells/mm³. The inverse relationship between the platelet count and the severity of PHG was statistically significant.

Conclusion: The severity of thrombocytopenia increased with the increasing grade of portal hypertensive gastropathy. Hence platelet count can serve as the prognostic marker of chronic liver disease induced portal hypertensive gastropathy.

Key words: Portal Hypertension Gastropathy, Thrombocytopenia, Platelet count.

INTRODUCTION

Portal hypertensive gastropathy (PHG) is one of the complications of chronic liver disease. It is characterised by change in the gastric mucosa with varying severity. Under endoscopic examination, the mucosa of fundus and body of the stomach will have snakeskin-like appearance [1]. It is the second most common cause of non-variceal GI bleeding. The prevalence of PHG in liver diseases ranges from 11% to 98% [2]. It is classified in to mild and severe based on Baveno III classification. Mosaic-like appearance without redness of the areola is considered as mild PHG, while severe PHG is established by redness [3].

PHG increases in frequency with more severe portal hypertension, advanced liver disease, esophageal varices and endoscopic variceal obliteration. The incidence of PHG-related acute

GI bleeding is 2-12% whereas chronic gastrointestinal bleeding is about 3–60% [4]. Advanced cirrhosis leads to multifactorial haemostatic disturbance and thrombocytopenia is the common complication of chronic liver disease (CLD) [5]. Patients with stable liver disease are more prone to internal bleeding due to portal hypertension. Around 78% with CLD develops thrombocytopenia [6]. Splenic sequestration of platelets, suppression of platelet production from bone marrow and decreased activity of the hematopoietic growth factor thrombopoietin are the probable mechanisms behind the development of thrombocytopenia in CLD patients. Thrombocytopenia is an independent marker of advancement of cirrhosis and poor prognosis. So this study is intended to find the association between portal hypertensive gastropathy and thrombocytopenia in chronic liver disease.

MATERIALS AND METHODS

This cross-sectional analytical study was conducted in a tertiary care centre, Saveetha Medical College. A total of 80 consecutive subjects were included in this study.

All adult patients admitted with diagnosis chronic liver disease underwent upper GI endoscopy, those with portal hypertensive gastropathy were included in this study. Subjects with liver disease with only varices but not gastropathy were excluded. Patient less than 18 years and with poor preparation were excluded from this study. Platelet count was done using automated flow cytometry and gastropathy was classified using endoscopic examination. Correlation of thrombocytopenia and severity of gastropathy was studied.

Thrombocytopenia was classified in to mild, moderate and severe category based on the below classification [7]

Mild category – 1, 00,000 to 1, 50,000 lakhs

Moderate – 50,000 to 1, 00,000 lakhs

Severe - < 50,000 lakhs

Portal Hypertensive Gastropathy was classified according to Baveno III consensus statement [3]

Mild PHG - Mosaic-like appearance without redness of the areola

Severe PHG – redness.

Statistical analysis was done using SPSS 21. A statistical analysis was done by student independent - t test and finds their mean and standard deviation between the 2 groups. Categorical value was analysed by chi-square test to find out their association between the variables.

RESULTS

[Table/Fig 1]: shows the comparison of age and thrombocyte between mild and severe grade of portal hypertensive gastropathy. When the mean age increased, the severity of PHG was also increased. Platelet had a negative correlation with age and it decreased as the age increased which was found to be statistically significant ($p=0.000$).

[Table/Fig 2]: illustrates comparison of patient's thrombocyte between mild and severe grade of portal hypertensive gastropathy. Subject's with mild grade PHG had platelet count within normal limits. In individuals with severe grade PHG, about 79% had thrombocytopenia. Among them 12% had severe thrombocytopenia, 29% had moderate and 38% had mild thrombocytopenia. Thrombocytopenia and severity of PHG shares inverse

relationship, as the severity increases the platelet count decrease which was found to be statistically significant.

[Table/Fig 3]: represent the graphical representation thrombocyte level between mild and severe grade of portal hypertensive gastropathy.

[Table/Fig 4]: Comparison of Gender between mild and severe grade of portal hypertensive gastropathy by Chi – Square test. It showed that both the gender were evenly distributed in both the grade of portal hypertensive gastropathy.

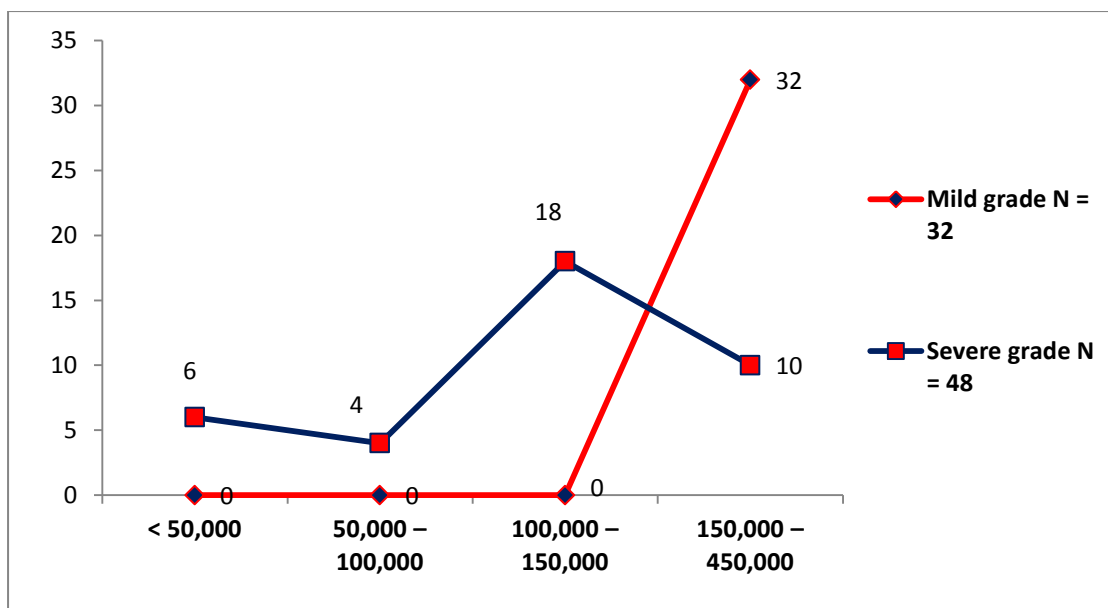
[Table/Fig 5]: illustrate the association of age between the mild and severe grade of portal hypertensive gastropathy. It showed that there was no association between these 2 grade groups.

Parameter	Grade of Portal hypertensive gastropathy.		t - value	p – value
	Mild grade Mean \pm SD (32)	Severe grade Mean \pm SD (48)		
Age	49.00 \pm 11.484	51.92 \pm 9.53	-1.235	.221
Platelets (in lakhs)	2.50 \pm .507	1.064 \pm .495	12.64	.000***

[Table/Fig 1]: Comparison of age and thrombocyte between mild and severe grade of portal hypertensive gastropathy by independent student –t test. Values are expressed as Mean \pm SD; p value calculated using independent student –t test, *p<0.05- ***p<0.001- statistically significant, ns- not significant

Platelets' value (Lakhs)	Grade of Portal hypertensive gastropathy.		Total	X2	p – value
	Mild grade N = 32	Severe grade N = 48			
< 50,000	0	6 (12.4)	6 (7.6)	51.938	.000***
50,001 – 100,000	0	14 (29 .2)	14 (17.5)		
100,000 – 150,000	0	18 (37.5)	18 (37.5)		
150,000 – 450,000	32 (100)	10 (20.8)	42 (20.8)		
Total	32 (100)	48 (100)	80 (100)		

[Table/Fig 2]: Comparison of patient's thrombocyte between mild and severe grade of portal hypertensive gastropathy by Chi – Square test. *p<0.05- ***p<0.001- statistically significant, ns- not significant



[Table/Fig 3]: Graphical representation of thrombocyte levels between mild and severe grade of portal hypertensive gastropathy.

Gender	Grade of Portal hypertensive gastropathy.		Total N (%)	X2	p – value
	Mild grade N = 32	Severe grade N = 48			
Male	27 (84.4)	44 (91.7)	71 (88.8)	1.022	.312
Female	05 (15.6)	04 (8.3)	09 (11.2)		
Total	32 (100)	48 (100)	80 (100)		

[Table/Fig 4]: Comparison of Gender between mild and severe grade of portal hypertensive gastropathy by Chi – Square test. ***p<0.001 - *p<0.05 (alpha Value) - statistically significant,ns- not significant.

Age in Years	Grade of Portal hypertensive gastropathy.		Total N (%)	X2	p – value
	Mild grade N = 32	Severe grade N = 48			
20 -40	10 (31.2)	06 (12.5)	16 (20)	4.252	.121
41 -60	17 (53.2)	33 (68.2)	50 (68.5)		
61 -80	05 (15.6)	09 (18.8)	14 (17.5)		
Total	32 (100)	48 (100)	80 (100)		

[Table/Fig 5]: Comparison of Age between mild and severe grade of portal hypertensive gastropathy by Chi – Square test. ***p<0.001 - *p<0.05 (alpha Value) - statistically significant,ns- not significant.

DISCUSSION

Haemostatic imbalance is commonly noticed in patients with chronic liver disease. Thrombocytopenia is one of the most common and early findings in chronic liver disease. It has important role in prognosis and bleeding. We observed that males had a greater frequency of chronic liver disease and its complications which in accordance with the study done by Abbasi et.al [8]. Out of 80 subjects, 71 of them were males which were equal to 89% of our study population.

Sammy Sab et.al, has reported that advancement of liver disease is correlated with increased degree of thrombocytopenia than those with compensated chronic liver disease [9]. The pathophysiology of thrombocytopenia is multifactorial and severity of liver disease is the most important factor. Splenic sequestration of platelets, suppression of platelet production from bone marrow and decreased activity of the hematopoietic growth factor thrombopoietin are the probable mechanisms behind the development of thrombocytopenia in CLD patients [10]. There is also a high prevalence of autoantibodies against platelets, reacting specifically with platelet membrane protein in CLD patients [11].

Our results also support the above findings. In a total of 80 subjects, 32 individuals had mild PHG and their platelets count was within the normal limit. In severe PHG category, 48 individuals were there. Among them 12% had severe thrombocytopenia, 29% had moderate and 38% had mild thrombocytopenia. These results were found to be statistically significant. Past researches have already documented that thrombocytopenia was an important and reliable predictor of varices in CLD patients [12].

Decrease in platelet count also adversely affects liver regeneration [13]. So, thrombocytopenia is a marker of poor prognosis and it complicates invasive procedure. Our finding suggests that platelet count is inversely related to the severity of portal hypertensive gastropathy. Based on the severity of platelet count, appropriate medical management can be planned early for the subject.

CONCLUSION

From this study we conclude that the severity of thrombocytopenia increases along with the increase in grade of portal hypertensive gastropathy. Hence platelet count can serve as an independent prognostic marker of chronic liver disease induced portal hypertensive gastropathy. This study has the prognostic value, patient with thrombocytopenia need to be monitored closely for the risk of bleeding.

AUTHOR'S CONTRIBUTION

-----carried out the conception and design of this study, acquired the data and analysis part. ----- was drafted the article with intellectual content. -----has interpreted the data and -----gave the final approval for publishing in the journal.

CONFLICT OF INTEREST

The author declared “no conflict of interest”

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None

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