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THROMBOCYTOPENIA IN CIRRHOSIS OF LIVER

Medicine

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ABSTRACT

Abstract- The present study was undertaken to address the prevalence of thrombocytopenia, relation of thrombocytopenia in cirrhosis to severity of disease ,bleeding complications and safety of the usual intervention procedures in cirrhosis with thrombocytopenia.

Material and method- 179 patients were included and platelet count along with other required investigations were performed. The correlation between thrombocytopenia and severity and bleeding complications were assessed.

Results and observation- The prevalence of thrombocytopenia was 75.41% in this study. Child Pugh Score and MELD score had negative correlation with platelet count.

Conclusion- Thrombocytopenia is a very common manifestation in cirrhosis of liver. The platelet count decreases as the Child Pugh Score increases. MELD score has strong negative correlation with platelet count. There is no absolute correlation between UGI bleeding and thrombocytopenia.

KEYWORDS

Cirrhosis, Thrombocytopenia, GI bleeding, MELD score.

INTRODUCTION

Cirrhosis of liver is defined histopathologically as extensive fibrosis of parenchyma of the liver and nodule formation[1]. The pathogenesis of cirrhosis of liver is a complex process where hepatocyte injury leads to partial degeneration and extensive fibrosis of liver parenchyama. There is complete destruction of normal liver architecture and entire liver is involved.[2]

The incidence of liver disease is 5-10% world wide.[3] Incidence and prevalence of cirrhosis of liver varies from region to region and country to country. Cirrhosis is mostly caused by alcohol and chronic viral hepatitis. Other causes of cirrhosis are biliary tract disease, iron overload and NASH etc. Alcoholic cirrhosis is more in countries where alcohol consumption is more and post necrotic cirrhosis is more where alcohol consumption is low.

Thrombocytopenia is a very common manifestation of cirrhosis of liver. The etiology of thrombocytopenia in cirrhosis and portal hypertension is multifactorial.

These are-

Splenic sequestration and/or dilutional, Hypersplenism caused by congestive splenomegaly, Impaired platelet production Low thrombopoietin levels, Reduced platelet half life due to autoantibodies, Thrombocytopenia also occurs due to severe acute viral hepatitis, folic acid deficiency, alcohol induced bone marrow suppression , sepsis, DIC and drugs .[4] Plasma concentration of TPO (thrombopoietin),the key regulatory factor of platelet function mainly produced by liver , is also reduced in cirrhotic patients, correlates with platelets count and rise of platelet count after liver transplantation.[5]

Increased level of autoantibody (platelets associated IgG) is found in all forms of chronic liver diseases suggesting possible role of an autoimmune mechanism for thrombocytopenia in liver diseases.[6]

The occurrence of bleeding or hemorrhage is influenced by the condition in which thrombocytopenia has developed. When condition is associated with infection ,metabolic disoreder such as uremia, vascular disease,functional defects,bleeding may occur in relatively mild thrombocytopenia.

Thrombocytopenia is considered a marker of severity of cirrhosis of liver over the years but little is known of the level of platelet count causing bleeding complications. Similarly the incidence of bleeding during surgery ,invasive procedures like liver biopsy, large volume paracentesis, abdominal paracentesis ,dental procedures etc. Most physicians considered platelet count above 80,000/cu mm to be safe as far as bleeding complications are concerned in cirrhosis. Furthermore ,decrease in hemoglobin level is associated with cirrhosis with thrombocytopenia .

The present study was undertaken to address these issues namely prevalence of thrombocytopenia, relation of thrombocytopenia in cirrhosis to severity of disease ,bleeding complications and safety of the usual intervention procedures in cirrhosis with thrombocytopenia.

MATERIAL AND METHOD-

It was a hospital based observational study conducted in medicine ward in Assam Medical College and Hospital, Dibrugarh ,Assam,from October 2017 to December 2018. Randomly selected 179 patients with cirrhosis were enrolled in this study.

Inclusion criteria– All patients with cirrhosis were included in this study.

Exclusion criteria- Patients with known pre-existing hematological disorder, pre-existing thrombocytopenia, any pre-existing coagulation and bleeding disorder, hepatocellular carcinoma, patients on anti-cancer chemotherapy were excluded from the study.

Cirrhosis of liver was defined by thorough clinical examination, investigations and biopsy report if available.

Thrombocytopenia was defined as a reduction of platelet count less than 1.5 lacs/ µL in peripheral blood in cirrhotic patients. Thromb ocytopenia was subdivided into mild (1-1.5 lacs/ µL), moderate (0.5 -1 lacs/ µL) and severe (<0.5 lacs/ µL) and more than 1.5 lacs/ µL was considered normal.

Child Pugh Score (CPS) was classified in to class A (5-6), class B(7-9) and class C(10 -15).MELD score was also calculated from the different laboratory parameters. The severity of the thrombocytopenia was compared or correlated with CPS and MELD score.

All selected patients were thoroughly examined clinically and by laboratory investigations. The clinical evaluation included a detailed history with thorough clinical examination. The laboratory investigations included complete hemogram, urine analysis, liver function tests, renal function test, prothrombin time, INR, blood glucose ,serum electrolytes, ultrasound abdomen, upper gastrointestinal endoscopy. Informed consent was taken from the patients.

DATA ANALYSIS -.

The statistical analysis of the data were done with IBM SPSS software (version 20). Data has been summarized as mean and standard deviation for numerical variables and percentage for categorical variables. Pearson correlation coefficient was used for test of significance. A probability (p) value of less than or equal 0.05 was considered statistically significance at 95% confidence interval.

RESULTS AND OBSERVATION-

In this study, 179 patients were enrolled and evaluated by clinical examination and required investigations.

The etiology of the cirrhosis in all patients were alcohol. Out of 179 patients, 152 (84.92%) patients were male and 27 (15.08%) patients were female with mean age of 47.56 ±10.70 (age range of 22 to 78 years). In this study, 14 (7.82%) patients, 72 (40.22%) patients and 93 (51.96%) patients were in class A, Class B and class C respectively. It clearly showed that majority of patients (50.96%) with cirrhosis were in class C.

Out of 179 patients, 175 (75.43%) patients had ascites, 165 (71.12%) patients had jaundice, 39 (16.81%) patients had hepatic encephalopathy and 30 (12,93%) patients had upper GI bleeding.

In this study, out of 179 patients,171 patients (95.53%) had anemia,of which 146(81.56%)patients were male and 25(13.97%) patients were female. The mean haemoglobin level was 7.89 ± 2.75 gm% with range of 1.6-15 gm%. The mean platelet count was1.33 ± 0.63 lacs/ microliter with range of 0.2 -3.4 lacs/microliter.

Table 1. Thrombocytopenia in cirrhotic patients (n = 179)

Thrombocytopenia	N	%
Normal (>1.5 lacs/ µL)	44	24.58
Mild (1–1.5 lacs /µL)	97	54.19
Moderate (0.5–1 lacs/ µL)	34	18.99
Severe (<0.5 lacs/ µL)	4	2.23

In this study, 44 (24.58%) patients had normal platelet count, 97 (54.19%) patients had mild, 34 (18.99%) patients had moderate and 4 (2.23%) patients had severe thrombocytopenia. The prevalence of thrombocytopenia was 75.41% .

Table 2. Correlation between Thrombocytopenia with Child-Pugh Score (n = 179)

Thrombocytopenia	Child-Pugh Score			p value
	A (5–6)	B (7–9)	C (10–15)	
Normal (>1.5 lacs/ µL)	4	16	24	0.007
Mild (1–1.5 lacs/ µL)	8	48	41	0.000
Moderate (0.5–1 lacs/ µL)	2	8	24	0.084
Severe (<0.5 lacs/ µL)	0	0	4	0.000

The correlation between thrombocytopenia and Child Pugh Score was done in this study and shown that as severity of the disease increases the percentage of patients with thrombocytopenia increases, and it was statistically significant.

Table 3. Correlation between Thrombocytopenia with MELD Score (n = 179)

Thrombocytopenia	MELD Score (Mean ± S.D.)	r value	p value
Normal (>1.5 lacs/ µL)	21.32 ± 8.07	-0.1934475	0.009641
Mild (1–1.5 lacs/ µL)	20.32 ± 8.18		
Moderate (0.5–1 lacs/ µL)	27.18 ± 10.18		
Severe (<0.5 lacs/ µL)	31.50 ± 1.73		

The MELD score and severity of thrombocytopenia were compared and found strong negative relation was found between them (r value -0.1934475, p value 0.009641)

DISCUSSIONS

Due to high alcohol consumption, cirrhosis of liver is very common in this part of the country. All patients were alcoholic cirrhosis in this study. Anemia was a very common association in cirrhotic patients .The prevalence of anemia was 95.53 % in cirrhosis and mean haemoglobin was also very low with 7.89 (± 2.75) gm% which indicates severe anemia.

In this present study, the prevalence of thrombocytopenia at platelet count 1 to 1.5 lacs/ µL was 75.41% followed by 21.22% at platelet count 0.5 to 1 lacs/ µL and 2.23% at platelet count less than 0.5 lacs/µL. The prevalence of thrombocytopenia (at platelet count 1 -1.5 lacs/ µL) in this study , was similar to Nezam Afdhal et al[7] and Amanullah Abbasi et al [8],where they have reported 76% and 78.46% respectively.

In an another study, prevalence of thrombocytopenia in cirrhotic patients was 92%, reported by Amin jan et al.[9] In their study, mild, moderate and severe thrombocytopenia were found in 75%, 22.8% and 2.2% patients respectively.[9]

Child Pugh Score was compared with severity of the thrombocytopenia and it was statistically significant. As the child pugh score increases the platelet counts decreases .

Hemorrhage or bleeding is very common in patients with thrombocytopenia. But many patients with thrombocytopenia (mild to moderate), even some patients with severe thrombocytopenia (< 0.5 lacs/ µL) do not bleed spontaneously for months or years. So, the relationship between thrombocytopenia and occurrence of bleeding and its severity is not absolute.[10]

In this study, 30 (12.93%) patients had upper GI bleeding. Of this , 2 patients had normal platelet count (>1.5 lacs/ µL), 22 patients had mild, 6 patients had moderate thrombocytopenia. No patients had upper GI bleeding among severe thrombocytopenia. This result shows that there is no correlation between upper GI bleeding and severity of the thrombocytopenia although majority of the patients with upper GI bleeding had thrombocytopenia. So, our finding was also similar to findings of Harkar L. A et al.[10]

No procedure related bleeding including abdominal paracentesis was found in this study.

Limitations of the study- it was single centered study, and patient were not being followed up to see the out comes.In this study all patients were alcoholic cirrhosis. So, further studies are required with more patients with cirrhosis from other causes .

CONCLUSIONS

Thrombocytopenia is a very common manifestation in cirrhosis of liver. They severity of thrombocytopenia increases as the severity of the chronic liver disease progresses. The correlation between thrombocytopenia and Child Pugh Score is statistically significant. MELD score has strong negative correlation with platelet count in cirrhotic patients. Although, Upper GI bleeding is commonly associated with thrombocytopenia in cirrhotic patients but, there is no absolute correlation between upper GI bleeding and severity of thrombocytopenia . Post interventional bleeding did not occur in any patients of this series suggesting safety of such procedures in cirrhosis provided coagulation defects are not present.

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