

ORIGINAL ARTICLE

Frequency of Thrombocytopenia in Patients with Chronic Liver Diseases in Tertiary Care Hospital

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ABSTRACT

Introduction: Chronic liver disease (CLD) is the major cause of morbidity and rate of death across the globe. Chronic liver diseases lead to many complications like cirrhosis, endocrines disorders, cardiac disorders, hepatorenal syndromes and metabolic disorders.

Objective: To determine the frequency of thrombocytopenia in patients with chronic liver disease at Tertiary care hospital Peshawar

Methodology: This Descriptive Cross sectional Study was carried out at the Medicine Department of Hayatabad Medical Complex, Peshawar for duration of six months from June 2020 to December 2021. A total of 189 patients were observed to determine the frequency of thrombocytopenia in patients with chronic liver disease. All the data was analyzed statistically by using SPSS version 23.

Results: Among 189 patients males were 134(70.9%) and females were 55(29.1%). In our study, thrombocytopenia was observed in 116(61.4%) patients while it was not observed in 73(38.6%) patients.

Conclusion: Our study concludes that thrombocytopenia is frequently present in chronic liver disease patients. In individuals with chronic liver disease, severe thrombocytopenia raises the risk of bleeding and may often complicate or delay therapeutic management.

Keywords: Thrombocytopenia, Chronic liver disease, Morbidity

INTRODUCTION

Chronic liver disease (CLD) is the major cause of morbidity and death rate across the globe. Centers for Disease Control and Prevention reported that chronic liver disease and cirrhosis caused 36,427 deaths in 2013 in United States of America ¹. Chronic liver diseases usually lead to cirrhosis ². Globally, cirrhosis is the 14th commonest cause of death, in Europe, 4th commonest cause while in United States, cirrhosis is the 12 common cause of death ³. A Chronic liver disease varies with ethnic and racial populations and prevalence also varies depending upon ethnic and racial differences. Alcoholism related chronic liver diseases are more prevalent in western non-Muslim countries as compared other Muslim countries worldwide.

Chronic liver diseases may be hereditary or caused by others factors like viruses, alcohol, obesity and autoimmunity. Hepatitis C and alcohol use and non alcoholic fatty liver are the major causes of chronic liver disease ⁴. Chronic liver diseases lead to many complications like cirrhosis, endocrines disorders, cardiac disorders and hepatorenal syndromes and metabolic disorders. Thrombocytopenia is one the metabolic disorders associated with chronic liver diseases and cirrhosis. Acid base and sodium disorders are commonly associated with chronic liver diseases and cirrhosis. A serum sodium level of <135 mmol/L is defines as thrombocytopenia ⁵. Chronic liver diseases are commonly present in cirrhotic and portal hypertensive patients in which retention of renal water occur in excess as compared to sodium because of decreased sodium renal clearance ⁶. Other factors involved in thrombocytopenia in chronic liver

diseases and cirrhosis result from increased release of anti diuretic hormone via baroreceptor mediated non-osmotic stimulation and renin-angiotensin-aldosterone system activation ^{7, 8}. Other factors of thrombocytopenia are, decreased sodium clearance in distal tubule or increased resorption of sodium in proximal tubule.

The prevalence of thrombocytopenia in chronic liver diseases varies in different studies. According to one study by Trikha S et al. the thrombocytopenia prevalence in patients of chronic liver disease and cirrhosis was 46% ⁹. Another study by Khan AF et al. the thrombocytopenia prevalence in patients of cirrhotic liver was 72% ¹⁰.

Thrombocytopenia is associated with significantly high mortality and morbidity in chronic liver disease and cirrhosis. It is used a predictor of mortality and hepatic encephalopathy in cirrhotic patients ^{11, 12}. As chronic liver disease is very prevalent among our population and causes different complications. Thrombocytopenia is one the complications related to the chronic liver disease and cirrhosis. This study will assist to find out the prevalence of thrombocytopenia in chronic liver diseases and cirrhosis in our population. Based on literature search, in our population, no data is available for the last five years; therefore this study will provide us the latest and updated information about the magnitude of thrombocytopenia in patients with chronic liver disease in the population

MATERIALS AND METHODS

This Descriptive Cross sectional Study was conducted at the Medicine Department of Hayatabad Medical Complex, Peshawar for duration of six months from June 2020 to December 2021. Criteria for inclusion in our study were all

patients with chronic liver disease from duration >6 months, age range 18-60 years, both genders and all the patients having any grade of severity of liver cirrhosis i.e. Child Pugh A, B, C whereas the criteria for exclusion in our study were all the patients having concurrent illness which can induce thrombocytopenia like

Malaria (detected by MP Smear), dengue fever (detected by dengue serology), ITP and hematological malignancy (detected by peripheral smear and bone marrow examination), all the patients having SLE (detected by double stranded DNA), leukemia (detected by Bone marrow examination) and aplastic anemia (detected by bone marrow examination), all the patients on drugs like quinine, penicillins, digoxin (on the basis of history) and all the patients received platelets transfusion within last seven days.(on the basis of history). Totally 189 patients were enrolled in our study after approval from the institutional ethical and research committee. From all the enrolled patients, consent was taken. All the included patients were observed for detailed history, clinical examination and ultrasound liver for confirmation of cirrhosis as per operational definition. 5 CC of blood was obtained in all the patients and were immediately sent to the hospital laboratory for detecting thrombocytopenia. All the laboratory investigations were done from single hospital laboratory under supervision of single pathologist having minimum of five years of experience. Thrombocytopenia was considered positive if the platelet count of less than 150,000 per millimeter cube in any patient. A pre-design proforma was used for all the information. All the data was analyzed statistically by using SPSS version 23. Mean and standard were computed for quantitative variables whereas frequencies and percentages were calculated for qualitative variables.

RESULTS

Amongst 189 patients, the number of patients in age groups, 18- 30 years, 31-40, 41-50, 51-60 years were 7(3.7%), 33(17.5%), 78(41.3%) and 71(37.6%) respectively. Mean age was 45.56 years with standard deviation ±3.357. In our study males were in majority as compared to females. There were 134(70.9%) males and females were 55(29.1%). Based on the grade of severity of liver cirrhosis, the number of patients in Child Pugh A was 87(46.0%), Child Pugh B were 61(32.3%) and Child Pugh C were 41(21.7%). Amongst 189 patients, thrombocytopenia was observed in 116(61.4%) while in 73(38.6%) it was not observed.

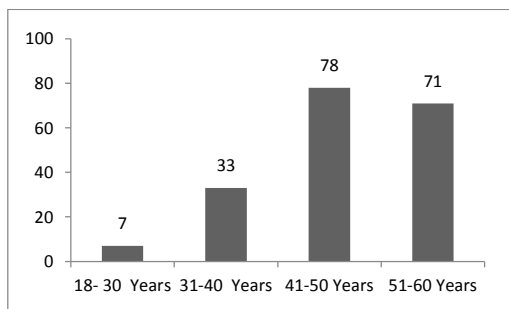


Figure 1: Age wise distribution of patients

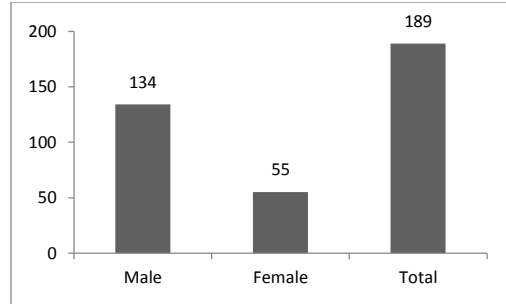


Figure 2: Gender base distribution of patients

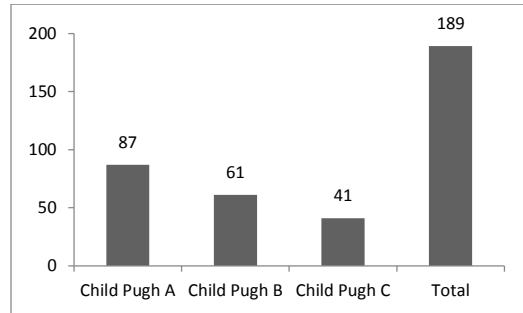


Figure 3: Distribution of patients based on grade of severity of liver cirrhosis

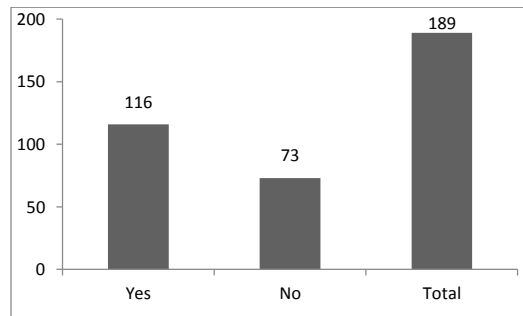


Figure 4: Frequency of thrombocytopenia in chronic liver diseases patients

DISCUSSION

Extra-hepatic symptoms of chronic hepatitis C (HCV) infection have been linked to the development of thrombocytopenia². Thrombocytopenia may result in serious problems after a liver biopsy. Thrombocytopenia patients may be unable to have biopsies or other invasive operations due to the threat of significant bleeding².

In our study, Based on the grade of severity of liver cirrhosis, the number of patients in Child Pugh A was 87(46.0%), Child Pugh B were 61(32.3%) and Child Pugh C were 41(21.7%). In accordance with our study, another study reported comparable results¹³. Amongst 189 patients, thrombocytopenia was observed in 116(61.4%) while in 73(38.6%) it was not observed in our study. Contrary to our findings another study reported high frequency of thrombocytopenia¹⁴.

Mild thrombocytopenia has little clinical relevance and normally does not need treatment¹⁵. But, because of the increased risk of bleeding, severe thrombocytopenia often complicates the care of individuals with chronic liver disease.

Multiple variables have been linked to the pathogenesis of thrombocytopenia in chronic liver disease. Improved knowledge of thrombocytopenia in chronic liver illness has shown a complex process formerly ascribed to hypersplenism owing to increased pressure splenic vein¹⁶. Platelet production is lowered for a variety of reasons, including reduced thrombopoietin production in the liver and decreased platelet synthesis in the bone marrow as a result of many inhibitory factors¹⁶. Diminished platelet production is also caused by low bone marrow production, which is most usually caused by viruses, alcohol, iron excess, or drugs¹⁶. Alcohol use, a significant risk factor for CLD, decreases life span of platelet and results in inefficient megakaryopoiesis¹⁶.

Platelet degradation in CLD is also attributed to sequestration of spleen and destruction by immune system¹⁷. Because of portal hypertension, the spleen enlarges in chronic liver illness, causing platelet pooling. Spleen size and platelet count, on the other hand, have been shown to have an inverse association. Chronic liver illness has a significant impact in the loss of platelets due to immune-mediated destruction. There are a number of autoimmune disorders that may induce thrombocytopenia, like hepatitis C and sepsis¹⁸. Despite the fact that thrombocytopenia is the most typically observed anomaly in end-stage liver disease, there is no ample proof linking platelet count to disease severity currently. Platelet count has been linked to liver function deterioration, but no clear criteria exist for measuring the severity of the condition¹⁹. Patients with cirrhosis or chronic liver disease, on the other hand, generally need regular intervention and medication; hence, patients with severe thrombocytopenia have been shown to have a worse prognosis as a result of delaying therapy^{20, 21}.

CONCLUSION

Our study concludes that thrombocytopenia is frequently present in chronic liver disease patients. In individuals with chronic liver disease, severe thrombocytopenia raises the risk of bleeding and may often complicate or delay therapeutic management. To define the optimum course of prophylactic therapy of thrombocytopenia in individuals with chronic liver disease, additional study and subsequent formulation of recommendations are required.

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