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ORIGINAL ARTICLE

Thrombocytopenia in Cases Presenting with Chronic Liver Disease Due to Hepatitis C Virus

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ABSTRACT

Objectives: record the rate of thrombocytopenia in cases presenting with chronic liver disease(CLD) due to Hepatitis C virus.
Methodology: A total of 300 patients who were diagnosed with CLD caused by HCV and were over the age of 18 were part of this trial. The enroleld cases were admitted from Deptt. of Medicine, Rawalpindi Medical University. All patients diagnosed using AST, ALT levels of liver function test and reported by the radiologist was labeled as havign CLD. A thrombocyte count and an ELISA test for HCV were performed on the blood sample that was supplied to the laboratory from patients who had been diagnosed with CLD to determine presence/absence of thrombocytopenia.
Results: Patients were in majority in age group 41-60 yrs i.e. 62%(n=186), mean age 42.63+8.57 yrs, 60 percent males (n=180) and there are 40 percent female subjects (n=120). Thrombocytopenia was found in 26 percent of CLD patients (n=78), while 74 percent of CLD patients (n=222) did not have any signs of thrombocytopenia.
Conclusion: Higher rate of thrombocytopenia was observed in CLD cases due to hepatitis C virus. It needs attention for its early detection and management.
Keywords: Chronic liver disease, hepatitis C virus, thrombocytopenia, HCV, CLD

INTRODUCTION

HBV and HCV are the most major contributing factors in development of chronic liver disease(CLD), which ranks as the tenth greatest cause of death among adults.[1] According to estimates provided 71.1 million subjects suffering with chronic HCV infection around the globe.[2,3] It is computed that hepatitis C is responsible for a total of 366,000 deaths each year.[4] Our country is known with the highest mortality rate owing to hepatocellular carcinomas and liver failure, making it one of the countries with the highest burdens of chronic hepatitis.[5]

Patients who suffer from chronic liver illness are more likely to experience thrombocytopenia than patients who do not have this condition.[6] Platelet count <150 x 109/L, is considered to be thrombocytopenia. However, it is frequently operationally considered as the level below which performing invasive manoeuvres (such as a liver biopsy) or administering interferon therapy could be dangerous (i.e. 50–75 x109 /L), or as a threshold below which platelet transfusion is indicated (i.e. 10 x109 /L). In all three cases, the level is measured in terms of platelet counts.[7-10]

Since 1993, thrombocytopenia has been recognised as a complication of HCV infection.[11,12] This disorder might only be a single symptom, or it might be present in conjunction with a number of different extrahepatic symptoms.[13] Furthermore, in individuals who have untreated hepatitis C, the rate of thrombocytopenia, in addition to its severity, increases in proportion to the severity of the disease.[14] The only cause of thrombocytopenia is an elevated concentration of platelets in the spleen, which is a direct result of portal hypertension and its associated enlargement.[15]

The treatment of patients who have HCV-associated thrombocytopenia is a significant issue that has not been fully resolved. This is especially the case because the mechanism that is responsible for the onset of thrombocytopenia in these patients has not yet been determined. Steroids, intravenous immunoglobulin (IVIg), and splenectomy are only some of the several treatments that have been attempted, but in most cases, they have only produced short-term improvements in the patient's condition.[16]

The Pakistan Research Council on Water Resources (PRCWR) estimates that ten million people living in Pakistan are currently afflicted with hepatitis C. The majority of instances are documented in economically disadvantaged regions, such as the interior of Sindh, the southern Punjab, and the southern NWFP. When compared to Sindh, Balochistan, and NWFP, the results from Punjab indicated a greater prevalence of HCV (4.3 percent weighted average, range: 0.4–31.9 percent).[17-18] It was observed that the province of Punjab possesses a great deal of regional diversity (range 0.4-31.9 percent). The southern region of Punjab is among the most severely affected places, with a prevalence range of more than 7 percent.[5]

Previously an urban population of Punjab observed prevalence of HCV in 6.68 percent. Where various age groups and either gender were evaluated for occurrence of HCV, it was discovered that the rate of HCV was highest (8.92 percent) in mature males as opposed to young males (6.66 percent) and old males. This was the case for both mature men and young guys (7.69 percent). The proportion of elderly women who tested positive for hepatitis C was significantly higher (5.68 percent) when compared to the proportion of mature women who tested positive (5.03 percent) and younger women (5.00 percent) (5.17 percent).[19] Another previous study revealed that thrombocytopenia is significantly assocaited with hepatitis C.[20] We planend this study to record the recent magnitude of thrombocytopenia in CLD cases with hepatitis C virus. This study will be helpful for patients and health providers.

METHODOLOGY

A total of 300 patients who were diagnosed with CLD due to HCV and were over the age of 18 were included in the study. All patients diagnosed using AST, ALT levels of liver function test and reported by the radiologist were labeled as havign CLD. However, patients who were receiving interferon therapy, had a history of liver mass on abdominal USG, alcoholism or any drug abuse, had co-infection with hepatitis B and C, and patients who had a history of drug use (thiazides, antimetabolites, cytotoxic), as well as sign and symptoms of any these patients were taken into the medical services of the Department of Medicine at Rawalpindi Medical University from Jan 2022 to May 2022.

A demographic history was documented, which included details such as age and sex. Patients were required to provide a written informed permission before receiving treatment. A thrombocyte count and an ELISA test for HCV were performed on the blood sample that was supplied to the laboratory from patients who had been diagnosed with CLD. It was determined whether or not there was thrombocytopenia (platelet count of < 150 x 10^9/L) based on the data that were gathered and reported. For the

analysis of the data, SPSS-25 was utilised. Frequncies along with percentages and mean values along with standard devitions were calculated after the analysis as per the type of the variable. Chi square tests were applied to determine the significance in different values, taking the p value of less than 0.05 as significant.

RESULTS

In this cross sectional study, a total of 300 patients who were diagnosed with CLD due to HCV and were over the age of 18 were included in the study. It was determined that age range 41-60 was commonly affected in our patients i.e. 62 percent (n=186), 38 percent of them were between 18-40 years i.e. (n=114). The mean age and standard deviation was determined to be 42.63+8.57years.

The gender breakdown shows that there were 60 percent males (n=180) and there are 40 percent female subjects (n=120). Thrombocytopenia was found in 26 percent of CLD patients (n=78), while 74 percent of CLD patients (n=222) did not have any signs of thrombocytopenia. Both the factors age and gender were found significant. Analysis of our data showed that the female gender and a young age were important factors in the diagnosis of thrombocytopenia in the patients of CLD with Hep C infection. (see table no. 1)

Table 1: Thrombocytopenia in cld patients due to hepatitis c virus (n=300)

Variables		Thrombocytopenia		P value
		Yes	No	
Age (in years)	18-40	41	73	0.002
	41-60	37	149	
Gender	Male	36	144	0.003
	Female	42	78	

DISCUSSION

Hepatitis C is more common in our coutry, thrombocytopenia is frequent in patients with chronic liver disease, particularly severe fibrosis and cirrhosis. Approximately 8 million platelets are transfused in the United States each year to prevent blood clots.[21] Patients with extensive fibrosis and portal hypertension have been found to have thrombocytopenia in 15–70 percent of cases, depending on the stage of the disease and the platelet cut-off level used to define thrombocytopenia.[22-23] Because of this, it is critical to look into the relationship between thrombocytopenia in CLD patients and Hepatitis C, as our country, where the impact may be due to different hygienic and climatic conditions.

The purpose of this study was to examine whether or not a connection exists between thrombocytopenia and Hepatitis C in CLD patients. Because the findings of the regional studies on the frequency of thrombocytopenia that were carried out in various parts of Pakistan has revealed a difference of about 7.5 percent from one study to the next, it is possible that an additional study would help to substantiate the findings.

The preliminary data on the subject in the Punjab area may aid in the formulation of subsequent research plans and protocols. Further research and protocol development may benefit from the study's primary data, and it may also serve as a guide for developing an early treatment strategy for the disease in order to avoid more significant problems.

Previously, thirty-two percent of 155 HCV-infected individuals in Pakistan were found to have thrombocytopenia, according to a prior study.[24] These findigns are near to our resutls. i.e. 26%. However, a Taiwanian trial revealed 10.2% of the cases had platelet count of less than 100,000/mm^3 in patients with positive anti HCV antibody.[25] The lower rate of thrombocytopenia may be due to the definitioin of thrombocytopneia they used, whereas we used <150,000mm3 as thrombocytopenia. Noor-ul Iman and others[26] in another study at Peshawar revealed (32.3 percent) thrombocytopenia and used definition of thrombocytopenia as <150,000mm^3 these findings are near to our results.

The rate of thrombocytopenia was found within the range 0.16% to 45.4%, as stated by Louie KS and colleagues[32]. Furthermore, more than half of the studies found a prevalence of 24% or above. It was not possible to determine the prevalence of thrombocytopenia among patients with HCV because there are multiple definitions of thrombocytopenia, a variety of study designs, and a lack of data on study parameters such as age ragne, gender difference, rate of HCV treatment, and severity of disease. In addition, there was a lot of variation in the studies themselves. On the other hand, the relatively high incidence found in various studies suggesting that a large number of HCV subjects may develop the risk for bleeding difficulties and have a lesser likelihood of responding favourably to antiviral treatment for HCV.

An interferon (IFN)-based anti-viral medication can reduce platelet count and function directly or by suppressing thrombopoiesis in the bone marrow can cause thrombocytopenia, although it can also be caused by HCV directly.[27-28] A poor clinical outcome is associated with severe or prolonged thrombocytopenia, however, not with high grade and life-threatening, because it increases the risk of bleeding during invasive treatments,[29-30] makes treatment more difficult,[27-31] and raises the possibility of death.[24]

Last but not least, the occuence of thrombocytopenia in CLD patients that is caused by the Hepatitis C virus is considerably greater, and its early care requires specific attention. This is because the early therapy of this condition requires special attention.

CONCLUSION

Higher rate of thrombocytopenia was observed in CLD cases due to hepatitis C virus. It needs attention for its early detection and management, so that precautionary measures can be taken before doing any procedure and discharging the admitted patients. Further studies should be done to determine other causes of thrombocytopenia in patients of CLD.

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