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ORIGINAL ARTICLE

Frequency of Hepatitis C in patients presented with isolated thrombocytopenia.

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ABSTRACT... Objective: HCV-related thrombocytopenia poses challenges in infection and treatment. This study emphasizes screening for early thrombocytopenia as it signals hematological abnormalities, indicating bleeding tendencies and complications. **Study Design:** Cross-sectional Investigation. **Setting:** Pathology Department of Allama Iqbal Medical College and Jinnah Hospital. **Period:** November 2019 to November 2020. **Methods:** Included 180 participants with platelet counts <100,000/µl, normal hemoglobin, and WBC counts. Exclusions: anemia, leucopenia, prior Hepatitis C treatment, and platelet clumps. Data on age, gender, socioeconomic status, and family history were collected. Platelet counts and HCV detection utilized peripheral smears and venous blood samples, analyzed with SPSS version 25.0. **Results:** In a study of 180 thrombocytopenic patients of all ages were included with mean age 32. Among 34 HCV-positive cases, 102 had a family history, with age-wise distribution: 18, 14, 2. Gender: 20 males, 14 females. HCV-positive households: 21 positive, 13 negative. Significant p-values for age groups (p=0.000), non-significant for gender (p=0.281), socioeconomic status (p=0.083), and household HCV status (p=0.505). **Conclusion:** A significant association exists between decreased platelet count and Hepatitis C virus, providing valuable insights for screening in clinical settings.

Key words: Hepatitis C Virus, Thrombocytopenia.

INTRODUCTION

Hepatitis presents an escalating global health challenge, especially in developing nations. According to the World Health Organization (WHO), Hepatitis C has a worldwide prevalence of 2.8%, while in Pakistan, it is 4.8%, based on WHO data, and 4.5-8.2% according to local studies, ranking it as the second-highest worldwide. Some localized studies even suggest higher prevalence rates.[1,2]

Addressing this growing issue requires a comprehensive approach, necessitating an understanding of how Hepatitis C manifests. Thrombocytopenia emerges as a notable manifestation, being one of the most common extrahepatic effects of HCV infection, even in the absence of cirrhosis.[3] It often appears early in the course of Hepatitis C, serving as one of the initial laboratory indicators. Additionally, thrombocytopenia is observed in various viral infections such as HIV and H. pylori.[4] Other potential causes, including autoimmune diseases, bacterial infections, DIC, TTP, malaria, and HELLP syndrome, should also be considered and ruled out.[5,6]

The pathophysiology of thrombocytopenia in HCV patients is intricate, involving multiple factors like immune dysfunction, bone marrow suppression, hypersplenism, decreased thrombopoietin levels or activity, and hepatic fibrosis or cirrhosis.[7] Immune dysfunction, particularly in the early stages, plays a crucial role in the diagnosis. As the disease progresses, other mechanisms, such as hypersplenism, contribute to increased peripheral platelet destruction and pooling in the spleen. A two-year study found a 20.5% prevalence of hepatitis C in patients with thrombocytopenia[8], while studies on chronic HCV infection reported a prevalence ranging from 0.16% to 45.4%, and more than half of the studies reported a prevalence of 24% or more.[7] The wide range in HCV patient prevalence may be attributed to diverse causes that vary across different regions globally.

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Although previous research extensively discusses the role of thrombocytopenia in HCV concerning disease severity, bleeding tendencies, and treatment[9], there is a lack of studies specifically exploring the screening of people with isolated thrombocytopenia for Hepatitis C. Given that thrombocytopenia is an early laboratory sign, it could aid in early detection of HCV, emphasizing the importance of establishing an association between low platelet count and the Hepatitis C virus, especially in regions like Pakistan where the disease is endemic, and healthcare facilities are limited.[10]

In my study, I plan to assess cases of thrombocytopenia in daily complete blood count (CBC) requests received in our laboratory for Hepatitis C status using a screening method. Blood samples collected will be EDTA, with a 50% margin above or below the reference line on the vial. Hemoglobin and total leukocyte count (TLC) will also be evaluated to identify samples with only one affected parameter, i.e., platelet count. Pancytopenia typically develops later in Hepatitis C, and its causes differ. Aplastic anemia is more common in acute rather than chronic settings of hepatitis.[11,12]

METHODS

This research adopted a cross-sectional study design. Over the span of a year, data was meticulously collected at the Hematology Department of AIMC/JHL for a comprehensive study. The study was approved by ethical review board (39m/ERB) (24-10-2019). The sample size, comprising 180 cases, was determined, employing a non-probability sampling technique of the consecutive type. Patients with a platelet count below 100,000/μl, along with normal hemoglobin levels and WBC count, were included. The study considered individuals aged between 18 and 80 years, encompassing all genders. Patients with associated anemia (Hemoglobin <10g/dl) or leucopenia (WBC <4/uL) were excluded, as were those undergoing or having undergone treatment for Hepatitis C. Additionally, cases with platelet clumps on peripheral smear were not considered.

Prior to inclusion, informed consent was diligently obtained from each patient. Pertinent demographic details, such as age, gender, socioeconomic status, and family history of HCV, were recorded. Platelet counts were assessed through peripheral smears under a microscope. For Hepatitis C Virus detection, venous blood samples were aseptically collected in EDTA vials (3ml of blood). After centrifugation to separate plasma, two drops were utilized for the kit method to detect HCV. All information was systematically documented using a prepared questionnaire/ Performa. It is noteworthy that confounding factors were not excluded in this research. The data, having been entered, underwent analysis utilizing SPSS version 25.

RESULTS

Initially, an evaluation of the age distribution among the thrombocytopenic patients was conducted. Among the total of 180 patients, 116 fell within the age range of 18 to 40 years, 40 were in the 41 to 60 years bracket, and 24 were aged between 61 to 80 years, as indicated in Table-I. The calculated mean age was 32 years, ranging from a minimum of 18 to a maximum of 21 years. In terms of gender, there were 120 males and 60 females, as illustrated in Figure-1.

Age	Frequency (%)
18-40	116 (64.4%)
41-60	40 (22.2%)
61-80	24 (13.3%)
Total	180 (100.0%)
Mean= 32.27 SD= 18.016 Minimum age=18 Maximum age =21	

Table-I. Frequency of patients in different age groups

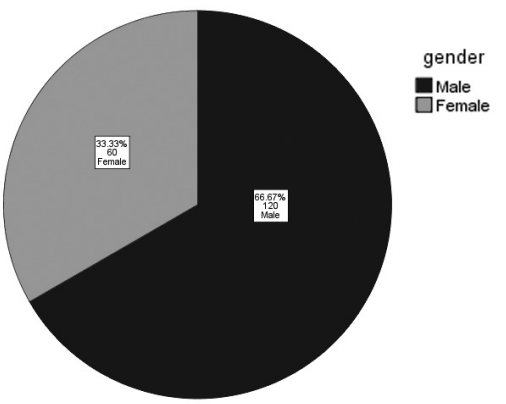

Figure-1. Gender distribution of HCV positive patients

In consideration of socioeconomic status, 139 individuals were classified as having a low socioeconomic status, which was highest. Socioeconomic status is outlined in Table-II.

Socioeconomic Status	Frequency (%)
Low	139 (77.2%)
Middle	37 (20.6%)
High	4 (2.2%)
Total	180 (100.0%)

Table-II. Socioeconomic status of patients

Every patient included in the study, all of whom presented with thrombocytopenia, underwent an assessment for HCV positivity utilizing the kit method. Among the total of 180 patients, 34 tested positive for HCV, while 146 were identified as HCV negative, as depicted in Table-III. The calculated p-value indicated a significant correlation between HCV and thrombocytopenia.

HCV	Frequency of Patients (%)
Positive	34 (%)
Negative	146 (81.1%)
Chi-square = 69.688 P = .000*	

Table-III. Correlation of HCV and thrombocytopenia
***P<0.05 is significant**

The subset of 34 patients who tested positive for HCV was further categorized based on gender. Among them, 20 were identified as males, and 14 were females, as outlined in Table-IV. The resulting p-value, computed at 0.281, indicates a lack of significant association between gender and HCV in this particular group.

		Hepatitis C		Total	
		Negative	Positive		
Gender	Male	100	20	120	Chi-square = 1.160 P = .281*
		68.5%	58.8%	66.7%	
	Female	46	14	60	
		31.5%	41.2%	33.3%	
Total		146	34	180	
		100.0%	100.0%	100.0%	

Table-IV. Correlation of HCV & both genders
***P<0.05 is significant**

The HCV-positive patients were stratified based on their socioeconomic status into three groups: low, middle, and high, as presented in Table-V. The calculated p-value of 0.083 suggests that there is no significant correlation between HCV and socioeconomic status in this context.

Socioeconomic Status		Hepatitis C		Total	
		Negative	Positive		
	Low	117	22	139	Chi-square = 4.977 P = .083*
		80.1%	64.7%	77.2%	
	middle	27	10	37	
		18.5%	29.4%	20.6%	
	high	2	2	4	
		1.4%	5.9%	2.2%	

Table-V. Correlation of HCV and socioeconomic status of patients
***P<0.05 is significant**

DISCUSSION

Hepatitis C remains a pervasive issue in Pakistan, with its prevalence on the rise due to a lack of adequate education and information systems nationwide. Thrombocytopenia emerges as a significant association with hepatitis C, influencing various clinical and management aspects of the disease. This study aims to determine the frequency of hepatitis C in patients presenting with isolated thrombocytopenia, where total leukocyte count (TLC) and hemoglobin (Hb) levels are within the normal range. Additionally, the data is stratified according to age, sex, socioeconomic status, and the HCV status within the households of HCV-positive patients.

Out of the total 180 patients with thrombocytopenia, 34 were found to be HCV-positive, representing an 18.8% prevalence. Thrombocytopenia can have diverse causes, with hepatitis C virus being one of them. A study by Dimitroulis D et al. in 2012 reported a 20.5% prevalence of hepatitis C in patients with thrombocytopenia[8], while Fouad YM found in their study that in patients with chronic HCV infection, the prevalence of thrombocytopenia ranged up to 45.4%.[7]

In this study, out of the 34 HCV-positive patients, 18 were in the age range of 18 to 41 years, 14 were between 41 to 60 years, and 02 were between 61 to 80 years. A study in Romania by Olariu M et al. in 2010 indicated a positive correlation between age and platelet count in hepatitis C patients.[13]

The male-to-female ratio in the current study

was 1.4:1, with males slightly predominant. Behnava B et al. found in a study in Tehran that males were 3.1 times more prone to a combination of thrombocytopenia and hepatitis C infection.[4] However, Olariu M et al.'s study in Romania showed female predominance without a significant correlation between gender and platelet count.[13]

Socioeconomic status was divided into low, medium, and high based on monthly income. In the current study, most thrombocytopenic HCV-positive patients belonged to the low socioeconomic status (64.7%), followed by 29.4% in the middle socioeconomic status, and 5.8% in the high socioeconomic background. A Danish study by Omland L et al. in 2013 reported that 50.1% were from low SES, 25% from the middle, and 24.8% from high SES.[14]

The study also correlated age with the socioeconomic status of HCV-infected individuals. In the low socioeconomic status group, 41.1% were between 18 to 40 years of age, and 23.5% were in the 41 to 60 years age group. In the middle-class group, 11.7% were in the 18 to 40 and 41 to 60 years of age group each, while 5.8% fell into the 61 to 80 years age group. In the high socioeconomic status group, both patients were in the age group between 41 to 60 years.

A local study by Mukhtar O et al. in different tertiary care hospitals of Lahore explored socio-demographic aspects of hepatitis C.[15] While platelet count was not considered, the study highlighted that 70% of HCV-positive patients were females, with 57 in the age group of 25-35 years, 81 between 31-45 years, and 16 above 45 years. The majority belonged to the labor class (39.4%), were illiterate (71.4%), and resided in congested areas.

Regarding household history of positive HCV, the current study found that 20 out of 34 patients had a positive family history, emphasizing the significance of a positive household history in HCV prevalence. These findings align with the local study conducted by Mukhtar O et al., where 34% of patients had a positive family history, with parent-child relationships being the most common (40%), followed by siblings (29%) and spouses (19%). Out of 154 patients in their study, 87% were married, indicating the prevalence of HCV in spouses. This comprehensive exploration underscores the complex interplay of factors influencing the prevalence and manifestations of hepatitis C, emphasizing the need for targeted interventions in the context of socioeconomic disparities and familial associations.

CONCLUSION

The study at Jinnah Hospital, Lahore, reveals a noteworthy correlation between low platelet count and Hepatitis C, suggesting potential applications in clinical settings.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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1	Rumaisha Aslam	Results analysis and writing and review.	
2	Masooma Jaffer	Principal Investigator and writer.	
3	Hammad Saleem	Results analysis and writing and review.	
4	Fatima Saeed	Corrections in investigations and writings.	
5	Mehroosh Shakeel	Critical analysis of results and writing.	
6	Muhammad Touqeer Hanif	End critical corrections and analsis and formatting.	