



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.3661604>Available online at: <http://www.iajps.com>**Research Article****FREQUENCY OF HEPATITIS C IN PATIENTS PRESENTED  
WITH ISOLATED THROMBOCYTOPENIA****Dr Rumaisha Aslam, Dr Muneeza Natiq, Dr Masooma Jaffer, Dr Fatima Saeed**  
Jinnah Hospital Lahore**Article Received:** January 2019**Accepted:** February 2019**Published:** March 2019**Abstract:**

*Hepatitis is a growing problem worldwide especially in developing countries. Worldwide prevalence of Hepatitis C is 2.8% according to WHO. while in Pakistan its prevalence is 4.8% according to WHO and 4.5-8.2% in local studies, which is 2<sup>nd</sup> highest in the world. Some local studies on small groups show even high prevalence. It is vital to deal with this growing problem with every mean possible. For this, it is important to understand ways in which hepatitis C presents itself. Thrombocytopenia is one of them. It is one of the most common extra hepatic manifestations of HCV infection, even in the absence of cirrhosis. So thrombocytopenia is one of the first lab manifestations to present in Hepatitis C infection. It is also a feature of many other viral infections like HIV and H pylori. It is important to rule out other causes as well. Besides viral infections autoimmune diseases, bacterial infections, DIC, TTP, malaria, HELLP syndrome, etc also cause low platelet count.*

**KEYWORDS:** Hepatitis C, Thrombocytopenia, Manifestations, Hypersplenism, Pathophysiology's.

**Corresponding author:****Dr. Rumaisha Aslam,**  
Jinnah Hospital Lahore

QR code



*Please cite this article in press Rumaisha Aslam et al., Frequency Of Hepatitis C In Patients Presented With Isolated Thrombocytopenia., Indo Am. J. P. Sci, 2019; 06(03).*

**INTRODUCTION:**

The pathophysiology of thrombocytopenia in patients with HCV infection is complex and multiple factors take part. Especially different causes act through different pathophysiology's or a combination. This pathophysiology's include, immune dysfunction, bone marrow suppression, hypersplenism, decreased thrombopoietin levels or activity and hepatic fibrosis or cirrhosis [1,2,3]. Out of these mechanisms immune dysfunction is the one which is presented at an early stage and is vital in diagnosis at an early stage [4,5]. As disease progresses other factors also take part. Hypersplenism which develops latter in disease causes thrombocytopenia by increased peripheral platelet destruction and pooling of platelets in spleen. In a 2-year study prevalence of hepatitis C in patients with thrombocytopenia was calculated as 20.5 % [6,7] conversely, in patients with chronic HCV infection, the prevalence of thrombocytopenia ranged from 0.16% to 45.4% and more than half of the studies reported a prevalence of 24% or more [8]. Wide range of prevalence in HCV patients is probably due to wide variety of causes which could vary in different parts of world.

In previous studies role of thrombocytopenia in HCV is discussed widely regarding severity of disease, bleeding tendency and treatment of disease and many studies have suggested that more studies should be conducted which can suggest that people with isolated thrombocytopenia should be screened for Hepatitis C but no study has actually been conducted in this regard [9]. As thrombocytopenia is an early laboratory sign this can help ruling out HCV as a cause of this thrombocytopenia at an early stage. This signifies importance of proving association of low platelet count and Hepatitis C virus especially in an area like Pakistan which is endemic for disease and low in health care facilities. In my study, cases of thrombocytopenia in daily CBC requests which we receive in our lab would be assessed for Hepatitis C status by screening method. Samples collected would be EDTA blood with margin of 50% above or below the reference line on vial. Hemoglobin and TLC count is also assessed to short list samples which have only one parameter affected i.e, Platelet count. Pancytopenia develops latter in disease in Hepatitis C and has different set of causes [10] [11]. Aplastic anemia occurs mostly in acute rather than chronic settings of hepatitis [12].

**MATERIAL AND METHODS:**

Data was collected within one-year period of time in setting of Hematology Department AIMC/JHL. Sample size of 180 cases is calculated with 95% confidence level and 10% margin of error with Non probability sampling technique (consecutive type).

**SAMPLE SELECTION****INCLUSION CRITERIA**

- Patients with platelet count below 100,000/ $\mu$ l with normal Hemoglobin level and WBC count.
- Age group: Between 18 years to 80 years.
- Any gender.

**EXCLUSION CRITERIA**

- Associated anemia (Hemoglobin <10g/dl) or leucopenia (WBC <4/uL).
- Patients being treated or already treated for Hepatitis C.
- Platelet clumps on Peripheral smear.

**STUDY DESIGN:** Cross sectional study**DATA COLLECTION**

Cases which fulfill the selection criteria are enrolled in my study from OPD and inpatient departments of Jinnah hospital Lahore. Informed consent is obtained from every patient. Demographic information like age, gender, socioeconomic status and family history of HCV is obtained. For platelet count peripheral smears are made to assess platelet count under microscope. For Hepatitis C Virus venous blood samples are taken under aseptic measures in EDTA vials (3ml of blood). Samples are centrifuged to separate plasma, 2 drops of which are then be used for kit method to detect HCV. All information is acquired according to prepared Questionnaire/Performa. Confounding factors are not excluded in my research.

**DATA ANALYSIS PROCEDURE**

The data was entered and analyzed through SPSS version 20. Quantitative variables like age and platelet count were calculated by mean and standard deviation. Qualitative variables like gender were calculated by frequency and percentage. Effect modifier/ confounder (e.g; Treatment of HCV with interferon, which also cause thrombocytopenia besides HCV itself) were controlled through post stratification. Chi square was applied by taking  $P = <0.05$ . Chi square test will be applied if mean outcome is a qualitative variable. T test will be applied if main outcome is a quantitative variable

**RESULTS:**

The study was carried out over a period of 6 months. 180 patients were assessed from different departments like medicine, surgery, gynecology and obstetrics, intensive care units and OPD based patients in the setting of Jinnah hospital Lahore. Age limit set for patients was 18 to 80 years. Patients were diagnosed as having thrombocytopenia according to the definition given in Postgraduate Hematology by A Victor

Hoffbrand, 7<sup>th</sup> edition. Samples collected in EDTA vial were run on sysmex kx 21 and verified by microscopy after making peripheral smears. All patients were assessed according to age, sex, socioeconomic status and household history of hepatitis C. Hepatitis C was screened by kit method. Those who tested positive for Hepatitis C were further analyzed for same parameters. First of all age assessment of all the patients presented with thrombocytopenia was made. Out of 180 patients 116 patients were between 18 to 40 years. 40 patients were between 41 to 60 years. 24 were between 61 to 80 years. Table no. 1. Mean age was determined to be 32 years. With minimum 18 and maximum 21 years.

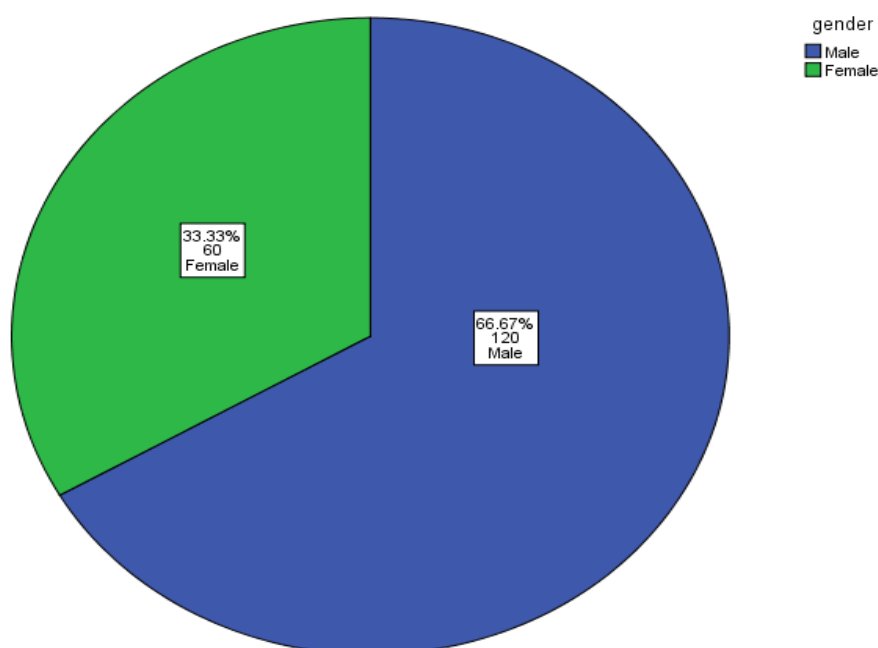
According to gender 120 were males and 60 were females. Graph no. 1. According to socioeconomic status 139 patients were in low, 37 in middle and 4 patients were in high socioeconomic status. Table no. 2. HCV positive patients assessed with family history showed that 102 patients had positive family history of hepatitis C while other 78 had no

family history of HCV positive household. Table no. 3.

All patients with thrombocytopenia taken in study were assessed for HCV positivity by kit method. Out of total 180 patients 34 were positive while 146 were HCV negative. Table no.4. These 34 HCV patients were further assessed. HCV positive patients were further assessed according to three age groups. 18 were in between 18-40 yrs age group, 14 were in 41-60 yrs age group, 2 were in 61-80 yrs age group as shown in table no. 5. P value came out to be 0.000. These 34 patients were segregated according to gender, 20 were males and 14 were females as in table no. 6. P value came out to be 0.281. According to socioeconomic status HCV patients were grouped in three groups, low, middle and high. Out of 34 HCV positive patients 22 were in low, 10 in middle and 2 in high group. Table no. 7. P value came out to be 0.083. 21 patients in household of HCV positive patients were also positive for hepatitis C while 13 were negative. Table no. 8. P value came out to be 0.505

**Table No. 1: Age of Subjects n=180**

Age	Frequency	Percent
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		



**Graph No: 1 Gender of subjects**

**Table No. 2: Socio Economic Status of Subjects n=180**

Socio Economic Status	Frequency	Percent
low	139	77.2
middle	37	20.6
high	4	2.2
Total	180	100.0

**Table No. 3: HCV Positive Patients in Household n=180**

HCV Positive Persons In Household	Frequency	Percent
negative	78	43.3
positive	102	56.7
Total	180	100.0

**Table No. 4: Frequency of Hepatitis C in Patients with Thrombocytopenia n=180**

HCV	No. of patients	Frequency (%)
Positive	34	18.8
Negative	146	81.1
Chi-square = 69.688 P = .000		

**Table No. 5: Frequency of Hepatitis C Positive Patients According to Age Groups**

Age Group	Hepatitis C		Total	
	Negative	Positive		
18-40	98 67.1%	18 52.9%	116 64.4%	Chi-square = 9.383 P = .000
41-60	26 17.8%	14 41.2%	40 22.2%	
61-80	22 15.1%	2 5.9%	24 13.3%	
Total	146 100.0%	34 100.0%	180 100.0%	

**Table No. 6: Frequency of Hepatitis C Positive Patients According to Gender**

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

**Table No. 7: Frequency of Hepatitis C Positive Patients According to Socio economic Status**

Socio Economic Status		Hepatitis C		Total	
		Negative	Positive		
	low	117 80.1%	22 64.7%	139 77.2%	Chi-square = 4.977 P = .083
	middle	27 18.5%	10 29.4%	37 20.6%	
	high	2 1.4%	2 5.9%	4 2.2%	
Total		146 100.0%	34 100.0%	180 100.0%	

**Table No. 8: Frequency of Hepatitis C Positive Patients According to Positive Household**

HCV Positive Persons In Household		Hepatitis		Total	
		Negative	Positive		
	Negative	65 44.5%	13 38.2%	78 43.3%	Chi square= .444 P = .505
	Positive	81 55.5%	21 61.8%	102 56.7%	
Total		146 100.0%	34 100.0%	180 100.0%	

**DISCUSSION:**

Hepatitis C is endemic in Pakistan and this problem is growing fast owing to lack of proper education and information system across the country. Thrombocytopenia is an important association with hepatitis C. Thrombocytopenia influences various aspects of hepatitis C both clinical and management related. It may include being one of the first lab indications of the disease, influencing treatment as many treatment options might as well

decrease platelet count and being an indicator of degree of liver fibrosis etc. This study finds frequency of hepatitis C in patients presented in lab with isolated thrombocytopenia where TLC and Hb are normal. Further data was stratified according to age, sex, socioeconomic status and status of HCV in household of HCV positive patients. It reveals that 34 (18.8%) out of 180 patients presented with thrombocytopenia were HCV positive. Causes of thrombocytopenia are diverse; one of them is

hepatitis C virus. In a 2 year study by Dimitroulis D et al, conducted in 2012 prevalence of hepatitis C in patients with thrombocytopenia was calculated as 20.5 %. [8] Conversely, Fouad YM found in his study that in patients with chronic HCV infection, the prevalence of thrombocytopenia ranged up to 45.4% and more than half of the studies reported a prevalence of 24% or more. [7] This is because although low platelet count is strongly associated in patients with hepatitis C, there are many other causes of low platelet count in hospital settings which influence overall frequency of thrombocytopenia in HCV patients.

In current study out of these 34 patients 18 patients were in between 18 to 41 years of age, 14 were between 41 to 60 years of age while 02 were between 61 to 80 years. A study published in journal of gastroenterology and liver diseases by Olariu M et al, in 2010 conducted in Romania showed positive correlation between age and platelet count in hepatitis C patients. Average age was 44.99 years when they set range between 23 to 63 years [13]. Male to female ratio in current study turned out to be 1.4:1, male slightly predominant while a study conducted by Behnava B et al, in Liver and Gastrointestinal Research Center, Tehran showed that males were 3.1 times more prone to combination of thrombocytopenia and hepatitis C infection. [4] While another study conducted by Olariu M et al, in Romania showed female predominance i.e.; 64.1% but no significant correlation was found between gender and platelet count. [13]

Socioeconomic status is divided into low, medium and high according to monthly income in current study. 10,000 to 50,000 rupees per month is middle class, below which is low and above which is high class. As this study is conducted in premises of Jinnah hospital Lahore, a government setup mostly low and middle class is expected to show in this setup. Mostly thrombocytopenic HCV positive patients were of low socioeconomic status i.e.; 22 (64.7%). 10 patients (29.4%) were of middle SES and 02 (5.8%) were from high socioeconomic background. High SES people are most probably doctors/ medical professional or their relatives seeking help in government setup.

In a Danish study conducted by Omland L et al, in 2013, income was calculated in percentage of national average. 50.1% were from low SES, 25% from middle and 24.8% from high SES. [14] Generally low SES is associated with low literacy rate and infrequent availability of healthcare facilities so low SES is bound to be associated with spread of Hepatitis C Virus. Current study also correlates age with socioeconomic status of people who are infected with HCV. In low SES 14

(41.1%) people were between 18 to 40 years of age, remaining 08 (23.5%) were in 41 to 60 years' age group. In middle class 04 (11.7%) were in 18 to 40 and 41 to 60 years of age group each while 02 (5.8%) patients fell into 61 to 80 years of age group. 02 (5.8%) patients belonged to high SES and both were in age group between 41 to 60 years. No study seemed to undergo taking this aspect in regard. In a local study conducted by Mukhtar O et al, in different tertiary care hospitals of Lahore about socio demographic aspects of hepatitis C that was published in journal of Ayub medical college Abbottabad, different aspects were studied widely. Although platelet count was not taken into account [15] 154 patients who were HCV positive were studied. Out of these patient 57 were in age group between 25-35 yrs, 81 were between 31-45 yrs. And 16 were above 45 yrs of age. 70% of these patients were females. Although socioeconomic status was not measured in income but different parameters were taken into account. This included occupation, literacy rate and residential areas.

Mostly people belonged to labor class (39.4%) , were illiterate (71.4%) and lived in congested areas, although residential area didn't seem to have major effect as 52% lived in congested areas and 48% lived in open areas. Importance of lack of knowledge can be well judged by this figure as well. Regarding household history of positive HCV; 52 (34%) patients out of 154 had positive family history out of which majority i.e.; 40% had parent child relationship, 29% were siblings and 19% were spouses. Out of 154 people under study 87% were married which signifies HCV prevalence in spouses. In current study household cases positive for HCV were assessed based on history. 20 out of 34 turned out to be HCV positive, other 14 gave insignificant history although no screening tests were done. Above study proves significance of positive household history as well.

### CONCLUSION:

According to my study which was based in one setting i.e.; Jinnah Hospital Lahore, I conclude that there is fair association of decreased platelet count with Hepatitis C virus and this association can be used in various clinical and lab settings such as screening for Hepatitis C, analyzing stage and severity of disease and Follow up on treatment provided that further research is done. Further research would be fruitful especially in settings with high prevalence of Hepatitis C virus that is our country Pakistan.

### REFERENCES:

1. WHO. Prevention and control of hepatitis. Available at: <http://www.emro.who.int/pak/programmes/pre>



- [venton-a-control-of-hepatits.html;2013](#)  
Accessed Sunday 07 12 2014.
2. Jiwani N, Gul R. A Silent Storm: Hepatitis C in Pakistan. *J PAK MED STUD*. 2011;1: 89-91.
  3. Mohd Hanafiah K, Groeger J, Flaxman AD, Wiersma ST. Global epidemiology of hepatitis C virus infection: new estimates of age-specific antibody to HCV seroprevalence..*Hepatology* 2013 Apr;57(4):1333-42
  4. Behnava b, Alavian S, Asl M. The Prevalence of Thrombocytopenia in Patients with Chronic Hepatitis B and C. *Hepatitis Monthly*. 2006;6(2):67-69.
  5. Thrombocytopenia (low platelet count) Causes - Mayo Clinic [Internet]. *Mayoclinic.org*. 2016 [cited 22 July 2016]. Available from: <http://www.mayoclinic.org/diseases-conditions/thrombocytopenia/basics/causes/con-20027170>
  6. Stasi R. How to approach thrombocytopenia. *ASH Education Program Book* [Internet]. 2012 [cited 22 July 2016];2012(1):191-197. Available from: <http://asheducationbook.hematologylibrary.org/content/2012/1/191.full>
  7. Fouad YM. Chronic hepatitis C-associated thrombocytopenia: aetiology and management. *Tropical gastroenterology* 2013;34(2):58–67.
  8. Dimitroulis D, Valsami S, Stamopoulos P, Kouraklis G. Immunological HCV-Associated Thrombocytopenia: Short Review. *Journal of immunology research* 2012;2(1);1-5.
  9. Waheed M. WHO EMRO | Prevention and control of hepatitis | Programmer | Pakistan [Internet]. *Emro.who.int*. 2016 [cited 21 July 2016]. Available from: <http://www.emro.who.int/pak/programmes/prevention-a-control-of-hepatitis.html>
  10. Hoffbrand A, Higgs D, Keeling D, Mehta A. *Postgraduate hematology*. 7th ed. London: wiley blackwell; 2016: p 846 Table 48.11.
  11. Pol S, Driss F, Devergie A, Brechot C, Berthelot P, Gluckman E. Is Hepatitis C Virus Involved in Hepatitis-Associated Aplastic Anemia? *Ann Intern Med*. 1990;15;113(6):435-7.
  12. Hoffbrand A, Higgs D, Keeling D, Mehta A. *Postgraduate hematology*. 7th ed. London: wiley blackwell; 2016: p 175.
  13. Olariu M, Olariu C, Olteanu D. Thrombocytopenia in Chronic Hepatitis C. *J Gastrointestin Liver Dis*. 2010;19(4):381-385.
  14. Omeland L, Osler M, Jepsen P, Krarup H, Weis N, Christensen P et al. Socioeconomic status in HCV infected patients andndash; risk and prognosis. *Clin Epidemiol*. 2013; 5:163-172.
  15. Mukhtar O, Zaheer F, Malik M, Khan J. Socio-Demographic Study of Hepatitis C Patients Visiting Tertiary Care Hospital. *J Ayub Med Coll Abbottabad*. 2015;27(3):650-652.