International Journal of Research and Review
www.ijrrjournal.com E-ISSN: 2349-9788; P-ISSN: 2454-2237

Original Research Article

Study of Prevalence of Hepatitis B and Hepatitis C in Hemophiliacs in a Tertiary Care Hospital in Northern India

Dr. Shazia Hamid[1], Dr. Ritu[2], Dr Shahbaz Khan[3]

[1]Asstt. Professor, Deptt. of Medicine, GMC Jammu.
[2]Resident, Deptt. of Medicine, GMC Jammu.
[3]Senior Resident, Deptt. of Medicine, GMC Jammu.

Corresponding Author: Dr Shahbaz Khan

ABSTRACT

Background: Hemophilia is an X-linked recessive bleeding disorder caused by a deficiency in coagulation factor VIII (hemophilia A) or factor IX (hemophilia B). Transfusion-transmitted infections (TTI) are serious complications at Hemophilia patients treated by factor VIII and IX concentrates. The cause of manifestation of these infections is on the fact that concentrating coagulation factors are prepared of plasma from thousand of blood donors that did not undergo viral inactivation.
Materials and methods: The present study was conducted at Hemophilic Centres of Govt. Medical College and Associated Hospitals Jammu. This is a cross sectional prevalence study and was conducted over a period of one year after approval from members of ethical committee.
Results: In the patients, 77 (86.52%) were HCV negative and 12 (13.48%) were HCV positive. In the age group less than 18 years, all the 37 patients (100.00%) were HCV negative. A significant association was seen between age category and prevalence of HCV. (P<0.05)

Key words- Hepatitis B and Hepatitis C, Transfusion, Bleeding, Joints.

INTRODUCTION

Hemophilia derives from the Greek word haima 'blood' and philia 'affection or love'- love of blood. Jewish writings from the 2nd century AD described a ruling from the patriarch Rabbi Judah, who exempted the third son of a woman from circumcision, since his two older brothers had died of bleeding after circumcision Ingram GI. 1976. [1] Hemophilia is an X-linked recessive bleeding disorder caused by a deficiency in coagulation factor VIII (hemophilia A) or factor IX (hemophilia B). Factors VIII and IX are encoded by the *F8* and *F9* genes on the X-chromosome. Replacement of the deficient coagulation factor to normalize the bleeding defect is the treatment used in both types and all severities of hemophilia. Mild hemophilia A can sometimes be treated using desmopressin, which increases the endogenous FVIII level Lethagen S. 2003. [2] Before 1956, patients suffering from bleeds were given blood or plasma transfusions to resolve the bleed. In 1956 in Sweden, patients with hemophilia A had access to factor VIII concentrates (Cohn fraction I-O/AHF-Kabi) and, a few years later, concentrate for patients with hemophilia B became available. Concentrates were manufactured from large plasma pools. These concentrates have been associated with transmission of hepatitis B, C and Human Immunodeficiency Virus

(HIV). Transfusion-transmitted infections (TTI) are serious complications at Hemophilia patients treated by factor VIII and IX concentrates Sharara A. I. et al 1996. [3] Multitransfused Hemophilics with antihemophilic products are endangered of acquiring viral hepatitis Makris M et al 1993. [4] Although the majority of infected patients do not suffer acute symptoms and clear the infection spontaneously, the remaining portion (<50%) become chronic carriers of virus Roberts H.R. et al 2000. [5] About 80% of adult Hemophilics develop antibodies against surface antigen of hepatitis B virus (HBsAg), while 10% among this group become chronic carriers Rumi M.G. et al 1990. [6] HBsAg positive Hemophilics are very often accompanied with delta hepatitis infection, which causes severe active hepatitis, cirrhosis and hepatocellular carcinoma that appears six times more often in Hemophilics than in other population Posthouwer D. et al 2004. [7] FVIII concentrates available on the market are considered safe in the sense of not transmitting infectious agents, especially to recombinant factor concentrates Bray G.L. et al 1994. [8] Due to the fact that hemophilia patients received multiple transfusions of FFP, cryoprecipitate, the factor VIII and IX concentrates prepared from pool plasma of thousands of donations, there exists a risk of acquiring TTI.

MATERIALS AND METHODS

The present study entitled "Study of prevalence of Hepatitis B and Hepatitis C in Hemophiliacs in a tertiary care hospital in northern India" was conducted on Hemophiliac patients presenting to Hemophiliac Centres of Govt. Medical College and Associated Hospitals Jammu.

INCLUSION CRITERIA

1. Hemophilic patients presenting to Hemophilic Centres of Govt. Medical College and Associated Hospitals Jammu.

EXCLUSION CRITERIA

1. Who do not give consent.
2. Patients with chronic liver diseases with etiology other than hepatitis B and C.
3. Intravenous drug abusers, hetero or homosexuality.
4. High risk jobs e.g. health center staff.

After taking informed consent from the participants data regarding age, sex, detailed family history, history regarding frequency and cause of hospital admissions, frequency of blood and factor transfusions, type of blood product administration (FFP, cryoprecipitate and blood derived and/or recombinant factors), blood and factor related transfusion complications etc. was collected us ing a structured questionnaire.

Statistical Analysis

Statistical analysis was carried out using SPSS for Windows (SPSS Inc., Chicago, Illinois, USA). Pearson's correlation coefficient was used for estimating the association between various variables. Statistical significance was defined as $P < 0.05$.

RESULTS

This study was conducted in the Hemophilic Centres of Govt. Medical College and Associated Hospitals, Jammu. It was a cross sectional prevalence study where 89 patients of hemophilia attending out-patient department fulfilling inclusion criteria were included in the study. After taking informed consent, detailed history of all 89 patients was taken using a structured questionnaire. After interview and preliminary physical examination of each subject, blood samples were collected under all aseptic conditions and tested for HBs Ag, HIV Ab, and HCV antibody by rapid card method (chromatographic immunoassay for the qualitative detection) and positive cases were confirmed by enzyme linked immunosorbent assay (ELISA) method. The data obtained was analyzed with the help of computer software. The following results pertaining to the effects with the therapy were seen in the study.

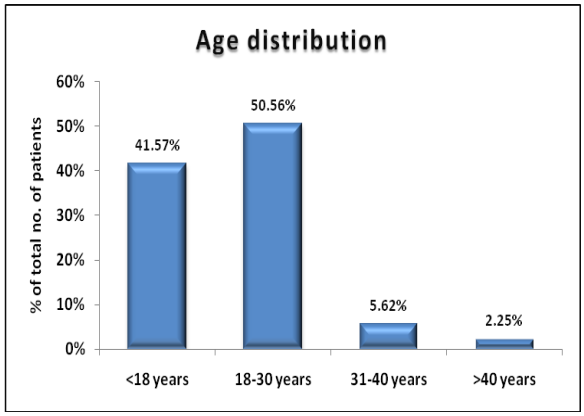

Figure 1: Age distribution of study subjects

The mean age of the patients in our study was 19.56 ± 8.99 years. 37 (41.57%) of the patients were in the age group <18 years and 45 (50.56%) were in the age group 18-30 years. 5 (5.62%) of the patients were in the age group 31-40 years and 2 (2.25%) were more 40 years. It is shown in figure 1.

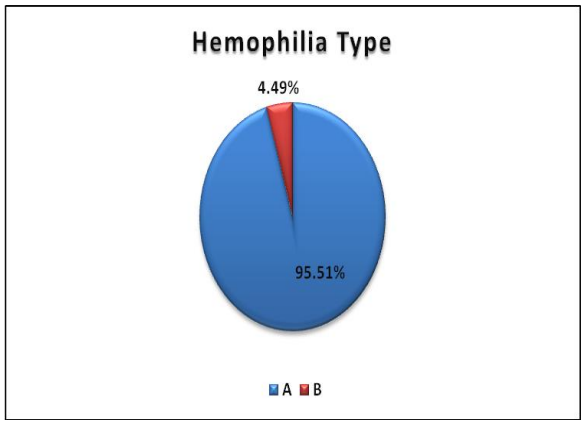

Figure 2: Hemophilia type distribution of study subjects

In the patients of hemophilia, 85 (95.51%) were Hemophilia type A and 4 (4.49%) were Hemophilia type B. It is shown in figure 2.

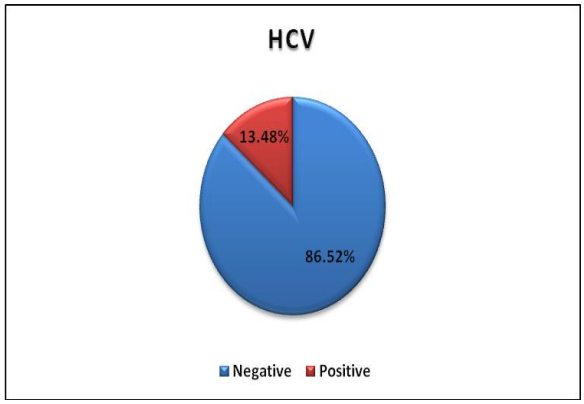

Figure 3: HCV distribution of study subjects

In the patients, 77 (86.52%) were HCV negative and 12 (13.48%) were HCV positive. It is shown in figure 3.

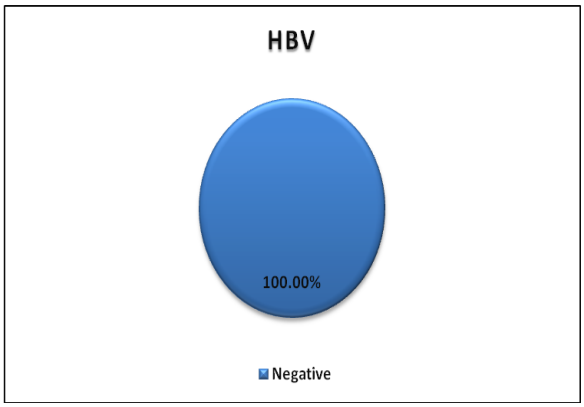

Figure 4: HBV distribution of study subjects

In the patients, all the 89 patients (100.00%) were HBV negative. It is shown in figure 4. In our study, there were no cases of HBV in hemophilia patients.

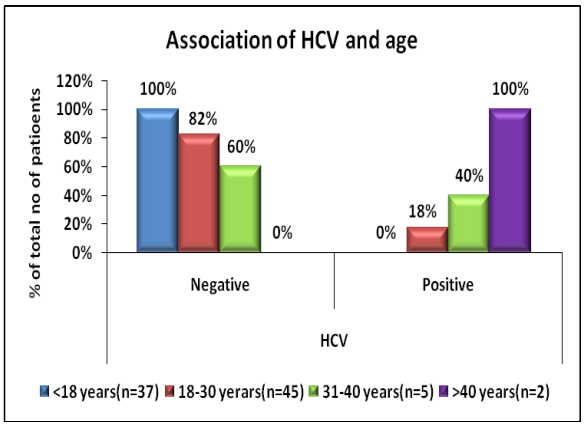

Figure 5: Association of HCV and age

In the age group less than 18 years, all the 37 patients (100.00%) were HCV negative. In the age group 18-30 years, 37 (82.22%) were HCV negative and 8 (17.78%) were HCV positive. In the age group 31-40 years, 3 (60.00%) were HCV negative and 2 (40.00%) were HCV positive. In the age group more than 40 years both the patients (2) were HCV positive. It is shown in figure 5.

Table 1: Association of HCV and age.

HCV	Age distribution				Total	P value
	<18 years (n=37)	18-30 years (n=45)	31-40 years (n=5)	>40 years (n=2)		
Negative	37 (100.00%)	37 (82.22%)	3 (60.00%)	0 (0.00%)	77 (86.52%)	<.0001
Positive	0(0.00%)	8(17.78%)	2(40.00%)	2(100.00%)	12(13.48%)	
Total	37 (100.00%)	45 (100.00%)	5 (100.00%)	2 (100.00%)	89 (100.00%)	

- A significant association was seen between age category and prevalence of HCV. (P<0.05)

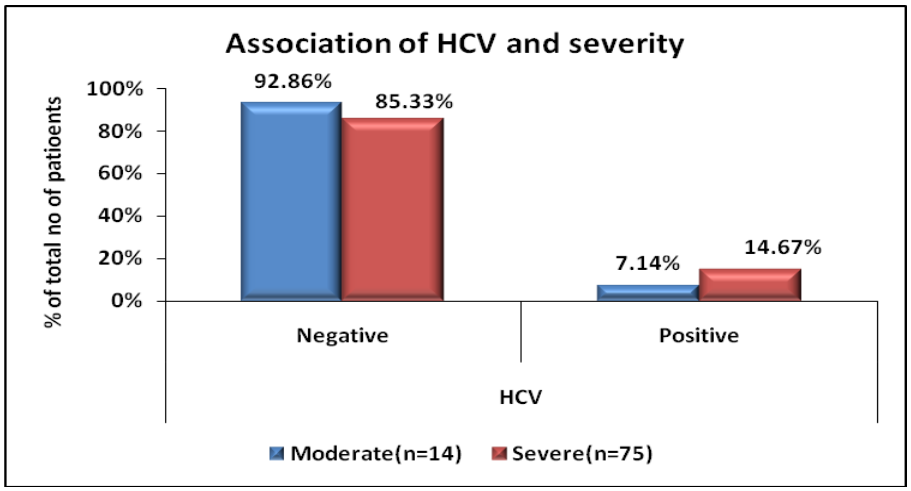

Figure 6: Association of HCV and severity

In patients presenting with moderate severity, 13 (92.86%) were HCV negative and 1 (7.14%) was HCV positive. In patients presenting with severe severity, 64 (85.33%) were HCV negative and 11 (14.67%) was HCV positive. It is shown in figure 6.

Table 2: Association of HCV and severity

HCV	Severity		Total	P value
	Moderate(n=14)	Severe(n=75)		
Negative	13(92.86%)	64(85.33%)	77(86.52%)	0.682
Positive	1(7.14%)	11(14.67%)	12(13.48%)	
Total	14(100.00%)	75(100.00%)	89 (100.00%)	

In our study, majority of the patients i.e.11 (14.67%) of HCV positive presented with severe severity but no statistical significant association was seen between severity and HCV prevalence. (P>0.05)

DISCUSSION

The mean age of the patients in our study was 19.56 ± 8.99 years. Majority of the patients were in the age group of 0-30 years i.e. 37 (41.57%) of the patients were in the age group <18 years and 45 (50.56%) were in the age group 18-30 years Similar findings were seen in study conducted by Zhubi et al 2009, [9] the average age of patients were 24.7 years. In our study, 85 (95.51%) were hemophilia type A and 4 (4.49%) were hemophilia type B. Even in the study by Brettler DB et al 1990, [10] in a total population of 131 patients with hemophilia, majority (117 patients) had hemophilia A, and only 12 patients had hemophilia B, whereas 1was an asymptomatic carrier, and 1 had von Willebrand disease. In our study, among 89 patients of Hemophilia, only 12 (13.48%) were HCV positive and 77 (86.52%) were HCV negative. This result collaborated with the study by Nezhad SM et al 2016, [11] were out of 580 hemophilia patients, 66 (11.4%) were found to be HCV seropositive and 88.6% to be HCV seronegative. HBV prevalence was lower in other studies as well, although the reported rate was higher than our study. In a study by Kalantari H et al 2016, [12] out of 615 patients of

hemophilia, only 10 (1.6%) were HBV antibody positive. In other similar studies, in the patients of hemophilia, the mean age in HCV antibody positive group was 27.3 years and that of HCV antibody negative group was 23.2 years. A significant association was seen between age category and prevalence of HCV. (P<0.05) Similar results were seen in other studies where adults in their late 30s presented with HCV and no cases were seen in children. In our study, majority of the patients i.e.11 (14.67%) of HCV positive presented with severe severity but no statistical significant association was seen between severity and HCV prevalence(P>0.05). In a study by Franchini et al 2001, [13] in case of patients HCV positive hemophilia A, mild/moderate hemophilia was present in 47.1%, severe hemophilia 33.3%, and von Willebrand disease 19.6%.

CONCLUSIONS

The mean age of the patients in our study was 19.56 ± 8.99 years. 37 (41.57%) of the patients were in the age group <18 years and 45 (50.56%) were in the age group 18-30 years. In the patients of hemophilia, 85 (95.51%) were hemophilia type A and 4 (4.49%) were hemophilia type B. The manifestation was severe in 75 (84.27%) and moderate in 14 (15.73%) of patients. In the patients, 77 (86.52%) were HCV negative and 12 (13.48%) were HCV positive. All the 89 patients (100.00%) were HBV and HIV negative. To sum up, risk of HBV, HCV, and HIV has decreased in patients of hemophilia because of the new used methods of factor VIII concentrates preparation and laboratory tests for blood donor examination, but HCV predominates among transfusion transmitted infections. Thus strict screening of these infections will remain of prime importance in treatment and management of hemophilia patients and early detection will help the patient with early treatment and stopping progression to chronic liver disease.

Inspite of decreasing prevalence, stringent screening criteria for these transfusions transmitted infections should be continued. Other studies in future with larger sample size are required for screening Hemophilics for transfusions transmitted infections like HCV, HBV and HIV so that early intervention can be done and we can prevent these patients from progressing to chronic liver disease by early treatment.

Conflicts of Interest: None

REFERENCES

1. Ingram GI. The history of hemophilia. J Clin Pathol. 1976 Jun;29(6):469-79.
2. Lethagen S. Desmopressin in mild hemophilia A: indications, limitations, efficacy, and safety. Semin Thromb Hemost. 2003 Feb;29(1):101-6
3. Sharara A.I., Hunt M.Ch., Hamilton J.D. Hepatitis C. Ann. Intern. Med. 1996; 125(8): 658-668.
4. Makris M., Garson J.A., Ring C.J.A., et al. Hepatitis C viral RNA in Clotting Factor Concentrates and the Development of Hepatitis in Recipients. Blood. 1993; 81(7): 1898-1902.
5. Roberts H.R., Hoff man M., Beutler E., Lichtman M.A., Coller B.S., et al. Hemophilia A and Hemophilia B. Willams Hematology. New York: Mc Graw-Hill. 2000; pp.:1639-1658.
6. Rumi M.G., Colombo M., Romeo R., et al. Serum hepatitis B Virus DNA detects cryptic hepatits B virus infections in multitransfused hemophilic patients. Blood. 1990; 75(8): 1654-1658
7. Posthouwer D., Wolters V.M., Fischer K., et al. Hepatitis C infection in children with hemophilia: a pilot study. Hemophilia.2004; 10: 722-726
8. Bray GL, Gomperts ED, Courter S, et al. A multicenter study of recombinant factor VIII (Recombinate): safety, efficacy, and inhibitor risk in previously untreated patients with hemophilia A. Blood 1994;83:2428-2435.
9. Zhubi B, Mekaj Y, Baruti Z, Bunjaku I, Belegu M. Transfusion-transmitted infections in hemophilia patients. Bosn J Basic Med Sci 2009;9(4):271-277.
10. Brettler DB, Alter HJ, Dienstag JL, et al. Prevalence of hepatitis C virus antibody in a cohort hemophilia patients. Blood 1990; 76(1):254-256.

11. Nezhad SM, Esmailnejad A, Sanie MS, Abedi HA, Niknam H. Prevalence of hepatitis B, hepatitis C, and human immunodeficiency virus infections among hemophilia patients in Shiraz, south of Iran. Comp Clin Pathol 2016;25:953-957.
12. Kalantari H, Mirzabaghi A, Akbari M, Shahshahan Z. Prevalence of hepatitis C virus, hepatitis B virus, human immunodeficiency virus and related risk factors among hemophilia and thalassemia patients In Iran. Comp Clin Pathol 2016. DOI: 10.1007/s00580-016-2286-1.
13. Franchini M, Rossetti G, Tagliaferri A, Capra F, Maria E, Pattacini C, et al. The natural history of chronic hepatitis C in a cohort of HIV-negative Italian patients with hereditary bleeding disorders. Am Soc Hematol. 2001;98(6):1836-1841.

How to cite this article: Hamid S, Ritu, Khan S. Study of prevalence of Hepatitis B and Hepatitis C in Hemophiliacs in a tertiary care hospital in northern India. International Journal of Research and Review. 2019; 6(7):318-323.

******