

The prevalence of hepatitis B and C in hemophiliac patients up to 18 years old in Children Welfare Teaching Hospital, Baghdad, Iraq

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Abstract

Background and Objectives: Hepatitis B virus is one of the important public-health issues worldwide. Globally two billion people are infected with hepatitis B virus and about 350 million people are chronic carriers. About 3% of the world population is infected with hepatitis C virus. Hemophiliac patients who received blood and / or blood products due to frequent bleeding attacks usually have high risk of these viral infections. The objectives of this study are to estimate the prevalence of hepatitis B and C in hemophiliac patients up to 18 years old and to show the association between the prevalence of hepatitis C and certain factors which include:

1 Age.

2 Type and severity of hemophilia.

3 Family history of hepatitis.

4 Inhibitor status.

5 Times of blood and / or blood products transfusion.

Patients and methods: This is a descriptive cross sectional hospital based study carried out in the congenital bleeding disorders ward in Children Welfare Teaching Hospital, Medical city in Baghdad

during the period between the 2nd of January 2013 to the 31st of May 2013. The medical records of 384 patients with hemophilia in patients up to 18 years old were surveyed and analyzed for the presence of hepatitis B and C infection and its association to certain factors by using Chi square. Fisher exact test was used alternatively when the Chi square was inapplicable.

Results: Three hundred and eighty four hemophiliac patients were studied; 38 (9.9%) of them had been infected by hepatitis C virus and 2 (0.52%) of them had been infected by hepatitis B virus; one patient had both hepatitis B and C. Twenty eight of the hepatitis C virus infected patients were 11-18 years old. 36 were type A hemophilia and 35 had severe hemophilia. All of them had received blood and / or blood products; 28 of them had received them more than twice.

Conclusion: The prevalence of hepatitis B was 0.52%. The prevalence of hepatitis C virus was (9.9 %), and it is significantly associated with the age of the patients, the type of hemophilia and its severity and times of transfusion.

Key words: Prevalence, Hepatitis B, hepatitis C, hemophilia.

Introduction

Management of viral hepatitis is a major aspect of hemophilia nursing. A large majority of individuals with bleeding disorders have chronic hepatitis C infection, while a few are chronic carriers of hepatitis B virus, some of whom are co-infected with hepatitis D. Many also have hepatitis G virus or antibody [1].

An understanding of viral hepatitis is essential to provide appropriate patient education and support in order to prevent or moderate the effects of chronic infection [1].

We must distinguish among these various viral infections and explain them to patients, interpret hepatitis tests and markers, explain how to prevent transmission to others and encourage behaviors that protect the liver from further harm. Caring for those with chronic hepatitis and protecting those without hepatitis are integral to the practice of hemophilia nursing [1].

Around 500,000,000 people are chronically infected with hepatitis B virus (HBV) or hepatitis C virus (HCV) [1].

- o Approximately 1,000,000 people die each year (~2.7% of all deaths) from causes related to viral hepatitis, most commonly liver disease, including liver cancer [2].

- o An estimated 57% of cases of liver cirrhosis and 78% of cases of primary liver cancer result from HBV or HCV infection [3].

New hepatitis B and C infections are seen more often in recipients of organs, blood, and tissue, along with persons working or receiving care in health settings, and in vulnerable groups [3]. Millions of people are living with viral hepatitis and millions more are at risk. Most people who were infected long ago with HBV or HCV are unaware of their chronic infection. They are at high risk of developing severe chronic liver disease and can unknowingly transmit the infection to other people [3].

Viral hepatitis places a heavy burden on the health care system because of the costs of treatment of liver failure and chronic liver disease. In many countries, viral hepatitis is the leading cause of liver transplants. Such end-stage treatments are expensive, easily reaching up to hundreds of thousands of dollars per person [3].

Chronic viral hepatitis also results in loss of productivity [4].

Objectives

- 1) To estimate the prevalence of hepatitis B and C in hemophiliac patients up to 18 years old .
- 2) To show the association between the prevalence of hepatitis C and certain factors which include:

- A) Age.
- B) Type and severity of hemophilia.
- C) Family history of hepatitis.

D) Inhibitor status.

E) Times of blood and / or blood products transfusion.

Patients and Methods

This is a cross sectional hospital based study carried out in the congenital bleeding disorders ward in Children Welfare Teaching hospital, Medical city in Baghdad, Iraq during a period between the 2nd of January 2013 to the 31st of May 2013.

This study involved hemophiliac patients who were registered in this ward between August 2008 and December 2012.

The medical records of 384 patients with hemophilia, up to 18 years old, were surveyed and analyzed. Two hundred and eighty two (282) of them are hemophilia A (factor VIII deficiency), (102) of them are hemophilia B (factor IX deficiency); all of them were males.

These patients were screened for Anti HCV antibody (Anti HCV Ab) and HBV surface antigen (HBs Ag) by ELISA test.

Data of all cases were checked for any error or inconsistency then transferred into a computerized database program; Microsoft Excel software was used. All variables were coded with a specific code for each variable and prepared for statistical analysis. SPSS (Statistical Package for Social Sciences) software for windows version 20 was used in statistical analysis.

Descriptive statistics were presented as frequency (number of cases) with proportions (percentages) for categorical variables, and as mean \pm standard deviation and range for discrete variables.

T test for two independent samples was used to test the significance of observed difference in mean. Chi-square test for independence and Fisher's exact test was used as appropriate to test the significance of association between discrete variables.

Results

Description of the studied sample:

A total number of 384 files of hemophiliac patients aged up to 18 years were surveyed, 282 of them (73.4%) with hemophilia A and 102 (26.6%) with hemophilia B. Out of the 384 patients with hemophilia, 39 (10.2%) had a positive serological test for hepatitis B, C or both. Two patients (0.52%) had hepatitis B, 38 (9.9%) had hepatitis C; one patient had both hepatitis B and C. (Table 1 - next page)

Prevalence of hepatitis B and hepatitis C among hemophiliac patients:

The findings of positive serology for hepatitis B and hepatitis C provide that among all hemophilia cases (384), the prevalence of hepatitis B was 0.52%, and of hepatitis C was 9.9%, (Figure 1 - next page).

Association between the prevalence of hepatitis C and certain factors:

- There is a statistically significant association between age and hepatitis C infection that the frequency of infection increases with age ($P < 0.05$), (Table 2).
- There is a statistically significant association between the prevalence of hepatitis C and type of hemophilia, more with hemophilia A ($P < 0.05$) (Table 3).

- There is a statistically significant association between the prevalence of hepatitis C and the severity of hemophilia, more with severe hemophilia ($P < 0.05$), (Table 4).

- There is a statistically significant association between the prevalence of hepatitis C infection and the times of transfusion, more than two transfusions ($P < 0.05$), (Table 5).

Table 1: Distribution of the study group according to serology status of hepatitis B and C

Serology*	N	Percentage (%) from number of cases (N=39)
Hepatitis B	2	5.1%
Hepatitis C	38	97.4%

* One patient had both hepatitis B and C

Figure 1: Prevalence of hepatitis B and hepatitis C among hemophiliac patients

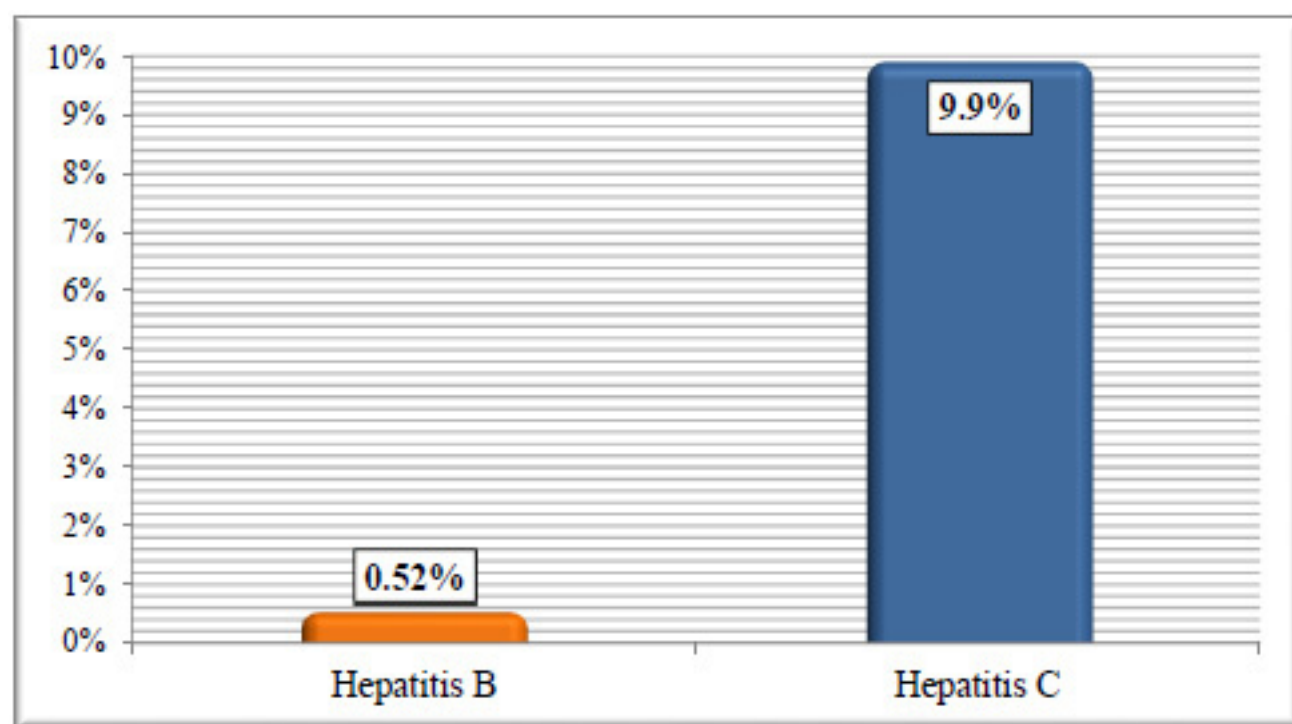


Table 2: Distribution of the study sample according to status of hepatitis C and to age group

	Total	Hepatitis C				
		Positive		Negative		
Age group (year)	N (100.0%)	N	%	N	%	P value
Up to 5	140	1	0.7%	139	99.3%	<0.001
6-10	118	9	7.6%	109	92.4%	
11-18	126	28	22.2%	98	77.8%	
Total	384	38	9.9%	346	90.1%	

Table 3: Distribution of the study sample according to status of hepatitis C and to type of hemophilia

	Total	Hepatitis C				
		Positive		Negative		
Type of hemophilia	N (100.0%)	N	%	N	%	P value
Hemophilia A	282	36	12.8%	246	87.2%	0.002
Hemophilia B	102	2	2.0%	100	98.0%	
Total	384	83	9.9%	346	90.1%	

Table 4: Distribution of the study sample according to status of hepatitis C and to severity of hemophilia

	Total	Hepatitis C				
		Positive		Negative		
Severity of hemophilia	N (100.0%)	N	%	N	%	P value
Mild	47	0	0.0%	47	100%	<0.001
Moderate	122	3	2.5%	119	97.5%	
Severe	215	35	16.3%	180	83.7%	
Total	384	38	9.9%	346	90.1%	

Table 5: Distribution of the study sample according to status of hepatitis C and to frequency of receiving blood &/or blood products

	Total	Hepatitis C				
		Positive		Negative		
Times of blood &/or blood products transfusion	N (100.0%)	N	%	N	%	P value
0	256	0	0.0%	256	100.0%	<0.001
1	37	1	2.7%	36	97.3%	
2	32	9	28.1%	23	71.9%	
>2	59	28	47.5%	31	52.5%	
Total	384	38	9.9%	346	90.1%	

Discussion

This study shows that the prevalence of hepatitis C was 9.9% among (384) hemophiliac patients. In contrast to another study in Iran done by Maziar Mojtavavi (2007) [5], which shows that the prevalence of hepatitis C was (22.6%), this difference may be because Maziar's study included all patients of hereditary bleeding disorders in all ages while our study included only hemophiliac patients up to 18 years.

In this study the prevalence of hepatitis C infection among hemophiliac patients may be associated to certain factors which include (age, type of hemophilia, severity of hemophilia, family history of viral hepatitis, the presence of inhibitors, history of blood and / or blood products transfusion).

It was found that HCV was more statistically significant associated to advanced age >11 years old. This agrees with the result by Chung-JI in Taiwan 1997 [6] and the study by Sanchez, J et al in Peru 2000 [7]. It could be due to the increasing physical activity of children at this age which makes them more susceptible to hemarthrosis.

There was a statistically significant association between the type of hemophilia and the prevalence of hepatitis C; it was more with hemophilia A than with hemophilia B. This may be due to type A being the commonest type of hemophilia. This disagrees with Musaab 2011 in Iraq [8] and agrees with Amel 2012 in Egypt [9].

In this study there is a statistically significant association between the severity of hemophilia and the prevalence of hepatitis C. This agrees with the study done by Musaab [8], where he found that HCV infection is higher in severe forms of hemophilia. This may be due to the low level of factor VIII which increases the susceptibility to bleeding and thus increases the requirement for factor replacement (either recombinant factor and if it is unavailable we give blood products) to correct the factor deficiency. This is also in agreement with the study done by Ghosk K et al in India 2000 [10].

Family history has no significant association with the prevalence of HCV infection. This is in agreement with Musaab 2011[8] and also agrees with R.A.Camro 2002 in Brazil [11].

There is no statistically significant association between HCV infection prevalence and positive inhibitors population of this study group. This disagrees with Kristen Et al in Nicaragua 2002 [12], but agrees with R.A. Camro 2002 [11].

In this study HCV infection has a statistically significant association to transfusion of blood and blood products; from another point the prevalence is directly associated to the times of transfusions. This result is in agreement with the study done by Calderon GM et al in Mexico 2009 [13] and this may be due to the blood screening for antibodies

to HCV could not completely eliminate the risk of HCV transmission by blood, because antibodies usually appear within 7-10 weeks after acquiring the infection.

This study shows that the prevalence of hepatitis B in hemophiliac patients up to 18 years old was (0.52%). Another study done by Mohammed Ali Assarehzadegan (2012) in Iran [14] shows that the prevalence of hepatitis B in hemophiliac patients was (1.1%), and Maziar's study [5] which shows that the prevalence of hepatitis B was (0.2%).

Conclusion

- 1) The prevalence of hepatitis C in hemophiliac patients up to 18 years old is still significantly high.
- 2) The prevalence of hepatitis C is statistically significant related to various factors:
 - a) Increasing age. More than 11 years old.
 - b) Type of hemophilia. More with hemophilia A.
 - c) Severity of hemophilia. More with severe hemophilia.
 - d) Frequency of blood and blood products transfusion, (more than 2 transfusions).
- 3) The family history of hepatitis C and the presence of inhibitors are not significantly related to the prevalence of hepatitis C infection.
- 4) There is low prevalence of hepatitis B infection in hemophiliac patients up to 18 years old.

Recommendations:

- 1) Health promotion and health education regarding raising public awareness about hepatitis B and C infections to prevent its transmission in the community.
- 2) Encouragement of the vaccination of all children and all risk groups (e.g. hemophiliac patients).
- 3) Implementation of blood safety strategies, including blood supplies based on voluntary blood donation, effective public education on blood donation, donor selection and quality assured screening of all donated blood and blood components used for transfusion. This can prevent transmission of HBV and HCV infection.
- 4) Strengthening of Infection control precautions in health care centers and community settings can prevent viral hepatitis infection.
- 5) Provision of Safe injection practices can protect against transmission of viral hepatitis.

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