

HBV, HCV and HIV among patients with Hemophilia in Khartoum- Sudan

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Abstract

Background: Hepatitis B, C and HIV infections and their impact forms one of the major health problems worldwide and in Sudan. Studies of hepatitis B, C and HIV virus among hemophiliacs in Sudan are lacking.

Objectives: The main objective is to determine the screening, vaccination, seroconversion of hepatitis B, C and HIV among Sudanese hemophilic patients registered in Hemophilia Center Khartoum Teaching Hospital.

Methods: During the period from July to November 2008, sixty two hemophilic male patients were randomly selected from hemophilic patients attending Hemophilic Center and were studied using simple direct standardized interview questionnaire and a blood sample from each patient was taken after consent for screening for hepatitis B, C and HIV.

Results: Out of the 62 patients, 39 (62.9%) were found to be screened before this study. Out of these 23(58.97%) were fully vaccinated for HB V, 23.08 % were partially vaccinated and seven had no vaccination at all.

Only one patient had seroconverted to HBsAg positive. HCV was detected in eight patient one of them was also found to have HIV infection.

Conclusion: The low figures of HBs Ag positivity we got in this study is probably an under estimation of the actual prevalence of HBV as we did not use other serological marker and modern technology for detection of exposure to HBV. To determine the real magnitude of the problem we have to applying other markers like HBc Antibody in the screening procedures which are simple and cost effective. The coverage of our hemophilic patients with HBV vaccine was 52% so a significant number of our patients are at risk of contracting HBV. Unlike HIV, HCV was detected in an alarming percentage. Health education is a cornerstone in prevention of these serious viral infections.

Keywords: seroconversion, factor VIII, Christmas disease.

Hemophilia is an X linked hereditary bleeding disease characterized by deficiency of factor VIII (HA) or factor IX (HB) which is also known as Christmas disease. The clinical manifestations of hemophilia correlate with the level of factor VIII and IX.

Bleeding - spontaneous or secondary to trauma or surgery- may occur at any site of the body but the most common sites are the joints(80%) whereas bleeding in the CNS is the most serious site¹.

Female carriers of hemophilia have variable factor levels so they may be prone to bleeding during surgery or after trauma².

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Treatment is with concentrated factor VIII or IX depending on the type of hemophilia although some patients may need transfusion with whole blood when they develop massive hemorrhage. These treatments will subject the patients to blood borne infections including HBV, HCV and HIV. The majority of the studies looking into this issue worldwide were old (in the 1980s), and were lacking in Sudan. Although viral inactivation and the use of recombinant technologies and the administration of HBV vaccine has significantly eliminated viral transmission via blood product transfusion, still HBV, HCV and HIV infections remain important causes of morbidity and mortality in countries where these technologies are unavailable.

Methodology: This is a prospective descriptive, hospital based study done at Khartoum Teaching Hospital (K.T.H) – Hemophilia Centre.

Sixty two patients were randomly selected from patients registered in the Hemophilia Centre during the period from Jul-Oct 2008.

Selection criteria: all male patients known to be hemophilic (aged 5 to 40 years) and seen regularly in the Hemophilia Centre in K.T.H

Exclusion criteria: female patients, patients with bleeding tendency other than hemophilia e.g., platelets disorders vWD, patients who underwent surgical operations in the last 6 months and patients who underwent invasive investigations e.g. endoscopy, cystoscopy, colonoscopy etc.. were excluded.

The patients were informed about the study and consents were taken. Each patient was interviewed using simple direct standardized interview questionnaire to obtain information about the personal data, past medical history including the previous transfusions, the state of vaccination for HBV. Clinical examination was carried out and blood sample for screening for HBsAg, HCV and HIV was taken from each patient. Patients with positive results were further investigated for the liver function test, and were referred to specialized centers for further management when needed. Results were analyzed, discussed and recommendations suggested.

Results: A total number of 62 hemophilic male patients was the sample size, 52 of them had HA. The mean age was 22.5 years the youngest patient was five years old were as the eldest was 40 years old (figure 1).

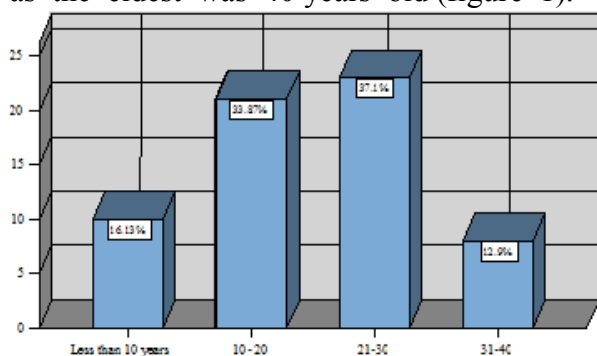


Figure (1): shows the distribution of patients depending on age.

Fifty two (83.9 %) of the patients have hemophilia A (HA) and so they receive factor 8 (F VIII) concentrate as treatment

while 16.1 percent had hemophilia B (HB) and receive factor 9 (F IX) concentrate.

The majority of the patients (72.6 %) have positive family history of hemophilia and 82.3 % of the studied groups were resident in Khartoum state.

If we exclude the students then 47.5% were working while 52.5 % were jobless (Table 1), and the majority (88.7%) were unmarried.

Table(1): shows the distribution of Hemophilic patients depending on occupation.

Occupation	Frequency	Percent
Student	37	59.7
Employment	4	6.5
Free work	8	12.9
No work	13	21.0
Total	62	100.0

Out of these 62 patients 39 were tested before for HBV, HCV and HIV and the result was negative for all these viruses. Although none was positive for HBsAg, only 23 (58.97%) received three doses of vaccine against HBV, while 3 (7.69%) received two doses, 6 (15.38%) received a single dose, and the remaining 7 (17.95%) received no vaccine at all.

Screening for HBsAg, HCV and HIV was performed on 38 (98.4%) of our studied patients after many years of anti-hemophilia treatment.

In this study we screened all the 62 hemophilic patients (including the 39 patients who were screened before) and we detect only one (1.61%) patients to be positive for HBs Ag, eight (13%) patients as positive for HCV and one patient from the eight was also positive for HIV.

Although 13 (21%) patients have past history of jaundice, but none shows stigmata of chronic liver disease.

Discussion: The issue of transmitting HBV, HCV and HIV to hemophilic patients has been reduced remarkably by screening donated blood and viricidal techniques and through development of recombinant products although patients treated with old concentrate factor VIII and IX were at risk of contracting infections with HIV, HBV, HCV^{3, 4}. In one study the prevalence of antibody to HCV was found to be 83% in patients infused for the first time before 1985 compared to 6% in 80 patients infused for the first time between 1985-1991⁵. The risk of donating blood in the window period and hence of post transfusion transmission of HBV was estimated to be 1/63000 in the united states of America⁶.

To the best of our knowledge studies concerning the prevalence of HBV, HCV and HIV among hemophilic patients was not done before in Sudan. In this study data of 62 hemophilic male patients were collected. Their ages ranged between 5 and 40 years. Five years of age was chosen to exclude patients who contracted the virus vertically from infected mothers.

Seventy percent of our patients' ages ranged between 10 and 30 years and this reflect the improvement in early diagnosis and proper management of hemophilia.

Before the extensive usage of replacement therapy, patients with severe hemophilia had shortened life span and poor quality of life. Life expectancy had increased from 11 years before 1960s in severe hemophilic to more than 50 – 60 years in the 1980⁷.

A round 59.7% of our studied patients were students, 19.3% were working. If we exclude the group of students then the percentage of nonworking patients will be 52%. Being vulnerable to trauma may explain that. This has a negative economic and social impact on patients and their families (table 1.)

The majority (82.26%) of our patients reside in Khartoum state. This percent does not reflect the actual distribution of patients throughout the states of the Sudan because patients from far states were

coming less frequently to the center for follow up.

Only a minority (11.3%) of our patients were married. This issue was not thoroughly discussed in literature but could be explained by the fact that in addition to the psychosomatic impact of the disease, the majority of these patients were also without work. In fact acceptance to marry a hemophilic patient may be associated with great hesitance from the females.

More than 72% of our patients have positive family history of hemophilia, these figures are similar to the world distribution of hemophilia⁷.

Screening for HBsAg was performed on 62.9% of our patients. The screening program for HBV which was started in 2002⁸ and that for HCV and HIV in 2006 had stopped temporary for different reasons. The vast majority of patients were screened for HBs Ag, HCV and HIV after many years of receiving anti hemophilic factors.

Despite being negative for HBs Ag, only 37.1% of the study population had received the three doses, 4.84% had two doses, 9.68% only one dose and the remaining (48.39%) received no vaccine at all. This may reflect negligence and carelessness and occasionally ignorance about the importance of vaccination and the seriousness of the infections. Past history of jaundice was seen in 20.97% of our patients. Although excessive hemolysis secondary to repeated transfusions, viral hepatitis like HCV (which is detected in eight of our patients) may partially explain that, however, further investigation to detect other causes may be necessary.

HBV is highly endemic in Sudan. The seroprevalence of HBs Ag was reported to range between 5 and 7% in the community and 26% in hospital outpatients^{9, 10}. Only one patient (1.6%) was positive for HBs Ag. This patient had seroconverted during therapy period as he was negative for HBsAg in the previous screening, but unfortunately he did not receive vaccination against HBV.

This figure is far less than the 75.6 % reported elsewhere and also less than the 51.2% that was reported from Japan¹¹. However, those high figures reported in the literature were in era before implementation of the new viricidal inactivation procedures and before vaccination of HBV had become popular, and the Japanese study had used PCR and other HBV markers which are more sensitive tests for detection of current or previous infection. Also another factor is that the studied Japanese hemophilic patients were older than our patients and so their risk of contracting HBV infection through other routes like sexual transmission is higher than our patients.

Before the era of modern screening and sterilization technology, unsterilized blood products such cryoprecipitate were the major cause of very high prevalence of HCV positivity among hemophilic patients reaching up to 90% in some countries^{12, 13}.

This was probably behind the fact that HCV was the major pathogen leading to chronic liver disease in these patients with hemophilia¹⁴. In Sudan HCV was detected in 0.4% of blood donors, 4.5% in patients with Schistosomiasis and in 5.5% in multiply transfused patients. Eight (13%) patients in this study were positive for HCV^{15, 16}. There is no clear explanation for this relatively high figure.

Although it was estimated by the WHO to be 1.1%, the prevalence of HIV infection in Sudan is currently unknown especially after the separation of Southern Sudan. Only one (0.016%) patient in this hemophilic population was positive for HIV, but unfortunately this patient was also positive for HCV. This is again far less than the high rate (55 %) of HIV reported from Japan. After using the modern inactivation procedures no documented HIV transmission in hemophilics was reported from there¹⁷. The negative impact of HIV and progression of liver pathology to cirrhosis and hepatic failure is well known in such co-infection^{18,19}.

Conclusions:

The low figures of HBs Ag positivity we got in this study is probably an under estimation of the actual prevalence of HBV as we did not use other serological marker and modern technology for detection of exposure to HBV. To determine the real magnitude of the problem we have to applying other markers like HBc Antibody in the screening procedures which are simple and cost effective. The coverage of our hemophilic patients with HBV vaccine was 52% so a significant number of our patients are at risk of contracting HBV. Unlike HIV, HCV was detected in an alarming percentage. Health education is a cornerstone in prevention of these serious viral infections.

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