



Full Length Research Paper

Sero-prevalence of Hepatitis B and Hepatitis C virus infection among Sudanese blood donors

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ABSTRACT

Infection with hepatitis B and hepatitis C virus causes serious mortality, morbidity, and financial burden and therefore they constitute a major global health problem. This study was conducted to determine the sero-prevalence of hepatitis B and hepatitis C infection among healthy volunteer blood donors at Elobeid blood bank. This cross-sectional study was conducted among male Sudanese voluntary blood donors at the blood bank of Elobeid teaching hospital in the period June 2014 to August 2014. A total of 400 blood donors were included in the study. Blood sample was taken from each individual tested for evidence of hepatitis B and hepatitis C infection markers using immunochromatographic (ICT) strips. Data sheet for collection of personal data (such as name, age, and sex) and socioeconomic data (such as marital status, education and occupation), history of immunization against hepatitis B, history of tattooing, was prepared and used for each individual. Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 18.0 This cross-sectional study includes 400 apparent healthy blood donors who came consequently for blood donation. All participants were males. The age of the donors ranged from 18-48 years with a mean of 28.5 (SD \pm 6.3) years. Majority of the donors were in the groups 18-27 years (49.75%) and age group 28- 37 years (41.5%). These two age groups constitute 91% of the donors. The overall sero-prevalence of hepatitis B virus and hepatitis C virus infection among blood donors was 9.3%, and 3.5% respectively. The mean age of those with hepatitis B virus infection was 29.8 (SD \pm 4.7) years and the mean age of those with hepatitis C virus infection was 34 (SD \pm 6.6) years. More than half (57%) of those have sero-positive markers of hepatitis B and hepatitis C infection, belong to the age group 28-37 years. The majority of individuals (86%), who are positive for hepatitis C antibodies, came from urban, while those with positive HBsAg coming from urban constitute 59%. The level of education of two third (74.3%) of blood donors included in this study was basic or secondary level. More than half (59%) of individuals with HBsAg are workers, while workers and merchants are equally affected with hepatitis C infection and together they constitute 86% of cases with positive antibodies against hepatitis C. This study shows that the sero-prevalence of hepatitis B is high and sero-prevalence of hepatitis C is rising among apparent healthy blood donors. To reduce the prevalence of hepatitis B infection, it will be necessary to educate people about risks factors for infection and benefits of immunization. In the absence of hepatitis c vaccine, proper screening of blood and selection of donors will have a paramount importance to ensure a safe blood supply.

Keywords: Sero-prevalence, blood donors, hepatitis B virus, hepatitis C virus

INTRODUCTION

Hepatitis B infection is one of the most common infectious diseases of the world, infecting two billion

people including an estimated 400 million chronically infected cases. Hepatitis C virus infection is another

common chronic blood borne infection with an estimated 3.9 million persons infected with the virus and has a high rate of development of liver cirrhosis (Nkrumah et al., 2011).

Elobeid teaching hospital is a tertiary hospital in the centre of Sudan. The hospital has a large catchment area providing services to patients from North Kordofan state, South Kordofan and West Kordofan states as well as patients from Eastern Darfur state. The blood bank in this hospital is well equipped to give services to this large population. This study aimed to determine the seroprevalence of hepatitis B and hepatitis C infection among healthy volunteer blood donors.

MATERIAL AND METHOD

This cross-sectional study was conducted among male Sudanese voluntary blood donors at the blood bank of Elobeid teaching hospital in the period June 2014 to August 2014. A total of 400 blood donors were included in the study. Blood sample was taken from each individual tested for evidence of hepatitis B and hepatitis C infection markers using immuno-chromatographic (ICT) strips. Data sheet for collection of personal data (such as name, age, Sex) and socioeconomic data (such as marital status, education and occupation), history of immunization against hepatitis B, history of tattooing, was prepared and used for each individual. Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 18.0

RESULT

This cross-sectional study includes 400 apparently healthy blood donors who came consequently for blood donation. All participants were males. The age of the donors ranged from 18-48 years with a mean of 28.5 (SD \pm 6.3) years. Majority of the donors were in the groups 18-27 years (49.75%) and age group 28- 37 years (41.5%). These two age groups constitute 91% of the donors.

The overall sero-prevalence of hepatitis B virus and hepatitis C virus infection among blood donors was 9.3%, and 3.5% respectively.

The mean age of those with hepatitis B virus infection was 29.8 (SD \pm 4.7) years and the mean age of those with hepatitis C virus infection was 34 (SD \pm 6.6) years.

The number of positive cases in each age group and their percentage is presented in Table 1 below.

More than half (57%) of those have sero-positive markers of hepatitis B and hepatitis C infection, belong to the age group 28-37 years.

The majority of individuals (86%), who are positive for

hepatitis C antibodies, came from urban, while those with positive HBsAg coming from urban constitute 59% (Table 2 below).

The level of education of two third (74.3%) of blood donors included in this study was basic or secondary level (Table 3 below). More than half (59%) of individuals with HBsAg are workers, while workers and merchants are equally affected with hepatitis C infection and together they constitute 86% of cases with positive antibodies against hepatitis C.

DISCUSSION

All subjects included in this study were voluntary healthy males, because females usually do not donate blood in Sudan. The sero-prevalence of HBV and HCV infection among blood donors found to be 9.25% and 3.5% respectively. The endemicity of HBV infection has been classified as high (> 8%), intermediate (2%-7%) and low (< 2%) (Te HS and Jensen DM, 2010). Sudan is classified by WHO among countries with high HBV endemicity of more 8%, so the findings in this study are consistent with WHO classification and with results by William W et al. (2014), from Ghana (9.6%), but are higher compared with reports from Eastern Sudan (4.3%) (Aballa TM and Ali AA, 2012).

The prevalence of HCV among Sudanese is reported to be 2.2 -3% among the general population (Aballa TM and Ali AA, 2012). The sero-prevalence of HCV in this study is higher than reports from Central Sudan, Gazira (2.2%) (Hatim MY Mudawi, 2008), while it is consistent with reports from Eastern Sudan (3.1%). In reports by Ratib et al., 2014 from Maridi, South Sudan, hepatitis C sero-positivity was 9.3% which is significantly higher than hepatitis C sero-positivity in this study. In 2008, we did a similar study in the blood bank at Elodeid hospital, in which the sero-prevalence of hepatitis B was 10%, while screening results for antibodies against hepatitis c was negative in all blood samples tested (Elfaki et al., 2008). Therefore, the prevalence of hepatitis C in this study in an alarming sign necessitates active measures to prevent the spread of the infection in the community.

No hepatitis B and C dual infection was detected in this study, a result which is similar to study findings done by Abou MA and Eltahir YM (2009), in Nyala teaching hospital.

The age of the blood donors ranged from 18-48 years with a mean of 28.5 (SD \pm 6.3) years. The mean age of HCV-positive donors was significantly higher than HBV-positive donors: 34.0 (SD \pm 6.6) versus 29.8 (SD \pm 4.7) years. Almost half of the blood donors belong to age group 18-27 years (49.75%). These findings are in line with reports from Nigeria by Olokoba et al. More than half of blood donors with positive HBsAg and positive

Table 1. Age groups and HBsAg and Anti-HCV positive cases

Age groups	No. of donors	HBsAg positive	Percentage (HBsAg)	Anti-HCV positive	Percentage (Anti-HCV)
18 - 27	199	13	6.5	02	1.0
28 - 37	166	21	12.7	08	4.8
38	35	03	8.6	04	11.0

Table 2. Residence of individuals with positive HBsAg and Anti-HCV

Type of infection	Total number	Residence	
		Rural	Urban
Hepatitis B	37	15 (41%)	22 (59%)
Hepatitis C	14	02 (14%)	12 (86%)

Table 3. Level of education of individuals with positive HBsAg and Anti-HCV

Type of infection	Total number	Level of education			
		Illiterate	Basic	Secondary	University
Hepatitis B	37	1	22	12	2
Hepatitis C	14	1	5	8	0

hepatitis C antibody are belonging to age group 28-37 years. Same age group (26-35 years) shows the highest prevalence of HBsAg and anti-HCV antibodies as reported by Afolabi AY et al., from Ibadan, Nigeria.

The level of education of two third (74.3%) of blood donors included in this study was basic or secondary level. More than half (57.75%) of blood donors were unskilled workers. Findings regarding the mean age of HCV and HBV-positive donors, level of education, and occupation blood donors, all these findings are similar results reported by Wasfi OAS and Sadek NA (2011) in Alexandria, Egypt and reports by Abdulaziz QA (2012), from Yemen.

More than half of blood donors came from rural areas (55%), and this can be explained by the fact that most patients who need blood came from rural areas and blood donors are usually family donors came from same areas.

CONCLUSION

This study shows that the sero-prevalence of hepatitis B is high and sero-prevalence of hepatitis C is rising among apparent healthy blood donors. To reduce the prevalence of hepatitis B infection, it will be necessary to educate people about risks factors for infection and benefits of immunization. In the absence of hepatitis c vaccine,

proper screening of blood and selection of donors will have a paramount importance to ensure a safe blood supply.

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