International Scholars Journals

African Journal of Internal Medicine ISSN 2326-7283 Vol. 8 (9), pp. 001-003, September, 2020. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Short Communication

Seroprevalence and epidemiological factors of hepatitis B virus (HBV) infection in Eastern Sudan

Tajeldin M. Abdallah[1], Mamoon H. Mohamed[2] and AbdelAziem A. Ali[3]*

[1]Department of Medicine, Faculty of Medicine, Kassala University, Sudan.
[2]Ministry of Health, Kassala State, Sudan.
[3]Department of Obstetrics and Gynecology, Faculty of Medicine, Kassala University, Sudan.

Accepted 14 June, 2020

This study was conducted at Kassala, Eastern Sudan between March and April 2011, to determine the seroprevalence and epidemiological risk factors of hepatitis B virus (HBV) infection among healthy people visited Kassala Teaching Hospital, eastern Sudan. 5 ml of blood were drawn from each subject, after immediate centrifugation, the sera were tested for HBsAg using Enzyme-Linked Immunosorbent Assay (ELISA). The seroprevalence revealed from ELISA was (8.2%). Among the epidemiological and risk factors, the seropositivity of HBV varied with residence, ethnicity and gender distribution (P value=0.01, 0.001 and 0.000, respectively). Substantial effort is needed to adopt the preventive measures, and HBV immunization should be strongly supported and sustained by the ministry of health in eastern Sudan.

Key words: Hepatitis B virus, infection, prevalence, epidemiology.

INTRODUCTION

Hepatitis B virus (HBV) is a major cause of chronic liver disease and it affects more than 3500 million people worldwide (Wright, 2006). HBV-related chronic liver disease results in more than one million annual deaths (Kane, 1996; WHO, 2007). The infection can be trans-mitted through various route, that is, sexual, oral, contact with infected blood or body fluid and vertical transmition (Simonsen et al., 1999). HBV infection is mainly occurred during early childhood or at birth in highly endemic area and the development of chronic disease occurs in approximately in 90, 30 and 6% of persons infected perinataly, in early childhood and after 5 years of age, respectively (WHO, 2004). Sub-Saharan Africa is considered as highly endemic area for HBV, the seropre-valence of the infection ranges between 8 to 11% among health workers (Braka et al., 2006), likewise recent stu-dies showed that the seroprevalence of HBV is 5.1 and 5.6% among blood donars in northern and central Sudan, respectively (Nagi et al., 2007; Elsheikh et al., 2007).

In Sudan there is high incidence rate of hepatocellur carcinoma (Omer et al., 2001), and there is no published data of seropositivity or epidemiology of HVB in eastern Sudan, thus, the current study is carried out to provide care givers and health planners with basic epidemiological data and seropositivity of HBV that may contribute the design of implantations necessary for effective intervention and preventive measures.

METHODS

This was a cross sectional study conducted at Kassala Teaching Hospital, eastern Sudan, during the period March – April 2011, to determine the seroprevalence of HBV and the possible risk factors among healthy people visited Kassala Teaching Hospital. After informed consent, all subjects presented to the hospital were approached to participate in the study. A structured questionnaire was used to gather the socio-demographic characteristics (age, sex, education, residence, ethnicity, marital status and occupation), and then the possible risk factors (history of blood transfusion, surgery, tattooing procedure, unprotected sexual activities, ect) were inquired. 5 ml of blood were drawn from each subject, after immediate centrifugation, the sera were tested for HBsAg using ELISA.

Data was entered in the computer database using Statistical Package for Social Sciences; SPSS (SPSS Inc., Chicago, IL, USA,

*Corresponding author. E-mail: abuzianab73@yahoo.com. Tel: +249912163820. Fax: +249411823501.

Abbreviations: HBV, Hepatitis B virus; **ELISA,** Enzyme-Linked Immunosorbent Assay; **HIV,** Human immunodeficiency virus; **DNA,** deoxyribonucleic acid.

Table 1. Epidemiological and risk factors among surveyed subjects for HBV infection, Kassala, Eastern Sudan.

Variable	HBV +ve N=31 (%)	HBV -ve N=345 (%)	*P*
Age (Standard deviation)	27.2 (11.4)	33 (7)	0.00
Illiteracy	19(61.3)	260(75.4)	0.07
Sex, male	28(90.3)	180(52.2)	0.00
Urban residence	22 (71)	172(49.9)	0.01
Ethnicity, Rashiada tribe	10(32.3)	34(9.9)	0.001
Marital status, unmarried	10(32.3)	90 (26. 1)	0.2
Tattooing	2(6.5)	8 (2.3)	0.1
Unprotected sex	28(90.3)	288(83.5)	0.2
Surgical procedures	2(6.5)	20(5.8)	0.5
Blood transfusion	3(9.7)	8 (2.3)	0.05
Jaundice	4 (12.9)	7 (2)	0.008

Data is shown as mean (SD) and number (%) as applicable.

version 13.0) and double checked before analysis. Analysis of variance was used to compare means and ×2 was used for categorical variables and P<0.05 considered significant. The study received the ethical clearance from the Health Research Board at Ministry of Health, Kassala, Eastern Sudan.

RESULTS

A total of 376 subjects enrolled in the study, their mean age±SD was 32.5±8.3 year, most of them (279\376, 74.2%) were illiterate, (208\376, 55.3%) male, (194\376, 51.6%) of urban residence, (276\376, 73.4%) married and out of these 376 (111\376, 29.5%) were non skill workers (117\376, 31.1%) employer and (148\376, 39.4%) housewife. 2.5% (11\376) of the surveyed subjects gave history of blood transfusion, 2.7% (10\376) tattooing, 5.9% (22\376) surgical procedures including dental maneuvers, 2.55 (11\376) history of jaundice and 84% (316\376) claimed that they have being practiced unprotected sex. The seroprevalence revealed was (8.2%); distribution by ethnicity showed 44 and 332 from Rashiada and other tribes, respectively, and likewise the seroprevalence was 22.7% (10\44) and 6.3% (21\332) among Rashiada and other ethnic groups, respectively. All of the subjects were not aware of their condition. There was statistical significant difference in residence, gender and ethnicity between seropositive and seronegative subjects (Table 1).

DISCUSSION

This is the first study to investigate the seropositivity of HBV in eastern Sudan and it is higher than other reports from western and Northern Sudan (Abou et al., 2009; Nagi et al., 2007; Elsheikh et al., 2007), about 8.2% of the surveyed persons had been found to be positive for HBV and interestingly this is lower than the prevalence in other African countries or even in South Sudan, however many factors might make this comparison little bit difficult because our cases were lower, our study was a facility base and some of these African studies detected the presence of the deoxyribonucleic acid (DNA) rather than the antibodies (Wuirie et al., 2005; McCarthy et al., 1994), Moreover there is a prominent diversity in culture, religion and ethnicity between eastern and South Sudan which might influence the results. Ethnicity had been reported as independent risk factor for HBV in recent report in neighboring Uganda (Nakwagala and Kagimu, 2002) and the association between ethnicity and HBV infection in our study might be explained by the specific culture of the Rashiada tribe, one of the influential tribe in eastern Sudan and among them there was high prevalence rate of HBV when compared with other ethnic group (P value 0.001), since they practice early marriage and specific type of taboos. Depending on the history and clinical assessment no obvious risk factor appeared in our study and this is inconsistent with other reports detected unprotected sexual activities, tattooing and parental injection as predisposing factors in Gezira state, Central Sudan, and Nyala, Western Sudan, however larger proportion of sero-positive subjects gave past medical history of jaundice, moreover our present results showed the HBV infection is more common among male which is consistent with recent reports observed in sub-Saharan African countries (Burnett et al., 2005).

In conclusion these results described the seropositivity of HBV in eastern Sudan for the first time and it is higher than other reports in Sudan apart from South Sudan. It highlights its association with certain ethnic group (Rashiada tribe) and it is more common in men than women, however the study is of small size; facility based and did not investigate the Human immunodeficiency virus (HIV) and HCV co-infections. Preventive measures should be delivered to the community through the different media and HBV immunization should be strongly supported and sustained by the Ministry of Health in Eastern Sudan and in particular among Rashiada tribe.

ACKNOWLEDGMENT

Authors are very grateful to the persons who participated in the study and to all the staff of Kassala Teaching Hospital.

REFERENCES

Abou M, Altahir Y, Ali A (2009). Seroprevalence of Hepatitis B virus and Hepatitis C virus among blood donors in Nyala, South Darfur, Sudan. Virol. J., 6: 146.

Braka F, Nanyunja M, Makumbi I, Mbabzi W, Kasasa S, Lewis RF (2006). Hepatitis B infection among health workers in Uganda: Evidence of need for health worker protection. Vaccine, 24: 6930-6937.

Burrnett RJ, Francois G, Kew MC, Leroux-Roels G, Meheus A, Hoosen AA, Mphalele MJ (2005). Hepatitis B virus and human immunodeficiency virus co-infection in sub Saharan Africa: a call for further investigation. Liver int., 25: 201-213.

Elsheikh RM, Daak AA, Elshiekh MA, Karsany MS, Adam I (2007). Hepatitis b virus and hepatitis C virus in pregnant Sudanese women. Virol. J., 4: 104.

Kane MA (1996). Global status of hepatitis B immunization. Lancet, 348: 696.

McCarthy MC, El-Tigani A, Khalid IO, Hyams KC (1994). Hepatitis B and C in Juba, Southern Sudan : results of serosurvey. Trans. R. Soc. Trop. Med. Hyg., 88: 543-536.

Nagi AM, Altyeb HA, Ahmed AM (2007). Seroprevalence of Hepatitis B and C Viral Infections among blood donors in Shendi, River Nile State, Sudan. Res. J. Med. Med. Sci., 2: 122-126.

Nakwagala FN, Kagimu MM (2002). Hepatitis B virus and HIV infections among patients in Mulago Hospital. East Afr. Med. J., 79(2): 68-72.

Omer RE, Veer Van't P, Kadaru AM, Kampman E, Elkhidir IM, Fedail SS, Kok fJ (2001). The role of hepatitis B and hepatitis C viral infections in incidence of hepatocellular carcinoma in Sudan. Trans. R. Soc. Trop. Med. Hyg., 95: 487-491.

Simonsen L, Kane A, Lloyd J, Zaffran M, Kane M (1999). Unsafe injections in the developing world and transmission of bloodborne pathogens: a review. Bull. World Health Organ., 77(10): 789-800.

World Heath Organization (2007). Department of Communicable Disease Surveillance and Response, author; Hepatitis B. WHO\CDS\LYO\2002.2.www.who.int\csr\disease\hepatitis\Hepatitis whocdscsrlyo2002 2.pdf.

World Health Organization (2004). Hepatitis B vaccine. 79. Vol. 28. WER; [29 June 2007]. Pp. 255-263. WHO position paper.www.who.int\wer\2004\en\wer7928.pdf.

Wright TL (2006). Introduction to chronic hepatitis B infection. Am. J. Gastroenterol., 101(Suppl 1): S1-6.

Wuirie IM, Wuirie AT, Gevao SM (2005). Sero-prevalence of hepatitis B virus among middle to high socio-economic antenatal population in Sierra Leone. West Afr. J. Med., 24: 18-20.