Kathmandu University Medical Journal (2005) Vol. 3, No. 3, Issue 11, 239-242

Original article

Seroprevalene of hepatitis B virus among Bhutanese refugees residing in Nepal

Shah BK, Bhattacharya S, Parija SC
BP Koirala Institute of Health Sciences Dharan, Nepal

Abstract
The carrier rate of HBsAg is about 6% in Bhutan and 1% in Nepal. Since outbreaks of viral hepatitis are also known, its high prevalence in a migrated community, if any, maybe a potential threat to the local people. The present study was conducted in Beldangi 2 Extension Camp, a Bhutanese refugee camp located in eastern Nepal to know the HBsAg carrier rate among the refugees. With the help of semi-structured questionnaires, 500 volunteers enrolled were interviewed for the risk factors for HBV transmission. Blood samples of 467 subjects were tested for HBsAg by an immunoassay based on immunochromatographic sandwich principle. Out of 467 samples 4 were positive for HBsAg a prevalence rate of 0.9%. HBsAg carrier rate was found to be low in Bhutanese refugees. From the questionnaires it was also found that they were not engaged in any practice that could increase the chances of HBV transmission. The study shows that the Bhutanese refugees in Nepal in this geographical area are not a threat to the local people as far as HBV transmission is concerned.

Key words: HBV, Bhutanese refugees, Nepal

Hepatitis B virus infection is a global problem. The magnitude of the problem is more severe in developing countries because of its high prevalence and sequel like chronic hepatitis, cirrhosis and hepatocellular carcinoma. Hepatitis B causes more fatalities than any other vaccine preventable diseases and is responsible for more than a million deaths a year. There are approximately 350 million people worldwide who are chronic hepatitis B carriers. The presence of HBsAg in blood denotes that an individual is both infected and may be infectious. Striking difference in HBsAg carriage rates varying from 0.1% to 20% occurs in different populations and geographical areas of the world (WHO 1997). In a recent survey in Bhutan Hepatitis B surface antigen (HBsAg) was found in 5.9% of the sample from the general population (5.2% in children, 5.6% in young people and 6.3% in adults) and in 5.4% of the pregnant women (Da Villa et al 1997).

HBV infection is common in Nepal but the HBsAg carrier rate is much lower than reported from other Asian countries. HBV infections are not active in eastern Nepal (Rai et al 1994). Seroepidemiology studies of Hepatitis B in Nepal has shown HBsAg in 0.9 percent of the population (1.5 per cent in male and 0.5 per cent in female) (Shrestha 1990). In a recent ten-year serological survey of hepatitis B virus infections in Nepal showed 1.1% HBsAg positivity (Sawayama et al 1999). The results showed that Nepal fell in WHO category of intermediate endemicity zone for hepatitis B infection (WHO). The percent positivity of HBsAg was found to increase steadily from Eastern (2%) to Far Western (6.2%) development regions. (Manandhar et al 2000).

Viral hepatitis is a known problem in Asian refugees (Skinhoj et al 1981; Poss 1987). Nepal is a south Asian nation and lies in close proximity to Bhutan. Political refugees are an important risk group for hepatitis B. In one study 12.4% of Asian refugees were positive for HBsAg (Vranckx and Coenjarts 1989). It seems appropriate therefore to test all persons wishing to take refuge in a foreign country for the presence of HBV to offer the carriers of these infections adequate counseling (Vranckx and Coenjarts 1989) and protect the indigenous population from risk of transmission.

Materials and methods

This prospective sero-epidemiological study was carried out between March 1998 to July 1998 in Beldangi-2 Extension Camp. This is one of the seven Bhutanese refugee camps in Nepal. Five hundred volunteers, irrespective of age and sex were enrolled in this study.

Corresponding
Dr. Binaya Kumar Shah, Currently resident
Long island college hospital,
Brooklyn, NY, USA,
94 Amity Street, Apt. # 7B
Brooklyn, NY 11201

With the help of semi-structured questionnaire the study population was interviewed to find out their name, age, sex, ethnicity and exposure to risk factors for HBV transmissions.

Three to 5ml of blood was collected by venepuncture from each case aseptically with disposable syringes. Informed oral consent was obtained from all individuals included in the study. The sera were separated in the camp, transported to BPKIHS in cold box and stored at -20˚C until used. The sera were then analyzed for HBsAg by immunoassay based on immunochrdomatographic sandwich principle using Fast Forward HBsAg Rapid Card Test-kits (obtained from Dr. Reddy's laboratories, Diagnostics Division, India) as per manufacturer's instructions.

Statistical analysis

The results were statistically analyzed using online statistical calculators available on the Internet, and by the Microsoft Excel® software program. The variation of the HBsAg positivity rate among total number of males (1/204), total number of females (3/263), and the total number of samples studied (4/467) were analyzed by the chi square test. The standard deviation and the 95% confidence interval of the positivity rates in each group were calculated. A correlation coefficient was determined between the sample size and the HBsAg positivity rate. One-way ANOVA was performed to find out the significance of variation in the HBsAg positivity rates in different age groups in males, females, and males and females combined.

Results

Of the 500 subjects enrolled, sera of 33 individuals could not be tested for HBsAg due to inadequate amount of sera and/or erasure of sample number. Our study population comprised of 204 males and 263 females, a total of 467 subjects (Table 1 and 2). The ethnic composition of the study population was Indo–Aryan 61.9% and Mongoloid 38.1%. Known risk factors for HBV transmission such as multiple sex partners and previous history of blood transfusions were not reported in anyone (Table 2). Intravenous drug abuse (IVDA) was unknown to this community. Only 1% (5/500) of the study population had tattoo marks but the practice of nose and ear piercing was quite common especially among females.

Four out of 467 [0.9%; S.D. (standard deviation) = 2.3; 95% CI (confidence interval) = 0.7-1.1%] sera tested positive for HBsAg (Table 3). Females showed higher carrier rate (1.1%; S.D.= 2.5; 95% CI= 0.8-1.4%) than males (0.5%; S.D.= 3.7; 95% CI= 0-1%). There was no statistically significant difference in the sero-positivity rates between males and females (p= 0.99; $\chi 2$= 0.57245; Chi-square test). There was a positive correlation between the number of samples and the positivity rates in males and females (correlation coefficient= 1). There was no significant difference in the HBsAg positivity among males, females, and males and females combined when the different age groups were compared for HBsAg distribution (p= 0.8795; one-way ANOVA). All the HBsAg positive individuals were married. Age distribution of the HBsAg carriers is shown in the table. Only 1 out of 4 HBsAg positive individuals gave previous history of jaundice.

Table 1: Demographic profile of the Bhutanese refugees included in the study.

Age (Years)	Married	Unmarried
0-10	0	173
11-20	4	95
21-30	61	13
Above 31	0	121

Table 2: Risk factors associated with HBV infection in the study population

Risk factor	Yes	No
Tattoo	5	462
Nose/Ear Pierced	402	65
Multiple Sex Partners	0	467
IVDA	0	467
H/o Blood Transfusion	0	467
Recent multiple injections	0	467

Table 3: HBsAg carriers by demographic factors

AGE YEAR	HBsAg +/M	HbsAg +/F	HbsAg +/T
<=10	0/91 (0)	0/82 (0)	0/173 (0)
11-20	0/42 (0)	0/57 (0)	0/99 (0)
21-30	0/22 (0)	1/52 (1.9)	1/74 (1.4)
31-40	0/21 (0)	0/32 (0)	0/53 (0)
41-50	1/11 (9.1)	1/23 (4.3)	2/34 (5.9)
>50	0/17 (0)	1/17 (5.9)	1/34 (2.9)
Total	1/204 (0.5)	3/263 (1.1)	4/467 (0.9)

+= positive; M= male; F= female; T= total

Discussion

Surveillance of the health status of Bhutanese refugees residing in Nepal has been surveyed by several international organizations including the CDC (CDC 1992; MMWR 1993). Simple, sustainable disease surveillance in refugee populations is essential. These data can be used to direct community-based public health interventions to control common infectious diseases and reduce high mortality rates among refugees while placing a minimal burden on health workers (Marfin et al 1994).

Viral hepatitis is a known problem in Asian refugees (Skinhoj et al 1981; Poss 1987). The Bhutanese refugees called Lhotsampa are ethnically Nepali and are the majority group in southern Bhutan. The population of Beldangi 2 Extension Camp is 9875. In this study, the prevalence of HBsAg carrier rate among Bhutanese refugees is 0.9%, a figure very close to the prevalence rate in Nepal but much lower than that in Bhutan. This may be due to the fact that the refugees are of Nepali ethnic origin and follow similar Nepali culture and life style. The lower prevalence may be attributed to relatively less exposure to the risk factors for HBV transmission. Our finding that the HBsAg carrier rate is nil among children, is consistent with other studies done in areas with low prevalence rate. All the HBsAg positive individuals were married. This also reflects age distribution of the carriers. Contrary to other studies the higher prevalence of HBsAg carrier rate among females (1.1%) than males (0.5%) may be due to higher infection rate in them, probably due to the common practice of nose/ear piercing. Similarly, our findings that only 1 out of 4individuals had jaundice is similar to other studies in that HBsAg carrier state is more likely to develop in anicteric infection than in icteric infection.

Hepatitis B virus (HBV) infection is prevalent among Southeast Asian refugees. HBV infection causes acute and chronic hepatitis and cirrhosis, and is associated with primary hepatocellular carcinoma. Health care providers must be able to make an accurate diagnosis of acute or chronic HBV infection when performing medical evaluations of Southeast Asian refugees. It is essential that appropriate follow-up care and teaching regarding infection control be provided. A protocol that aids interpretation of hepatitis B screening tests is essential (Poss 1987).

Conclusion

The HBsAg carrier rate among Bhutanese refugees (0.9%) is comparable to the Nepalese population, but much lower compared to the seroprevalence of HBsAg in Bhutan. The study shows that the Bhutanese refugees in Nepal are not a threat to the local people of Nepal as far as HBV infection is concerned.

Acknowledgements

We want to express our sincere thanks to the employees of Save the Children, UK (Birtamod) for help during collection of samples. This study was supported by Nepal Health Research Council and Save the Children Fund, UK.

Reference

1. WHO (1997) Viral Hepatitis. In: *Dominant Communicable Diseases; Southeast Asia region*.
2. Da Villa G, Andjaparidze A, Cauletti M, Franco E, Roggendorf M, Sepe A, Zaratti L (1997) Viral hepatitis in the Bhutanese population: preliminary results of a seroepidemiological investigation. *Researches in Virology* 148(2): 115-7.
3. Rai SK, Shibata H, Satoh M, Murakoso K, Sumi K, Kubo T, Matsuoka A. Seroprevalence of hepatitis B and C viruses in eastern Nepal (1994) *Kansenshogaku Zasshi* 68(12): 1492-7.
4. Shrestha SM. Seroepidemiology of hepatitis B in Nepal (1990) *Journal of Communicable Diseases* 22(1): 27-32.

5. Sawayama Y, Hayashi J, Ariyama I, Furusyo N, Kawasaki T, Kawasaki M, Itoh K, Acharya GP, Kashiwagi S. A ten-year serological survey of hepatitis A, B and C viruses infections in Nepal (1999) Journal of Epidemiology 9(5): 350-4.
6. Manandhar K, Shrestha B. Prevalence of HBV infection among the healthy Nepalese males: a serological survey (2000) Journal of Epidemiology 10(6): 410-3.
7. Vranckx R, Coenjarts A. Political refugees: an important risk group for AIDS and hepatitis B? (1989) Archives Belgium 47(1-4): 34-7.
8. Web Chi Square calculator. http://www.georgetown.edu/cball/webtools/web_chi.html
9. VassarStats. One-Way Analysis of Variance for Correlated Samples: k=3. http://faculty.vassar.edu/lowry/corr3.html
10. From the Centers for Disease Control and Prevention. International notes: surveillance of health status of Bhutanese refugees--Nepal, 1992 (1993) Journal of American Medical Association 269(7): 846, 850.
11. Surveillance of the health status of Bhutanese refugees--Nepal, 1992. (1993) Morbidity & Mortality Weekly Report 42(1): 14-7.
12. Marfin AA, Moore J, Collins C, Biellik R, Kattel U, Toole MJ, Moore PS. Infectious disease surveillance during emergency relief to Bhutanese refugees in Nepal (1994) Journal of American Medical Association 272(5): 377-81.
13. Skinhoj P, Aldershvile J, Black F, Kjersem H, Kryger P, Mathiesen L. Viral hepatitis in southeast Asian refugees (1981) Journal of Medical Virology 7(2): 149-55.
14. Poss JE. Protocol for hepatitis screening and follow-up of Southeast Asian refugees (1987) Nurse Practical 12(7): 8-10, 15.