

Report from the Tropics

Nigerian butchers and hepatitis B virus infection

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ABSTRACT

Various target groups have been identified in Nigeria for studying the prevalence of hepatitis B virus infection; however there is no information on its prevalence among workers in slaughter houses. This study determined the seroprevalence of hepatitis B virus infection in Nigerian butchers at Ibadan, and comprised 360 healthy Nigerian adult subjects (180 butchers, 180 traders as controls) selected by multistage stratified sampling. A questionnaire was used to collect relevant information and included points about risk behaviour. ELISA was used to detect the hepatitis B surface antigen in the serum; the seroprevalence rate in butchers and controls was 9.4% and 3.3%, respectively ($p < 0.05$). Risk behaviour was seen more commonly in butchers than in controls. The presence of hepatitis B surface antigen in the serum was not related to the duration of occupational exposure or the number of partners. In summary, butchers comprise a high-risk occupational group for exposure to hepatitis B virus infection. We conclude that routine screening for parenterally acquired infections in this group is thus necessary in order to identify those who will require treatment and immunisation, especially against hepatitis B virus infection.

Key words: hepatitis B virus infection, Nigeria, butchers.

INTRODUCTION

Hepatitis B virus (HBV) is an established aetiological agent in hepatocellular carcinoma,¹ and is a major cancer killer in Sub-Saharan Africa. The incidence of HBV infection is increasing even in developed countries.² It is well-known that viral infections may sustain themselves in certain reservoirs; HBV has been found in gorillas, chimpanzees and cows.^{3,4} Butchers may be subject to knife-cuts and blood-letting, with attendant risk of transmission of blood-borne infection to colleagues with whom knives and other sharp objects are shared.⁴ This may account for some of the reported outbreaks of HBV infection among butchers.^{5,6} The high prevalence of HBV in Nigeria, therefore calls for immediate identification of at risk groups for targeted hepatitis B immunisation while working towards universal immunisation.⁷ No study in Nigeria has

focused on the part played by butchers in disseminating HBV infection. The objective of this study was to investigate the prevalence of HBV among butchers and estimate their contribution towards spreading this virus.

METHODS

This prospective cross-sectional study comprised 180 apparently healthy butchers from randomly chosen markets and meat selling points in Ibadan, Nigeria. Ethical approval was obtained from the Joint UI/UCH Ethical Review Board. 180 controls were randomly selected and included apparently healthy food stuff traders from the same markets.

Questionnaires were administered to each study subject to collect information on demographic features and known risk factors for transmission of hepatitis B. The inclusion criterion was a working history of at least 7 weeks at the market, while the exclusion criteria included history of blood or blood product transfusion, past history of genital ulcer, intravenous drug abuse or indiscriminate injections, hepatitis B immunisation, history of jaundice prior to commencement of work at the market and close contact with jaundiced persons. Informed consent was obtained from all subjects. HBV infection was detected by assay of the hepatitis B surface antigen (HBsAg) using an ELISA Kit (Human Gesellschaft für Biochemica und Diagnostica MBH Germany).

Epi Info Version 6.0 statistical software was used to calculate the odds ratio and a p value of ≤ 0.05 was considered significant.

RESULTS

The test group comprised 171 male and 9 female butchers and the control group 141 male and 39 female adults with respective male to female ratios of 19:1 and 3.7:1.

The average age of the test group was 36.3 ± 13.2 years and they had spent an average of 18.4 ± 13.8 years as butchers; the corresponding values for the controls were 41.2 ± 16 years and 12.2 ± 9.5 years, respectively. 76.7% and 69.9% of the butchers and controls were married respectively.

Various HBV transmission risk practices were significantly more common amongst the butchers than the controls ($p < 0.05$), excepting the following factors: improper wound dressing, homosexuality, condom use and alcohol intake (Table 1).

HBsAg was detected in 9.4% of the butchers compared with 3.3% of the controls ($p = 0.02$). Male butchers had a higher prevalence of HBsAg in serum when compared with male controls ($p = 0.04$). However, amongst the females, seropositivity was only seen in the control group (2.6%), not in the test group (0%) (Table 2). In the test group HBs antigenaemia was highest in the 20-29 year old age group (10.7%), followed very closely by the 30-39 (10.6%) and 50-59 year groups (10%), while amongst the controls the seroprevalence was much higher in the 50-59 year age group (10.5%) (Table 3).

The difference in HBsAg seropositivity rates between monogamous and polygamous individuals in both groups taken together was not statistically significant ($p > 0.05$). Similarly, the duration of occupational exposure by butchers did not

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correlate with the HBsAg seropositivity rate ($p > 0.05$). Butchers tended to have more sexual partners relative to the control groups, 33.9% and 16.1% respectively had 2 or more partners ($p < 0.05$, Table 4).

Table 1: Distribution of risk factors for HBV infection among adult Nigerian butchers and controls

Risk factors	180 Butchers % positive	180 Controls % positive	p-value
Occupational practices			
Hand cuts	81.7	5	<0.05
Sharing of knives	67.2	1.7	<0.05
Sexual practices			
Casual sex	40.6	12.2	<0.05
Use of condom	17.2	8.3	0.62
Homosexuality	3.9	3.9	0.9
Social practices			
Sharing of razor	62.2	73.9	<0.05
Sharing of toothbrush	34.4	17.2	<0.05
Use of alcohol	28.3	23.9	0.39
Treatment practices			
Improper wound dressing	95	88.9	0.06
Blood donation	32.2	8.9	<0.05
Sucking of blood orally from hand injuries	28.3	12.2	<0.05
Injection by chemist	15.5	3.9	<0.05
Surgery	13.3	5.6	<0.05
Self injection	2.2	0	<0.05
Past medical history			
Yellowness of the eyes	16.7	6.1	<0.05

Table 2: HBsAg seropositivity and gender amongst adult Nigerian butchers and controls

Sex (number)	% HBsAg+ve	Odds Ratio	p-value
Male			
Butchers(171)	9.9		
Control(140)	3.6		
Total(311)	7.1	2.8	0.04
Female			
Butchers(9)	0		
Control(37)	2.6		
Total(46)	2.1		
Butchers(180)	9.4		
Control(180)	3.3	3.02	0.02
Total(360)	6.4	(1.09-8.82)	

Table 3: HBsAg seroprevalence and age distribution (years) among adult Nigerian butchers and controls

Age group	Butchers		Controls	
	Number	% HBsAg+ve	Number	% HBsAg+ve
<20	6	0	10	0
20-29	56	10.7	43	0
30-39	47	10.6	36	5.6
40-49	35	8.6	40	0
50-59	30	10	38	10.5
60-69	3	0	9	0
Total	180	9.4	180	3.3

Table 4: Number of spouses among adult Nigerian Butchers and Controls

No of Spouses	Butchers (%)	Controls (%)
Not married	22.8	26.7
1	40	56.1
2 - 5	33.9	16.1
Not specified	3.3	1.1
Total	100	100

DISCUSSION

Most studies on HBV infection amongst possible high risk groups in tropical countries such as Nigeria are hospital-based and tend to show very high prevalence rates amongst control groups.^{10,12} A seroprevalence of 9.4% observed in our study was significantly higher when compared with the controls ($p=0.02$), yet relatively lower than that derived from hospital studies.^{10,14,16} We were successful in eliminating this bias as ours was a community-based study. It is remarkable however that the 9.4% is higher than the 8% cut-off value stipulated by the World Health Organisation for HBV hyper-endemic regions. It is therefore clear from our study that butchers constitute a high risk group and reservoir of HBV infection; this group should thus be targeted when introducing control measures to reduce the transmission of infection. In addition, butchers may transmit the infection to their animals.³

Previous studies on HBV infection in other high risk occupational groups showed a higher prevalence than ours did. A prevalence of 25.7% was observed among surgeons,¹⁴ 36% among doctors¹⁵ and 21% among blood donors¹⁶ in urban centres in Nigeria.

The finding of higher seroprevalence in males compared with females is in keeping with the conclusion drawn by Chui et al that there is a physiologic mechanism for increased vulnerability of men to HBV infection.¹⁷ They also attempted to explain the higher prevalence of hepatocellular carcinoma in men.¹⁸

From a survey of their practices, improper wound dressing, hand cuts, sharing of knives and razors dominated the list of risk factors for acquisition of HBV infection. This risk behaviour may explain the higher prevalence of HBV infection amongst the butchers. It also suggests that diverse parenteral routes may be responsible for the spread of HBV infection in Nigeria. Health education and information would thus play a major part in preventing this form of transmission. A higher rate of infection amongst young adults may reflect greater sexual activity amongst the youth, as has also been seen in patients with HIV infection.¹⁹ Although, HIV infection was not tested for, this infection may also occur at a higher rate among the butchers. Further studies on parenterally transmitted infections, including HBV, hepatitis C virus and HIV infection are required from different locales in Nigeria to determine the contribution of the slaughter house to the spread of these infections in the nation.

In summary, this study has shown that butchers from Ibadan, Nigeria have a higher prevalence rate of HBV infection and show high-risk behaviour, which may lead to the spread of infection in the community. Hence, slaughter-houses in Nigeria and possibly in other developing countries seem to serve as

reservoirs for HBV infection. This calls for urgent screening of all butchers in different nations especially Nigeria for all parenterally transmissible infections in order to identify those that will require treatment and immunisation particularly against HBV infection.

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