HEPATITIS B MARKERS IN HETEROSEXUALS INVOLVED IN PROMISCUOUS SEXUAL ACTIVITY

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SUMMARY

179 heterosexuals, selected for VDRL testing on the basis of a history of involvement in promiscuous sexual activity, mainly prostitution, had their serum also tested for hepatitis B infection markers, HBsAg, HBeAg and anti-HBe. 51 samples (29%) were found to be positive for at least one of the three markers, at levels higher than the already high levels in voluntary random blood donors in Malaysia.

INTRODUCTION

Many studies have shown a strong relationship between sexual activity and infection with hepatitis B virus, in particular with prostitution and homosexuality.[1,2,3,4,5,6] An increased risk of infection with hepatitis A and B virus was found in men with a history of syphilis.[7]

The current study is directed at a heterosexual population to determine the prevalence of hepatitis B surface antigen (HBsAg), hepatitis B e antigen (HBeAg) and antibody to the e antigen (Anti-HBe) in patients whose history of heterosexual sexual activity warranted a Venereal Disease Research Laboratories (VDRL) test for syphilis. The prevalence of these markers is compared with that of an already high incidence in the ordinary population in Kuala Lumpur.[8,9] The three markers were chosen because they are serologic signs of ongoing hepatitis B infection. The presence of both HBsAg and HBeAg in blood indicate early acute hepatitis or chronic carrier state with a likelihood of high infectivity[10] whereas the presence of anti-HBe is associated with low infectively.

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METHODS

Patients

179 blood samples were taken aseptically at three branch clinics of an urban general practice group from heterosexual patients giving a history of involvement in promiscuous sexual activity, mainly prostitution. These patients were selected for VDRL testing on the basis of this history and serum was sent for testing for hepatitis B markers. 157 patients were male and 22 were females. Of the females, 12 were prostitutes.

Tests

The serum samples were tested with commercial RIA reagents supplied by Abbot Laboratories: Austria I 125 for HBsAg and Abbot-HBe for HBeAg

TABLE I
DISTRIBUTION OF HBsAG, HBeAG AND ANTI–HBe IN SEXUALLY PROMISCUOUS PATIENTS AND IN PROSTITUTES

Group	HBsAg	HBeAg	Anti-HBe
Sexually promiscuous (n – 179)	19 (11%)	10 (6%)	31 (17%)
Prostitutes (n – 12)	1 (8%)	1 (8%)	2 (17%)

TABLE II
RELATIONSHIP BETWEEN HBeAG, ANTI–HBe AND HBsAG IN THE BLOOD OF SEXUALLY PROMISCUOUS PATIENTS

HBV Markers	Sexually promiscuous (n – 179)
HBsAg only	10 (6%)
HBsAg + HBeAg only	5 (3%)
HBsAg + Anti–HBe only	4 (2%)
HBeAg and Anti–HBe only	0
HBeAg only	5 (3%)

TABLE III
AGE AND SEX DISTRIBUTION OF PATIENTS POSITIVE FOR HBsAG, HBsAG or ANTI–HBe

Age group (years)	Total no. assayed	Total no. positive	Male		Female	
			No. assayed	No. positive	No. assayed	No. positive
Under 20	7	2 (29%)	2	0	5	2 (40%)
20 – 29	90	23 (26%)	80	21 (26%)	10	2 (20%)
30 – 39	46	15 (33%)	42	13 (31%)	4	2 (50%)
40 – 49	20	6 (30%)	17	5 (29%)	3	1 (33%)
Above 49	9	1 (11%)	9	1 (11%)	0	0
Age not recorded	7	4 (57%)	7	4 (57%)	0	0
Total	179	51 (29%)	157	44 (28%)	22	7 (32%)

TABLE IV
PREVALENCE OF HBsAG, HBeAG OR ANTI–HBe IN SAMPLES ACCORDING TO PRESENTING CLINICAL SYMPTOMS

Presenting Complaint	Male		Female		Total No. Assayed
	No. Assayed	No. positive for HBsAg, HbeAg or Anti-HBe	No. Assayed.	No. Positive for HBsAg, HbeAg, or Anti-HBe	
Abnormal Discharge	25	10 (40%)	5	2 (40%)	30
Ulcer	20	5 (25%)	0	0	20
Other physical complaints	55	16 (29%)	8	3 (38%)	63
Blood test with no current complaint	57	13 (23%)	9	2 (22%)	66

and Anti-HBe. Radioactive counting was done on the Packard Autogamma Scintillation Spectrometer Model 5110. The samples were processed as described.[8] VDRL was done with VDRL Carbon Antigen prepared by Wellcome Reagents Ltd.(UK).

RESULTS

Out of a total of 179 samples, 51 samples were positive for either one of the three hepatitis B markers. The results are shown in Table I. Positive samples for markers are significantly higher than those obtained from the random blood donors ($p < 0.01$). Of the twelve prostitutes, four (33%) were positive for one of the three markers. The relationship between HBsAg, HBeAg and anti-HBe in the blood of these patients is shown in Table II. It is interesting to note that five patients (3%) are positive for HBeAg only. The incidence is much higher in the two groups than in the random blood donors. No correlation can be made with regard to age (Table III) or with presenting symptoms (Table IV).

DISCUSSION

Several workers have reported the relationship between sexual practices and infection with the hepatitis B virus [2,3,11] and that hepatitis B can be transmitted sexually. The risk of infection increases considerably with the number of sexual partners.[12]

In Malaysia there is a high incidence of hepatitis B markers in the general population.[8] The incidence of HBsAg, HBeAg and anti-HBe in voluntary random blood donors are 5.5%, 7.1% and 15.1% respectively.[8,13] As seen in Table I, the prevalence of HBsAg, HBeAg and anti-HBe is higher in both the sexually promiscuous group and in prostitutes than in the random blood donors. This indicates that sexually promiscuous individuals run a higher risk of being infected by the hepatitis B virus than the already high incidence of the ordinary population in Kuala Lumpur. However, our study found no correlation between the age of the individuals (Table III), and no presenting symptom was significantly associated with the presence of the markers (Table IV). Our study confirms the view that hepatitis B is a sexually transmitted disease. This group of individuals represent a pool that contributes to the level of HBV infection in the community. Because of this possibility, we recommend that sexually promiscuous individuals who are diagnosed as having a sexually transmitted disease be tested for the presence of markers of HBV; persons found to be seronegative should be offered HBV vaccine.

REFERENCES

[1] Frosner C G, Bucholz H M, Gerth H J. Prevalence of hepatitis B antibody in prostitutes *Am J Epidemiol* 1975; **102**: 241-250.

[2] Fulford K W M, Dane D S, Catterall R D, Woof R, Denning J V. Australia antigen and antibody among patients attending a clinic for sexually transmitted diseases. *Lancet* 1973; **I**: 1470-1473.

[3] Heathcote J, Sherlock S. Spread of acute type B hepatitis in London. *Lancet* 1973; 1468-1470;

[4] Papevangelou G, Trichopoluas D Kremastenon, T. Prevalence of hepatitis antigen and antibody in prostitutes. *Br Med J* 1974; **2**: 256-258.

[5] Szmuness W, Much M I, Prince A M, Hoffnagle J H, Cherubin C E, Haeley E J, Block G H. On the role of sexual behaviour in the spread of hepatitis B infection. *Ann Intern Med* 1975; 83: 489-495.

[6] Stringer H C W, Smith E R, Steward A G. The virus of hepatitis B, a new dimension in the diagnosis of sexually transmitted disease. *NZ Med J* 1978; 87: 44-47.

[7] Kryger P, Pedersen N S, Mathisen I, Neilsen J C, Increased risk of infection with hepatitis A and hepatitis B viruses in men with a history of syphilis-relation to sexual contacts. *J Infect Dis* 1982; **145**: 23-26.

[8] Ton S H, Lopez C G, Hasnah H. Prevalence of anti-HBc in Malaysian male blood donors and its correlation with DNA polymerase activity. *Southeast Asian J Trop Med Pub Hlth* 1979; **10**: 1-6.

[9] Ton S H, Lopez C G, Markers of hepatitis B infection in the Malaysian population. *Med J Nat University Malaysia* 1981; **3**: 13-17.

[10] Mushahwar I I, Dienstag J L, Polesky H F, Mc Garth L C, Decker R H, Overby L R. Interpretation of various serological profiles of hepatitis B virus Infection. *Am J Clin Pathol* 1981; 76: 773-777.

[11]Jefferies D J, James W H, Jefferies F J G, Australia (hepatitis associated) antigen in patients attending a venereal disease clinic. *Br Med J* 1973; 2: 455-456.

[12]Lim K S, Tan W V, Fulford K W M, Catterall R D, Briggs M, Dane D S. Role of sexual and non-sexual practices in the transmission of hepatitis B. *Br J Vener Dis* 1977; 53: 190-192.

[13]Ton S H, Lopez C G, Noriah R. HBeAg and Anti-HBe in Malaysian population and in Malaysian prisoners. *Southeast Asian J Trop Med Pub Hlth* 1983; 14: 252-254.