

Hepatitis B Antigen and Antibody in "Sexually Active" Thai and American Populations

Principal Investigators: Robert McNair Scott, MAJ, MC
 William H. Bancroft, LTC, MC
 Robert J. Schneider, CPT, MSC
 Michael W. Benenson, MAJ, MC
 Rapin Snitbhan, M.D.

OBJECTIVE: To determine the prevalence of hepatitis B antigen (HBsAg) and antibody (anti-HBs) in "Sexually active" Thai and American populations.

BACKGROUND: Hersh et al. (1) have reported transmission of hepatitis B virus (HBV) between hepatitis B antigenemic males and their sexual contacts. Further, HBsAg has been reported to be more prevalent among sexual contacts of antigen carriers than among the general population in which they reside. (2, 3) This suggests that HBV may be sexually transmitted. If this hypothesis is true, then in Thailand, with a high prevalence of HBsAg carriers (6-9%) in the general population, a group of sexually promiscuous women should have more contact with HBV and should therefore have a greater prevalence of HBsAg and/or anti-HBs than a similar group of monogamous women. Further, if the sexually active women consort with a population of susceptible individuals, such as a group of United States servicemen, sexual transmission should occur and a proportion of servicemen should develop either HBsAg, with or without clinical symptomatology, or anti-HBs. This study was designed to determine the point prevalence of HBsAg and anti-HBs in a population of promiscuous Thai women termed "service girls", and compare them with other groups of Thai women of similar age. Also, in association with another study (SEATO Medical Research Laboratory Annual Report, 1973-1974), United States servicemen known to have numerous sexual contacts with these women will be followed longitudinally for signs of the development of hepatitis B infection over a period of twelve months after entering Thailand.

DESCRIPTION: Populations. Members of four populations were studied:

1. Service girls selected from patients attending the Freeland Venereal Disease Clinic, Rayong, Thailand. This clinic was selected because it was in the vicinity of joint Thai-United States military facilities. The women admitted previous sexual activity with both Thais and Americans; however, at this time Americans were their usual consorts. The clinic has a panel of approximately 1,000 women who are seen at weekly intervals.
2. Women visiting a prenatal clinic at the Bangkok Women's Hospital.
3. Women delivering babies at the Bangkok Women's Hospital.
4. United States servicemen entering Thailand. (Serum was collected initially and after periods of 4 and 8 months).

Serological Studies: Sera were collected from all four groups and submitted for complement fixation (CF), immunoelectroosmophoresis (IEOP) and radioimmunoassay (RIA). Antigens detected by these means were tested for antigenic subtype by agar gel diffusion. Hepatitis B antibody was detected by IEOP. Methods for the above tests appear elsewhere (SEATO Medical Research Laboratory Annual Report 1971-1972, 1972-1973, 1973-1974). Sera were also tested serologically for syphilis by a commercial rapid plasma reagin test (Hynson, Westcott & Dunning, Inc.). All those found to be positive were confirmed by a standard VDRL test.

PROGRESS: Interviews and sera were obtained from 681 service girls at Freeland Clinic; 1,000 consecutive women visiting the prenatal clinic of the Bangkok Women's Hospital; and 1,625 consecutive women presen-

Table 1. HBsAg and VDRL Positives in Three Thai Populations

Population	Total	HBsAg			Anti-HBs (IEOP)	VDRL
		CF	IEOP	RIA		
Service Girls	681	49 (7.1)*	51 (7.4)	55 (8.1)	68 (10)	79 (11.6)
Prenatal Clinic	1000	60 (7.0)	72 (7.2)	9/100 (9.0)	100 (10)	32 (3.2)
Delivery Room	1625	93 (5.7)	93 (5.7)	7/100 (7.0)	141 (8.6)	ND**

HBsAg (IEOP) CHI^2 (2 df) = 3.3 0.10 < P < 0.20

Anti-HBs (IEOP) CHI^2 (2 df) = 1.38 0.40 < P < 0.50

VDRL CHI^2 (1 df) = 40 P < 0.001

* Numbers in parentheses are percentages

** Not done

Table 2. HBsAg Subtypes in the Thai Population

Population	Total	HBsAg (IEOP)	Subtype identified	adr	adw
Service Girls	681	51 (7.4)*	21 (41)	18 (85)	3 (15)
Delivery Room	1625	93 (5.7)	34 (37)	30 (88)	4 (12)

* Numbers in parentheses are percentages

ting for delivery at the Women's Hospital, Bangkok between 0800 and 1200 on weekdays. The Freeland Clinic's population was sampled over a 4 day period. The two groups from Bangkok took approximately a year to accumulate. Serum was obtained from 427 American servicemen on entrance into Thailand and at the time of this writing a second serum has been obtained from 303 of these after 4 months and a third serum from 73 after 8 months in Thailand.

Table 1 presents HBsAg, anti-HBs and VDRL data on the three Thai study groups. There were no significant differences in the prevalence of HBsAg found among any of these populations, and there is little difference between these prevalences and those seen in other Thai populations (SEATO Medical Research Laboratory Annual Report, April 1972-March 1973 pp 74-76). A comparison of the prevalence of IEOP detectable antibody gives similar findings, with no significant differences among the three groups of women. The VDRL positives, on the other hand, were three times more frequent among the service girls than among the women in the prenatal clinic, giving further evidence of promiscuity in the former group.

The antigen subtype was determined for 21 (41%) of the 51 antigens detected by IEOP in the sera of service girls and in 34 (37%) of the 93 antigen positive mothers in the delivery room (see Table 2).

The distribution of subtypes within each group was almost identical and was not significantly different from that observed in other Thai populations previously studied (SEATO Medical Research Laboratory Annual Report, April 1973-March 1974). The ay subtype was not found in either group.

At this time only preliminary data may be presented on United States servicemen.

Table 3 shows the prevalence of HBsAg, anti-HBs and VDRL positives among the men sampled at 3 different times.

Table 3. HBsAg, Anti-HBs and VDRL Prevalence among United States Servicemen in Thailand

Time of Sampling	Total	HBsAg	Anti-HBs	VDRL
Arrival	427	1	6	2
4 months	303	1	4	2
8 months	76	0*	2	0**

* The antigenemic individual not yet sampled at 8 months

** The VDRL positive individuals not yet sampled at 8 months

One HBsAg/adw carrier was detected among the 427 men from whom serum was obtained upon arrival in Thailand. This individual has remained positive for the four months he has been followed. In the 303 persons followed longitudinally for 4 to 8 months there does not appear to be a detectable increase in HBV activity despite considerable sexual as well as other contact with the local population as documented by interview data.

DISCUSSION: Among service girls, a sexually promiscuous population, there does not appear to be any higher prevalence of HBsAg or anti-HBs than in control populations of Thai women of approximately the same age group. The prevalence of positive VDRL's among these girls, however, was more than three times that of the control populations, attesting to a higher incidence of venereal disease. Anti-HBs has not yet been tested by a sensitive technique; however, among Thai women, the prevalence of anti-HBs detected by IEOP was higher but not significantly different from any of the two control groups tested.

The lack of any significant difference in the prevalence of HBsAg in these groups of Thai women suggests that venereal transmission of HBV is unlikely. This is also demonstrated by the similar antibody prevalences among these groups. IEOP antibody only measures high titers of antibody as compared with other methods such as PHA or RIAI (SMRL Annual Report, April 1973-March 1974) and appears to detect only secondary antibody responses; however, if HBV were venereally transmitted a large proportion of service girls would be expected to have had many exposures and therefore should have a higher prevalence of high titered antibody than a less promiscuous population. This was not found.

The data generated on United States servicemen up to this time cannot be fully interpreted. The incubation period of Hepatitis B is from 6 weeks to 6 months, therefore our follow-up schedule should pick up HBV infections acquired during the first half of a man's sojourn in Thailand. Early findings suggest no marked increase in the incidence of HBV infection as monitored by increasing disease, increasing HBsAg carrier rates or increased conversions of anti-HBs. If transmission of HBV was venereal, with the degree of sexual contact documented in this population, an increase in HBV infection should be evident by this time.

SUMMARY: The prevalence of HBsAg and anti-HBs was determined in three populations of Thai women. No significant differences were detected in the prevalence of HBsAg or anti-HBs despite the known promiscuity

of one of these groups. United States servicemen known to have sexual contact with the promiscuous population were followed for up to 8 months after entering Thailand. Early data does not support the hypothesis that HBV can be transmitted to any great extent by venereal contact.

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