

A Longitudinal Study of Hepatitis B Virus Infection in a School Population

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OBJECTIVE : To conduct a longitudinal study of hepatitis B virus infections in a lower socioeconomic school population.

BACKGROUND : Studies of a well-defined population of lower socioeconomic Bangkok residents (Huay Khwang) have shown that 8.2% of the population have hepatitis B surface antigen (HB Ag) in their blood (1). Children in the 1-4 year age group had a 4.5% prevalence rate. There was no significant difference in antigen prevalence between age groups. Antibody to HB Ag (anti-HB_s) on the other hand, was noted to increase rapidly from 15.4% to 48.9% between the ages of one and 19 years. These data suggested that hepatitis B virus (HBV) is widely disseminated in the population studied. Data from Huay Khwang also suggested that the risk of acquiring hepatitis B antigen, but not antibody, was associated with the family unit.

Two groups of mothers and their offspring have been studied. The HB Ag carrier rate in these mothers was not statistically different from that seen in women of child-bearing age in Huay Khwang. Follow-up of the mothers and offspring have shown that acquisition of HBV infection by infants in the first year occurred almost exclusively in families in which the mother was a HB Ag carrier (2). Fifteen of 31 (48%) infants of antigenemic mothers became infected by the age of 6 months and, of these nine (60%) became chronic carriers. Antigen and antibody acquisition data suggested the possibility of an extra-familial sources of infection after the first year of life. This report consists of preliminary findings of a longitudinal study designed to determine the incidence of HBV infection and the change in the prevalence of HB Ag carriers in a school population. The same school group was also used for a longitudinal study of dengue virus infection.

METHODS : Volunteer students attending the Pibulprachasan school in the Din-daeng area of Bangkok were studied. A consent form, signed by a parent or guardian and a family history was obtained from each student. Volunteers were bled in May of 1977, the first month of school. Blood will be obtained again from each student in December and in April of the same academic year.

Blood was submitted for initial screening for HBV markers by IEOP. Final testing was accomplished by radioimmune assay for HB Ag (AUSRIA II) and anti-HB_s (AUSAB). (Both radioimmune assay kits were provided^s by the Abbott Laboratories, North Chicago, Ill.). Each antigen detected was further tested for subtype by immunodiffusion.

RESULTS : Sera of 1977 students including 935 males and 1042 females were screened for HBV markers (Table 1). The age specific point prevalence of HB_s Ag in the whole group was 6.4% with no significant differences by age group. Although the differences were not significant, there was a higher prevalence of HB Ag carriers among males than females. Subtype determinations^s of the HB Ag showed 80.9% adr and 11.5% adw, (Table 2) figures which are compatible with those previously found in Bangkok populations (3). This is an ongoing study. Data collected on the next two bleeds should allow for calculation of incidence of HBV infection and point to modes of transmission that should be investigated.

REFERENCES :

1. Grossman, R.A., Benenson, M.W., Scott, R.M., Snitbhan, R., Top, F.H. and Pantuwatana, S., 1975. An Epidemiological Study of Hepatitis B Virus in Bangkok, Thailand. *Am. J. Epidemiol.* 101:144-159.
2. Bancroft, W.H., Scott, R.M., Vanapruks, V., 1976. Hepatitis in Bangkok Families, SEATO Medical Research Laboratory Annual Report, pp. 29-39.
3. Snitbhan, R., Scott, R.M., Bancroft, W.H., Top, F.H., Jr., and Chiewsilp, D., 1975. Subtypes of Hepatitis B Surface Antigen in Southeast Asia. *J. Inf. Dis.*, 131:701-711.

Table 1. The Prevalence of HB_s Ag Markers in Pibulprachasan School Students.

Age	Male			Female			Total		
	No. Tested	HB _s Ag (+) No. (%)	HB _s Ag (+) (%)	No. Tested	HB _s Ag (+) No. (%)	HB _s Ag (+) (%)	No. Tested	HB _s Ag (+) No. (%)	HB _s Ag (+) (%)
4	15	2 (13.3)		33	1 (3.0)		48	3 (6.3)	
5	30	2 (6.7)		33	1 (3.0)		63	3 (4.8)	
6	57	2 (3.5)		35	1 (3.0)		90	3 (3.3)	
7	85	7 (8.2)		103	5 (4.9)		188	12 (6.4)	
8	115	7 (6.1)		88	6 (6.8)		203	13 (6.4)	
9	116	11 (9.5)		110	5 (4.5)		226	16 (7.1)	
10	123	11 (8.9)		127	12 (9.5)		250	23 (9.2)	
11	108	10 (9.3)		107	3 (2.8)		215	13 (6.0)	
12	115	6 (5.2)		131	4 (3.1)		246	10 (4.1)	
13	111	11 (9.9)		168	9 (5.4)		279	20 (7.2)	
14	42	3 (4.1)		79	3 (3.8)		121	6 (5.0)	
15	8	1 (5.6)		28	3 (10.7)		36	4 (1.1)	
Total	935	71 (7.8)		1042	53 (5.1)		1977	126 (6.4)	

Table 2. Distribution of HB_s Ag Subtypes in Student HB_s Ag Carriers in the Pibulprachasan School.

Sex	Number Tested	Subtypes		
		adr	adw	ad?
Female	50	39 (78.0) ^a	9 (18.0)	2 (4.0)
Male	68	61 (89.7)	6 (8.8)	1 (1.5)
Total	118	100 (84.7)	15 (12.7)	3 (2.6)

^a Number parenthesis = Percent of number tested.