

Determination of the Etiology of Acute Hepatitis Infections in Bangkok: A Pilot Study

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OBJECTIVES

1. To estimate the relative incidence of clinically diagnosed acute hepatitis due to virus types A, B, and Non A-Non B.
2. To collect clinical specimens from cases of acute hepatitis to be used as sources of antigen and antibody in the development of diagnostics tests for hepatitis A and Non A-Non B.

BACKGROUND : In 1971, a year-long survey of the role of Hepatitis B virus in acute hepatitis in Bangkok was conducted (1). Over most age ranges, HBsAg was detected by CIE in approximately 40-50% of serum specimens from patients. As the CIE method used has been shown to detect HBsAg in 80-90% of cases of hepatitis due to Hepatitis B virus, it is reasonable to estimate that overall 50-60% of cases of acute hepatitis were due to the hepatitis B virus.

Recently we determined the age-specific prevalence of antibody to hepatitis A in a Thai population, using a sensitive commercially available radioimmunoassay; 98% of serum specimens in a random sampling of adults from the metropolitan Bangkok area were positive for antibody to hepatitis A.

Based on these data, it is likely that the vast majority of adults resident in Bangkok are immune to Hepatitis A by virtue of childhood infection.

The availability of a sensitive test for IgM antibodies to hepatitis A (staph aureus absorption modification of HAVAB) now allows us to define the relative incidence of acute viral hepatitis due to hepatitis viruses A, B, and (by exclusion) Non A-Non B. There is no reason to believe that the role of hepatitis B virus has significantly changed over the past 7 years; it is probable that 50-60% of cases are still due to hepatitis B. Further, as almost all adults are immune to hepatitis A virus, it is reasonable to predict that Hepatitis Non A-Non B may be an important cause of acute hepatitis among adults in Bangkok.

MATERIALS AND METHODS

Clinical : A target of 200 cases of acute hepatitis was set for this pilot study. Clinical cases were sought from throughout the greater Bangkok

area during the period 1 November - 31 May 1979. Letters requesting assistance in collecting clinical materials were sent to 12 Bangkok physicians known to have an interest in clinical management of hepatitis. All cases clinically diagnosed as acute viral hepatitis by these referring physicians were included in this study. Specific criteria (e.g. total bilirubin 2.0, etc.) were not set; rather the diagnosis rested entirely on the judgement of the referring physician. The following clinical specimens were collected from each patients :

<u>Day</u>	<u>Specimens</u>
Day 0 :	Serum #1 and stool
Day 14-30 :	Serum #2
Day 30-90 :	Serum #3

On the day that a specimen was to be collected the referring physician called the investigators at the Department of Virology, AFRIMS, who in turn dispatched a nurse's aid to collect the specimen on that day.

At the time of diagnosis (Day 0) and the time of the second convalescent blood specimen the referring physician was requested to fill out a short questionnaire.

Laboratory : All acute sera were tested for the following : (1) HBsAg by CIE and AUSRIA-II (R), (2) HBs Antibody by AUSAB, (3) Hep-A-Antibody by HAVAB (R), (4) Anti-HAV IgM by the staph aureus absorption modification of the HAVAB.

As a minimum, all convalescent sera were tested for the following : (1) Anti-HBs by AUSAB, (2) Heterophile antibodies by Monocheck (R) (Hyland).

RESULTS : 246 patients with acute hepatitis were entered in the study. The age distribution both of the total population studied and by individual referring hospital is shown in Figure 1. The large peak at age 20-21 probably reflects the mean age of the military patient populations at two of the referring hospitals.

Laboratory studies are completed on serum specimens from 223 patients. The etiology of acute hepatitis by 5 years age groupings is presented in Table 1. The general pattern suggests that HAV is the etiologic agent of most acute hepatitis in children under 15 years old; that HBV is the most important course in the young adult population; and that HBV and HANANB are predominant in older adults.

Overall 11 of the 246 studied cases were fatal. Fatalities tended to occur at the extremes of age (4 deaths \leq 11 yo, 1 death 12-45 yo, 6 deaths $>$ 46 yo). Fatality rates for each type of hepatitis are shown in Table 2.

A more detailed prospective study of all patients presenting to the Pramongkutklao Royal Thai Army Hospital with a diagnosis of acute hepatitis is currently underway.

Table 1. AFRIMS Acute Hepatitis Study: 5 Year Age Groupings

Years of age	Total patients in age group	Evidence for active infection with:			
		HAV	HBV	HAV and HBV	NON A-NON B
0-4	18	11(61%)	4(22)	2(11)	1(06)
5-9	36	28(78)	0(0)	3(08)	5(14)
10-14	27	17(63)	5(19)	1(04)	4(15)
15-19	21	3(14)	7(33)	3(14)	8(38)
20-24	66	13(20)	41(62)	1(02)	11(17)
25-29	21	6(29)	9(43)	0(0)	6(29)
30+	<u>34</u>	<u>4(12)</u>	<u>15(44)</u>	<u>0(0)</u>	<u>15(44)</u>
	223	82(37)	81(36)	10(05)	50(22)

Table 2. AFRIMS Acute Hepatitis Study: Mortality by Virus Type

Virus type	# Fatal/ total	% Fatal	Age of fatal cases
HBV	4/81	5%	(57, 61, 21, 46)
HAV	0/82	0%	-
HANB	5/50	10%	(6, 78, 56, 11, 62)
HAV + HBV	0/10	0%	-
Not complete	2	-	(9/12, 2)

REFERENCE :

1. Cotton, R.B., Chiewsilp, D., Grossman, R.A., Top, F.H., Jr.: The prevalence of hepatitis associated antigen (HAA) among Thais hospitalized with acute hepatitis. SEATO Medical Research Laboratory Annual Progress Report, April 1971 - March 1972.

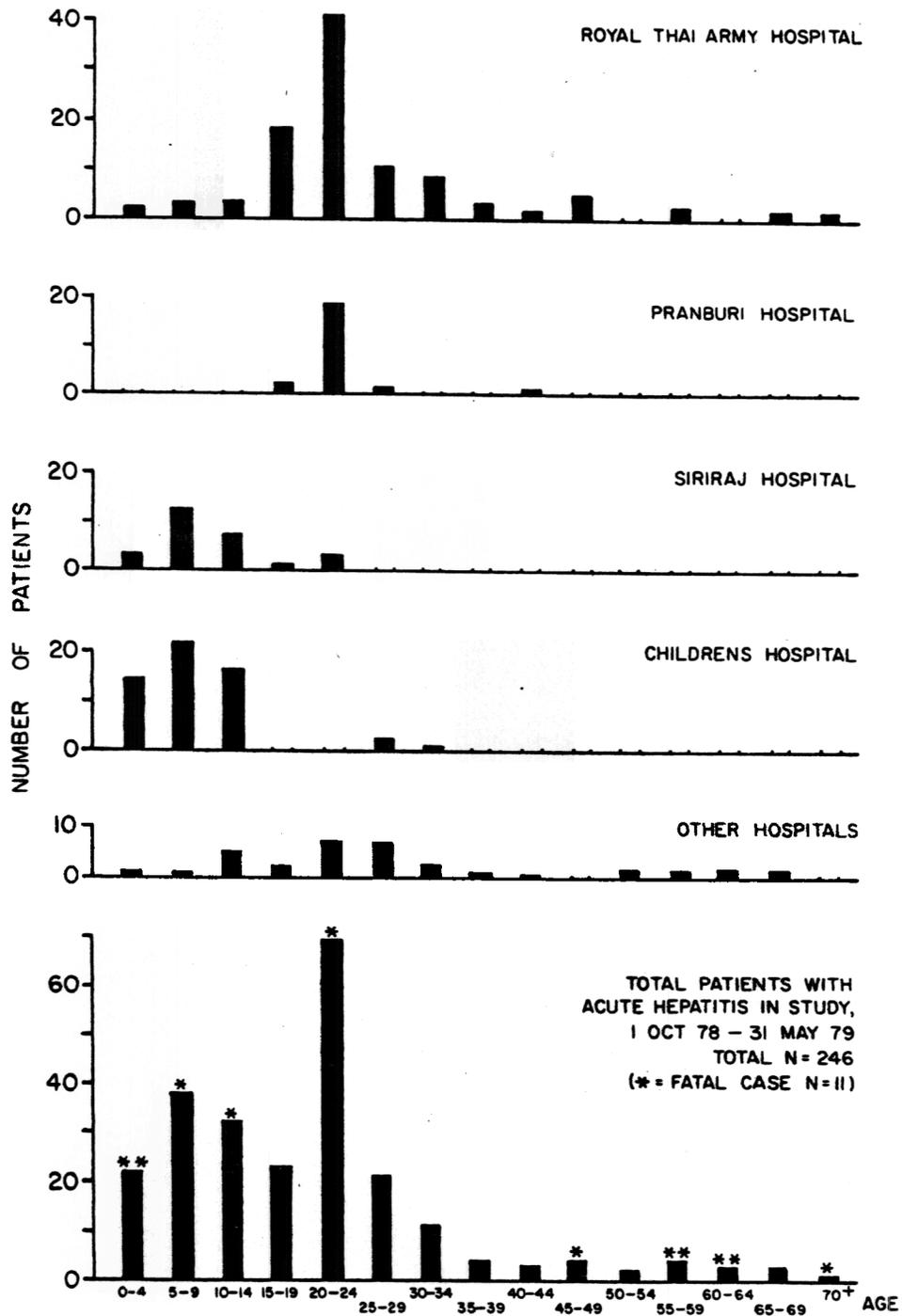


Figure 1. Source of Clinical Specimens in Acute Hepatitis Study.