

A SEROEPIDEMIOLOGIC STUDY OF HEPATITIS A IN MALAYSIA

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INTRODUCTION

Several prevalence studies of antibody to hepatitis A virus (HAV) have been performed in different communities of various countries. These have revealed widely differing patterns, which are dependent not only on the socio-economic status of that community but also on other geographic factors (Dienstag *et al.*, 1978). Malaysia had been classified as a developing country of the Third World, but in actual fact, because of her progressive national development policies, especially in the rural areas, her socio-economic status is, to some degree, higher than that of most developing countries. Hence, the infection rate of hepatitis A in Malaysia is expected to be generally lower than that of her Third World counterparts. This study seeks to determine whether this is so and describes the distribution of anti-HAV in Malaysia by age, sex and race in two types of community, rural and urban.

MATERIALS AND METHODS

Serum samples were obtained from 494 patients admitted, with illnesses other than overt hepatitis, into the medical wards of the various hospitals in Malaysia. The different age-groups, sex and racial groups were represented. The patients were regarded as urban when the hospital they had been admitted to serve relatively well-developed towns and cities with modern sanitation. Their rural counterparts were those admitted into

district hospitals catering to people living in small villages (kampongs) mostly without modern sanitation. However, because of the on-going national rural development policy, it is not uncommon that some district hospitals serve towns which are in various stages of development, and therefore some degree of overlapping in area demarkation has to be allowed.

The enzyme immunoassay (EIA) was performed for the detection of IgG antibody to HAV using the commercially available kit, HAVAB-EIA (Abbott Laboratories, Chicago, Ill.).

RESULTS AND DISCUSSION

The distributions of anti-HAV IgG in Malaysians by age, sex and race are shown in Table 1.

Table 1

Age, race and sex distribution of IgG anti-HAV (EIA) in non-icteric Malaysians.

Group	No. tested	No. pos. (%)
≤ 10 years	104	41(39.4)
11-20 „	132	67(50.8)
21-40 „	133	103(77.4)
41-60 + „	125	120(96.0)
Chinese	161	90(55.9)
Malay	266	187(70.3)
Indian	67	54(80.6)
Male	272	186(68.4)
Female	222	145(65.3)
Total	494	331(67.0)

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Table 2

Age and area distribution of IgG anti-HAV (EIA) in non-icteric Malaysians.

Age (years)	Rural		Urban	
	No. tested	No. pos. (%)	No. tested	No. pos. (%)
7-10	30	14 (46.7)	35	14 (40.0)
11-20	64	29 (45.3)	68	38 (55.9)
21-40	61	59 (96.7)	72	44 (61.1)
41-60+	62	60 (96.8)	63	60 (95.2)
Total	217	162 (74.7)	238	156 (65.5)

The overall percentage of antibody prevalence was 67.0% with steadily increasing and significantly different rates ($p < 0.001$) from children aged 10 years and below (39.4%) to those aged 60 years and above (96.0%). Racially, the highest rate was in the Indians (80.6%), the lowest in the Chinese (55.9%) with the Malays occupying intermediate position (70.3%). These differences were also highly significant ($p < 0.001$). No significant differences, however, were noted between males (68.4%) and females (65.3%).

Table 2 reveals that the overall antibody prevalence in the rural patients (74.7%) was significantly higher ($p = 0.044$) than in the urban patients (65.5%). However, the locality difference actually depends on which age-group was studied. The 21-40 age-group had a significantly higher rate in the rural area than the urban area ($p < 0.001$) but this did not apply to the other three age-groups.

Of children in the rural and urban areas, 46.7% and 40.0%, respectively, had acquired the infection in the first decade of life. The peak level in excess of 90% was reached in the third decade of life (21-40 years) in the rural group but was not reached till the fifth decade of life in the urban group (41-60+ years).

Fig. 1 compares the anti-HAV age-specific

prevalence rates of Malaysia with those of some developing countries in Asia and the Western Pacific Region viz. Sri Lanka (Vitarana *et al.*, 1978), Thailand (Viranuvatti, 1982) and Viti Levu, Fiji Is. (Gust *et al.*, 1979). It may be noted that 50% or more of the population of these countries, other than

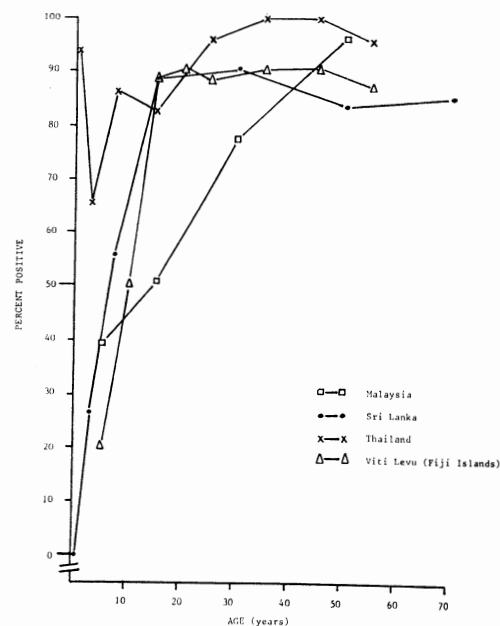


Fig. 1 — Age specific prevalence of anti-HAV in Malaysia compared with some developing countries.

Malaysia, acquired anti-HAV in the first decade of life and nearly 90% by the second decade of life. In Malaysia these figures were reached at relatively older age-groups.

The rapid acquisition of anti-HAV in developing countries was in marked contrast to the low rates of infection in developed countries e.g. Australia (Lehmann *et al.*, 1977) and U.S.A. (Villarejos *et al.*, 1976). In Fig. 2, the rates in Malaysia were acquired earlier than those in Victoria (Australia) or Philadelphia (U.S.A.) It may therefore be observed that the Malaysian rates are midway between the high prevalence in Sri Lanka, Thailand and Viti Levu and the low prevalence in Australia and the U.S.A.

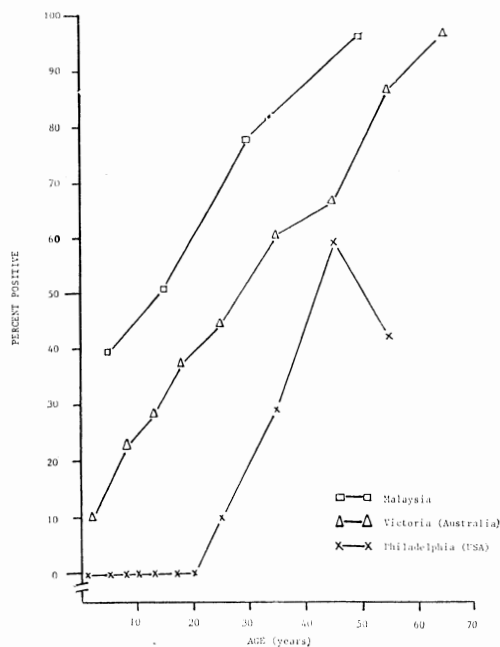


Fig. 2 — Age specific prevalence of anti-HAV in Malaysia compared with Australia and the United States of America.

Dienstag *et al.*, (1978) observed in Boston, U.S.A. that exposure to HAV increased with serologic evidence of prior HBV exposure but was much more common than HBV exposure. In Malaysia, the age-specific anti-HAV rates

did indeed increase with increases of anti-HBs rates (Fig. 3) and were higher than the latter (Tan *et al.*, 1986). However, the overall HBV exposure, as measured by HBsAg and anti-HBs rates, was not parallel to the HAV exposure because of the higher rate of HB. carriers in the adolescent age-group 11-20 years, at which time 50% of the population were equally exposed to both HAV and HBVs

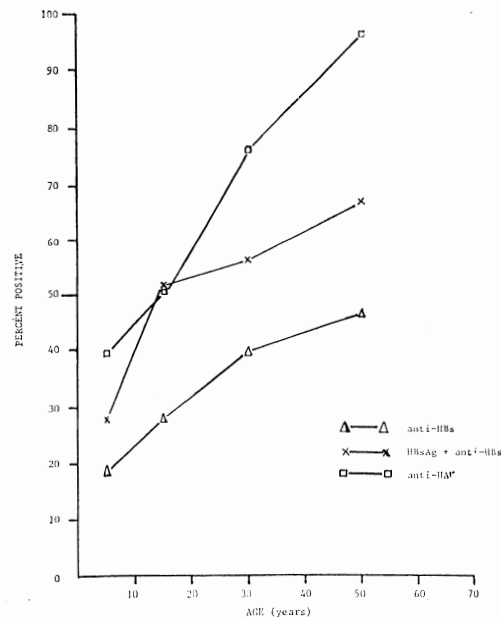


Fig. 3 — Age specific prevalence of anti-HAV, anti-HBsAg markers in Malaysia.

Szmunn *et al.*, (1977), in their study of correlation between anti-HAV and anti-HBV prevalence in seven countries reported a close correlation in five of them viz. U.S.A., Switzerland, Taiwan, Senegal and Yugoslavia but not in Belgium and Israel where the anti-HBs rates were relatively low (5% and 15% respectively) while the anti-HAV rates were unusually high (87% and 94% respectively). This seems to indicate that factors other than socio-economic conditions and environment probably play a role in the transmission of HAV as well.

SUMMARY

Sera from 494 non-icteric patients admitted with illnesses other than overt hepatitis into the various hospitals in rural and urban Malaysia were tested for IgG antibody to hepatitis A virus.

The overall antibody prevalence rate was 67.0% with rates increasing steadily from childhood 10 years old and under (39.4%) to middle-age and above (96.0%). No significant differences were noted between males (68.4%) and females (65.3%).

The highest rate was in the Indians (80.6%), the lowest in the Chinese (55.9%) with Malays occupying intermediate position (70.3%). The rate in the rural patients (74.7%) was higher than that in the urban patients (65.5%) especially in the 21 to 40 year age-group where the rural patients had a rate of 96.7% compared with that in urban patients (61.1%).

A comparison of antibody prevalence rates in different countries was made.

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