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Hepatitis B Infection in Singapore Children

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INTRODUCTION

In Singapore, viral hepatitis B is endemic and Singaporeans are exposed to the infection from early childhood. However, in children, clinical hepatitis is uncommon. In an epidemiological study, Goh showed a morbidity rate of 2.3 per 100,000 for the age groups 5 to 14 years. No cases were reported in children below 5 years of age.¹⁾ There is a need to study the incidence of hepatitis B infection in children.

MATERIALS AND METHODS

In 1981, a study of asymptomatic hepatitis B infection was conducted in the University Department of Paediatrics and Medicine,²⁾³⁾ Singapore General Hospital. In a 3 month period, all the children hospitalised in the Department of Paediatrics were included in the study. Children with clinical hepatitis or suspected hepatitis were excluded. The method used to detect asymptomatic infection was by means of radioimmunoassay for hepatitis B markers, HBsAg (AUSRIA 11), anti-HBs (AUSAB) and anti-HBc (CORAB). Those children with positive HBsAg had a second blood examination 6 months to 1 year later.

RESULTS

The results of the study is shown in Table 1. More male children were HBsAg positive compared to female children, 13.5% and 6.8% respectively. About 20% of both male and female children were positive anti-HBs. With regard to anti-HBc, 28.5% and 25.9% of the male and female children were positive.

Figure 1 shows the percentage of children with positive HBsAg amongst the children of various ethnic groups. 11.2%, 8.0% and 12.2% of the Chinese, Malay and Indian children were positive for the antigen.

Table I The Immunological Status of Singapore Children to Hepatitis B Infection

AGE (YRS)	SEX	HBs Ag		Anti-HBs		Anti-HBc	
		$\frac{\text{No. positive}}{\text{No. Tested}}$	%	$\frac{\text{No. Positive}}{\text{No. Tested}}$	%	$\frac{\text{No. Positive}}{\text{No. Tested}}$	%
1	M	$\frac{13}{118}$	11.0	$\frac{29}{115}$	25.2	$\frac{30}{109}$	27.5
	F	$\frac{4}{68}$	5.9	$\frac{26}{69}$	38.2	$\frac{22}{59}$	37.3
1 < 3	M	$\frac{7}{49}$	14.3	$\frac{7}{49}$	14.3	$\frac{11}{46}$	23.9
	F	$\frac{3}{39}$	7.7	$\frac{4}{38}$	10.9	$\frac{8}{35}$	22.9
3 < 6	M	$\frac{5}{39}$	12.8	$\frac{4}{39}$	10.3	$\frac{10}{38}$	26.3
	F	$\frac{0}{29}$	0	$\frac{1}{29}$	3.4	$\frac{2}{29}$	6.9
6 < 9	M	$\frac{7}{40}$	17.5	$\frac{7}{40}$	17.5	$\frac{12}{39}$	30.8
	F	$\frac{2}{19}$	10.5	$\frac{0}{19}$	0	$\frac{5}{19}$	26.3
9 < 12	M	$\frac{6}{36}$	16.7	$\frac{8}{36}$	22.2	$\frac{13}{35}$	37.1
	F	$\frac{3}{21}$	14.3	$\frac{3}{21}$	14.3	$\frac{5}{19}$	26.3
Total	M	$\frac{38}{282}$	13.5	$\frac{55}{279}$	19.7	$\frac{76}{266}$	28.5
	F	$\frac{12}{176}$	6.8	$\frac{34}{175}$	19.4	$\frac{42}{162}$	25.9

(YRS) = Years

M = Male

F = Female

The percentages of children positive for anti-HBs are shown in Figure 2. 20.9%, 18.0% and 9.8% of the Chinese, Malay and Indian children were positive for the antibody.

Similarly, the anti-HBc status is shown in Figure 3. 30.2%, 19.6% and 14.6% of the Chinese, Malay and Indian children were positive for anti-HBc respectively.

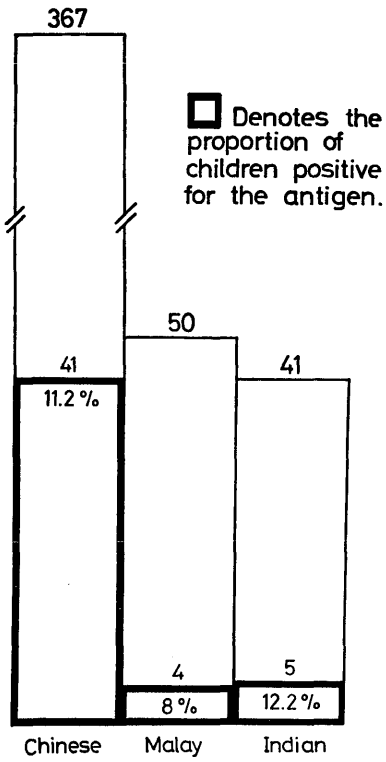


Fig 1: Percentage of Chinese, Malay and Indian Children with Positive Hepatitis B Surface Antigen (HBsAg)

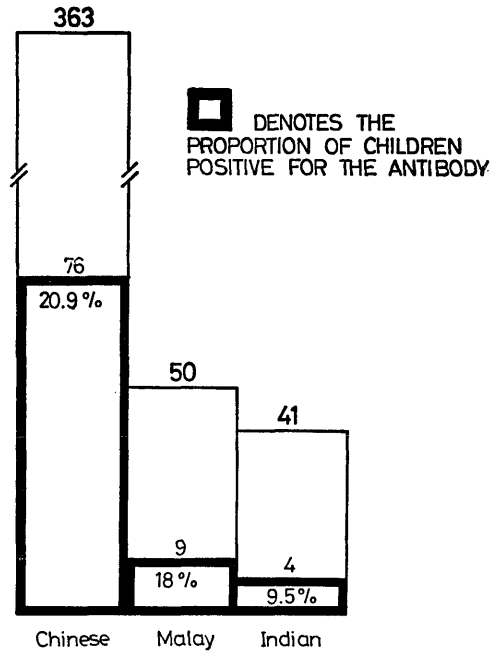


Fig 2: Percentage of Chinese, Malay and Indian Children with Positive Anti-Hepatitis B Surface Antibody (Anti-HBs)

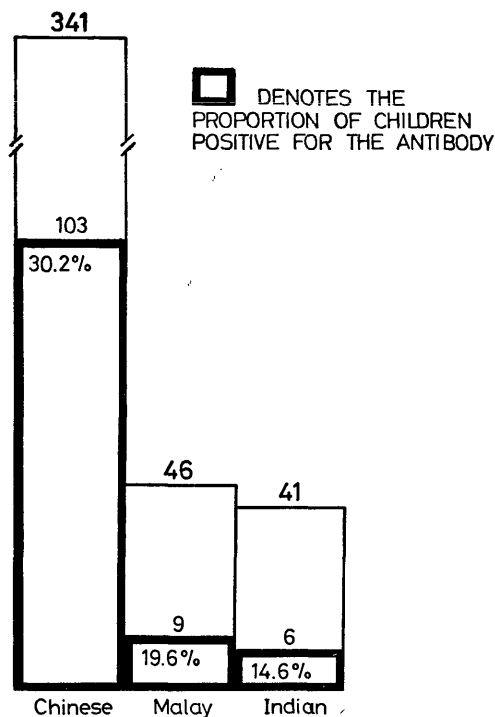


Fig 3: Percentage of Chinese, Malay and Indian Children with Positive Anti-Hepatitis B core Antibody (Anti-HBc)

FOLLOW-UP STUDY

There were 50 children with positive HBsAg in this study. 14 of them did not agree to a repeat blood examination. Out of the remaining 36, 8 were having the antigen for more than 6 months and they were all Chinese children. In other words, about 22.2 % of the children were chronic HBsAg carriers.

DISCUSSION

From the results, it is obvious that the children in Singapore are exposed to hepatitis B virus infection from early in life. 11.0% of the infants were HBsAg positive. This is different from the reported incidence of hepatitis B by Goh¹⁾. In other words, most of the hepatitis B infection in children are subclinical or asymptomatic.

Although the infection may be asymptomatic, a high proportion (22.2%) of the affected children became chronic HBsAg carriers. They are prone to develop chronic liver diseases and malignancy later on in life ⁴⁾⁵⁾⁶⁾. Furthermore, they form the reservoir for the spread of the infection in the community.

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