# MARKERS OF HEPATITIS B VIRUS INFECTION IN ASYMPTOMATIC DRUG ABUSERS IN MALAYSIA

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# INTRODUCTION

Many studies conducted in Malaysia indicate that the occurrence of Hepatitis-B virus disease is at low levels in the healthy population (Ton and Lopez, 1981a) and that cases are mainly concentrated in certain groups namely, sexually promiscuous heterosexuals (Rajakumar *et al.*, 1984), prisoners (Ton *et al.*, 1983) and patients and staff of hemodialysis units (Ton and Lopez, 1981b).

It is a generally accepted fact that intravenous drug abusers are highly exposed to Hepatitis-B virus (Scheutz *et al.*, 1983) but so far no study has been conducted in Malaysia to show whether this is true for Malaysia too.

The current research was directed towards determining the prevalence of HBV markers in a male drug abusing population in Malaysia and to determine the association of certain epidemiological factors to the prevalence rates, viz. race, age, sexual habits, duration and methods of drug abuse.

## MATERIALS AND METHODS

Two hundred male drug abusers originating from all over the country were chosen randomly from various Government drug rehabilitation centres and Christian Missionary care centres situated in and around Kuala Lumpur. In all, 9 such centres were sampled during the month of April, 1985.

Ten ml of venous blood was collected aseptically and the serum tested for each of

the following markers, viz. HBsAg, HBeAg, anti-HBs and anti-HBc, using sensitive enzyme immunoassay (EIA) tests supplied by Abbot Laboratories, Chicago.

# **RESULTS AND DISCUSSION**

The sample consisted of 200 male drug abusers, their ages ranging from 17 years to 45 years with a mean of 27 years; the duration of drug abuse ranged from 11 to 216 months, with a mean of 92.6 months.

It was found that 103 (51.5%) were positive for at least one HBV marker; 11 (5.5%) were positive for HBsAg; 4(2%) for HBeAg; 74 (37%) for anti-HBs and 85 (42.5\%) for anti-HBc.

At the time of testing, all were asymptomatic; 98 (95%) of those positive for at least one marker, had no history of any clinical illness or jaundice in the past. This indicates that in the majority of drug abusers, Hepatitis B virus disease is subclinical.

In drug abusers below the age of 21 years, 11.1% were positive for HBsAg and 5.56% were positive for HBeAg. These figures are higher than those in the other age groups (Table 1). Also in those below the age of 21 years, the anti-HBs (5.56%) and anti-HBc rates (16.67%) are lower than in the other age groups. It is interesting to note that HBe antigen was negative in all drug abusers aged more than 30 years.

The age specific prevalence rates for at least one marker was 22.2% (4/18) for those

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### Table 1

Age-specific prevalence rates for each marker.

	Age-group					
Marker	<21	21-29	30-36	>36		
HBs	11.11	4.88	4.26	8.33		
	(2/18)	(6/123)	(2/47)	(1/12)		
HBe	5.56	2.44	0.00	0.00		
	(1/18)	(3/123)	(0/47)	(0/12)		
AHBs	5.56	39.03	44.67	33.33		
	(1/18)	(48/123)	(21/47)	(4/12)		
AHBc	16.67	44/72	44.67	50.00		
	(3/18)	(55/123)	(21/47)	(6/12)		

less than 21 years; 52.8% (65/123) for those between 21-29 years; 57.5% (27/47) for those between 30-36 years and 58.3% (7/12) for those more than 36 years old. Although, on average, the difference between age-specific prevalence rate is not quite significant at the 5% level (p = 0.067), it was noted that the rate for individuals below 21 years is much lower than the other 3 age groups, and that the the rates increase with age.

The racial breakdown for those drug abusers positive for at least one HBV marker indicates the Malays had the highest exposure (54.2%); Chinese (50.9%); Indians (36.8%) and others 50\%, where the term 'others' includes one Eurasian and 3 East Malaysians (Table 2).

19

9.50

Prevalence rates of hepatitis according to race in Malaysia.					
	Chinese	Malays	Indians	Others	
Prevalence (%) (One or more markers)	50.85	54.24	36.84	50.00	
Proportion	30/59	64/118	7/19	2/4	
Prevalence HBsAg (%)	15.3	1.7	0	0	
Proportion	9/59	2/118	0/19	0/4	

Table 1	2
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118

59.00

Prevalence rates for at least one marker according to method of drug abuse.							
Method	С	Ι	S	SC	SI	SCI	
Prevalence (%)	0.00	100.00	43.53	35.29	61.97	60.00	
Proportion	0/1	1/1	37/85	6/17	44/71	15/25	
C — Chewing I — Intravenous		SC — Smoki SI — Smoki	ng and Chew ng and Intra	ving venous			

S — Smoking SCI — Smoking & Chewing and Intravenous.

59

29.50

200

100%

4

2.00

Total

Racially, the HBsAg carrier rate in the Chinese was 15.3%; Malays 1.7%, but there were no carriers among the Indians and other races. This was consistent with results in various studies that indicate that the Chinese have the highest HBsAg carrier rates among the general population (Ton and Lopez, 1981a), and random blood donors (Ton and Lopez, 1983).

The prevalence rate for at least one HBV marker was 47.8% in those who had used drugs for up to 36 months; 41.7% for(37-72) months; 51% for (73-108) months; 64% for (109-144) months and 55% in those abusing drugs for more than 145 months. There was some suggestion that the prevalence for at least one marker increases with duration of drug abuse but this trend was not statistically significant (p = 0.225). Since duration was highly correlated with age, any trend observed here could merely be a manifestation of the age effect noted earlier.

The prevalence for at least one HBV marker, as classified according to sexual orientation were as follows: 52% (64/123) for heterosexuals; 37.9% (11/29) for bisexuals and 58.3% (28/48) for those with no or unknown sexual habits. Statistically there was no significant difference between the three groups (p = 0.218). However, these data, on account of their highly subjective nature, were unreliable.

The prevalence for at least one HBV marker was found to be 43.5% for smokers (S); 35.3% for those using smoking and chewing methods (SC); 62.0% for those who smoke and use intravenous method (SI) and 60.0% for those who combine chewing, smoking and intravenous (SCI) (Table 3). In general, for smokers who use intravenous method, the HBV prevalence rate of 62% was much higher than for those who only smoke (43.5%) and those who smoke and chew (35.3%)

There was a statistically significant difference between the categories of 'S' and 'SI' (p = 0.022). The odds-ratio of having Hepatitis B marker was 2.11, so that using intravenous methods in addition to smoking increased the risk of having such a marker by a factor of 2.

If the last two categories were combined viz. SI and SCI so that it included all those who use a combination of oral and intravenous methods (SI + SCI) then there was a statistically significant difference (p = 0.02) between S, SC, and (SI + SCI).

It is generally accepted that intravenous drug abusers have the highest exposure to HBV infection (Scheutz *et al.*, 1983). This is true also for Malaysian drug abusers. That the smoking (inhalation) method for HBV transfer also appears to be important in this group can be explained. Group drug 'smoking' or 'sniffing' sessions are extremely common with sharing of cigarettes and straws. Close interrogation reveals that 'chasing the dragon'is almost always a group activity in order to minimise any wastage of the drug.

A total of 36.5% (73/200) appeared to have recovered from Hepatitis B virus disease (Table 4). The rest were either in the acute or chronic phase of the disease.

It was interesting to note that 8% (16/200) were positive for anti-HBs alone and negative for all other markers, a pattern usually seen in individuals immunized without infection. Since none of these had ever been vaccinated, these were probably immune individuals with short-lived anti-HBc levels.

There was not a single drug abuser who showed evidence of frequent exposure and reexposure to HBV. This pattern characterised by presence of HBsAg, anti-HBc, anti-HBe and anti-HBs (where the surface antigen and antibody are of different antigenic types) is

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#### Table 4

Pattern of recovery from hepatitis-B in Malaysian drug abusers.

1.	HBsAg + anti-HBc + anti-HBs	Early recovery phase	0.5 % (1/200)
2.	anti-HBc + anti-HBs only/or + anti-HBe	Recovery phase of hepatitis B indicative of past infection and persisting immunity. anti-HBe may be short-lived	28 % (56/200)
3.	HBsAg + anti-HBc + anti-HBe + anti-HBs	Frequent exposure and re-exposure	0% (0/200)
4.	anti-HBs alone	Immunization without infection or short-lived anti-HBc or cross reacting antibody unrelated to HBV	8 % (16/200)

usually found in individuals with multiple exposures to HBV (Mushawar *et al.*, 1981) e.g. hemophiliacs, renal dialysis patients and drug abusers.

# SUMMARY

Sera from 200 Malaysian male drug abusers were tested for markers of Hepatitis B virus (HBV) infection, viz. HBsAg, HBeAg, anti-HBs and anti-HBc using commercially available enzyme immunoassay (EIA) kits supplied by Abbot Laboratories, Chicago. Of these, 103 (51.5%) were postive for at least one HBV marker, 11 (5.5%) were positive for HBsAg; 4 (2%) for HBeAg, 74 (37%) for anti-HBs and 85 (42.5%) for anti-HBc. The HBsAg carrier rate was roughly the same as the carrier rate in the general population of Malaysia. The majority of drug abusers (95%) have had subclinical, asymptomatic HBV infection. Racially the Malay drug abusers had the highest exposure rate (54.2%). The HBsAg carrier rate was highest in the Chinese drug abusers (15.3%) and lowest in the Indians (0%). The mean age for the HBsAg carriers was found to be 26 years with a mean duration of drug abuse of 72 months. The Malaysian Anti-Narcotics Task Force of the National Security Council reported in the Malay Mail (July 13, 1985) that there were about 106,000 identified drug abusers in Malaysia and that 63% of these were in the 20-29 age groups. It appears from our study that this age group also coincides with the period of high HBsAg carrier rate.

Age wise, those less than 21 years old had the highest HBsAg (11%) and HBeAg (5.6%) prevalence rates indicating high infectivity. After the age of 30 years, nearly 50% of the drug abusers appear to be immune with the HBe prevalence of 0%. Statistically, there was no association between prevalence of HBV markers and the duration of drug abuse or sexual orientation. It is generally accepted that among the drug addicts those using the intravenous route for their addiction run the highest risk for HBV infection and we found that this was true also for Malaysian drug abusers. The smoking (inhalation) method for HSV transfer was also found to be important in this group and this can be explained. Group drug 'smoking' or 'sniffing' sessions are extremely common with sharing of cigarettes and straws. Close interrogation reveals that 'chasing the dragon' is almost always a group activity in order to minimize any wastage of the drug.

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