

HEPATITIS-B SURFACE ANTIGEN AND VDRL IN HEALTHY BLOOD DONORS OF BRUNEI DARUSSALAM

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ABSTRACT

We screened 3276 voluntary blood donors for Hepatitis-B surface antigen (HBsAg) and VDRL. The results were analysed to assess the prevalence and the possible relation to age, sex, race and blood group.

Our present study was done in Belait District of Brunei Darussalam where we have a mixed population of various racial groups namely Malays, Chinese, Ibans, Dusuns, Kelabits, Kadazans, Nepalese, Filipinos, Thais, Koreans, Eurasians, Indians, British, Dutch, Americans, Africans and Australians. Our findings suggest that the prevalence of HBsAg is 4.71% and that of VDRL is 0.64% of the donor population. HBsAg positivity rate among various blood groups is found to be not statistically significant ($p > 0.05$). However, this rate is found to be highly significant among racial groups ($p < 0.001$) and the rate of positivity of VDRL is also found to be significantly different among racial groups ($p < 0.01$), with the highest percentage of both being in the Ibans.

Keywords: Blood Donors, Hepatitis B surface antigen (HBsAg), VDRL

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INTRODUCTION

In 1965 Blumberg and his associates discovered Hepatitis-B surface antigen (HBsAg) in an Australian aborigine blood donor and named it "Australian Antigen" (1). It is now established by population correlation, cohort case control studies and investigations that there is a strong specific association between Hepatitis-B virus and hepatocellular carcinoma (2-4). The prevalence of post-transfusion hepatitis is very well documented and (5) since the introduction of routine screening for Hepatitis-B surface antigen and with improved screening techniques, the incidence of post-transfusion hepatitis has reduced significantly.

Routine screening for HBsAg in blood donors is very important as those with positive antigen are chronic carriers. Even though they have positive HBsAg in their blood, they are apparently symptom-free healthy individuals, without any clinical, biochemical, or histological evidence of liver disorder. So screening of donors with a highly sensitive test is an effective method of preventing post-transfusion hepatitis.

The prevalence of HBsAg in different countries and even in different regions within the countries varies considerably being much higher in the tropical and subtropical areas of Asia and Africa (6,7) and much less in North America and Europe (8).

Surveys conducted on blood donors in Ethiopia (9) and India (10,11) have shown the marked differences in the prevalence of HBsAg positivity in blood donors from different regions, of different race, age sex and professional status.

There is very little published data on HBsAg positivity in the population of South East Asia. Prevalence of VDRL positivity is not much recorded at all in the print. Our survey is aimed at assessing the HBsAg and VDRL status in the healthy blood donors of the Belait District in Brunei Darussalam.

MATERIALS & METHOD

SUBJECTS

3276 voluntary blood donors who attended the blood bank of Suri Seri Begawan Hospital, Kuala Belait, Brunei Darussalam were screened for HBsAg and VDRL. Kuala Belait (Belait District) has an area of 2724 square miles and a population of 53,600. Donors were mostly men (3171 men and 105 women). Belait District was particularly found suitable for this study because the donors represent various nationalities and racial groups including the local Malays, Chinese who are residents in Brunei, indigenous races like Ibans, Dusuns, Kadazans, and Kelabits, Gurkhas belonging to the Gurkha regiment resident in Brunei and a group representing the expatriate community formed by Filipinos, Thais, Koreans, Indians, Africans, British, Dutch, Australians, and Americans. All the donors were grouped under the following major groups:

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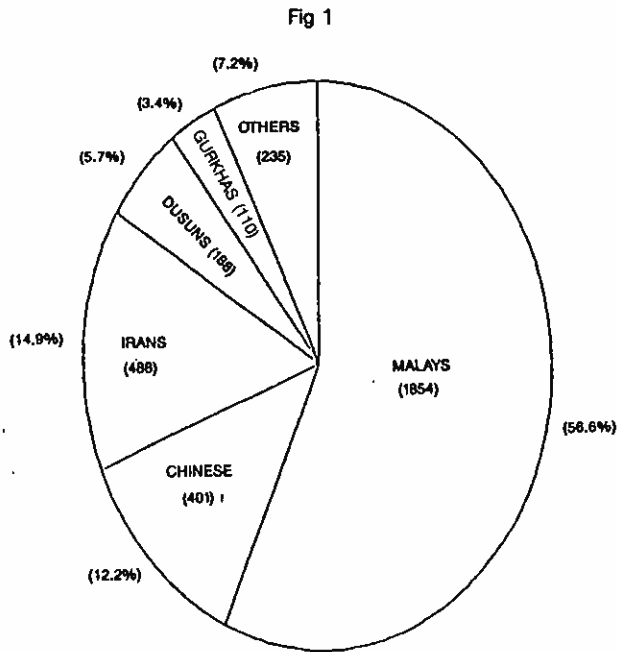
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- 1) Malays (MAL)
- 2) Ibans (IBN)
- 3) Chinese (CHN)
- 4) Dusuns with Muruts, Kadazans and Kelabits (DUS)
- 5) Gurkhas (GUR)
- 6) Others to include the rest of the expatriate donors (OTH)

Fig. 1 shows the various racial groups of blood donors.



METHODS

At the time of registration, details of each donor were carefully recorded to include name, Identity Card number, age, sex, race, and weight. Haemoglobin and Blood grouping were determined immediately and samples of blood collected from each donor for HBsAg and VDRL tests. HBsAg was tested by Enzyme-linked immunosorbent assay (ELISA) using AUSYME MONOCLONAL produced by ABBOT LABORATORIES on a Quantum Analyser. VDRL flocculation test was done using VDRL antigen produced by Gamma Biological Inc.

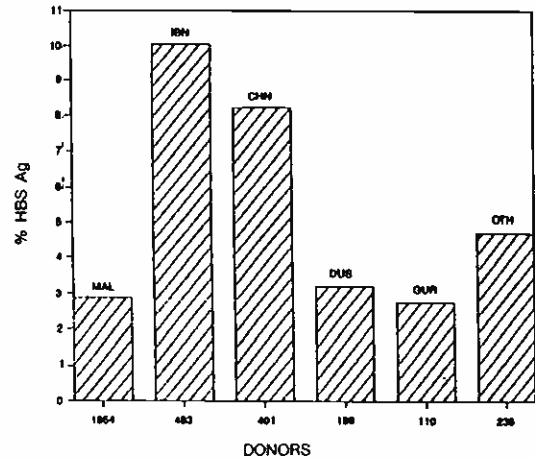


Fig 2. HBS Ag in various racial groups

SUMMARY OF FINDINGS

Table I

RACE	BLOOD GROUPS				TOTAL	HBsAg	%HBsAg	VDRL	%VDRL
	A	B	AB	O					
MALAYS	334	476	103	941	1854	33	2.86	5	0.27
IBANS	145	119	61	163	488	49	10.40	11	2.25
CHINESE	116	90	18	177	401	33	8.23	2	0.50
DUSUNS	35	68	7	78	188	6	3.19	1	0.53
GURKHAS	37	28	12	33	110	3	2.73	1	0.91
OTHERS	53	77	9	96	235	11	4.68	1	0.43
TOTAL	720	858	210	1488	3276	135	4.73	21	0.61

HBsAg Rate Vs Racial Groups $\chi^2 = 86.462$; $df = 11$; $p < 0.001$

VDRL Rate Vs Racial Groups: $\chi^2 = 26.045$; $df = 11$; $p < 0.01$

RESULTS

The prevalence of HBsAg in the Brunei Donor Population is 4.73% and that of VDRL is 0.64%. 4.73% of the men and 4.76% of the women were found to have positive HBsAg even though the majority of the donors were men (3,171 men and 105 women). HBsAg positivity rate was found to be highly significant among racial groups ($\chi^2 = 86.462$; $df = 11$; $p < 0.001$). VDRL rate was also significantly different among racial groups ($\chi^2 = 26.045$; $df = 11$; $p < 0.011$). When 3 racial groups (Dusuns +

Gurkhas + Others) were combined together due to small number of expected frequencies, VDRL rate was found to be highly significant ($\chi^2 = 24.474$; $df = 7$; $p < 0.001$). Table 1 and Figures 2 and 3 explain the significant difference. As seen in the Ethiopian study of blood donors we also found the donors with blood group AB (Table II) had a higher prevalence of HBsAg but this was not found to be statistically significant ($\chi^2 = 1.184$; $df = 7$; $p > 0.05$).

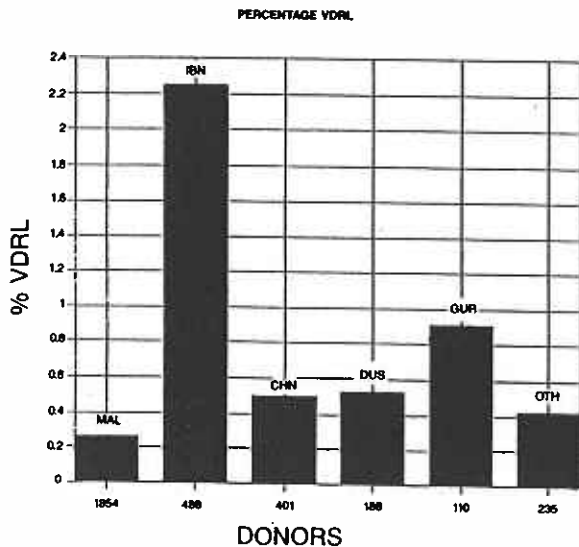


Fig. 3. VDRL in various racial groups

CONCLUSION

In 1975 the World Health Special Committee recommended that all blood and blood products should be screened for HBsAg before use. Since then the incidence of post-transfusion hepatitis has fallen considerably. There has been remarkable improvement in the methods of testing HBsAg. Routine screening of all blood donors for VDRL also has helped to reduce the incidence of infection due to blood and blood products.

Our findings in this study showed a significant variation in the occurrence of HBsAg and VDRL in various

racial groups. However we could not find statistically significant differences in different age groups, blood groups or sexes.

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TABLE II

HBsAg IN VARIOUS BLOOD GROUPS

BLOOD GROUPS	TOTAL	HBsAg	% HBsAg
A	720	30	4.17
B	858	30	3.50
AB	210	10	4.76
O	1488	64	4.30