Results Of Testing For Hb_sAg On Nepalese Blood Donors By Counter-Immuno-Electrophoresis

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SUMMARY

Serum testing for HBsAg by Counter-immuno-electrophoresis (CIEP) in agar gel on 1,000 Nepalese blood donors showed the incidence of positives to be 1.3%. Seven of the thirteen showing positive results were paid donors.

Introduction and Method

Routine testing of all blood donors for the presence of HBsAg was introduced in Jan. '81 in Kathmandu Red Cross Blood Bank. The method was based on that of Goche D. J. and Howe C. (1970).

The following veronal buffer was used--

Sodium diethylbarbiturate	10.3 g
Diethylbarbituric acid	1.84 g
Distilled water	1 l tr.

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Melted "Oxoid" purified agar (20 mg. in 2.5 ml of buffer) was pipetted onto standard microscope slides and allowed to solidify. Wells were punched using a standard apparatus, 8 pairs per slide, the centres of the wells being 6 mm apart. Wells on the anode side were filled with known positive HBs antibody, and on the cathode side with test sera. One known positive HBsAg serum was put up on each slide as a control. "Cambrelle" wicks were put in position to connect the slides to the buffer in a Shandon electrophoresis bath, and 150-200V applied, giving 10-15 mA per slide, for 60 mins. Results were read with magnifying lens, a sharp precipitin line between the wells indicating the presence of HBsAg.

Results and Discussion

13 out of 1,000 Nepalese blood donor sera showed a positive result for the presence of HBsAg, thus giving an incidence of 1.3%. Of these 13 positive donors, 7 were paid, 4 replacement and 2 voluntary. With regard to ethnic group (classification used, Sharma et al, 1981) all 7 paid donors were Tamang, of the replacement there was 1 Newar, 1 Gurung, 1 Chhetri and 1 "other"; of the two voluntary donors 1 Brahmin and 1 "other."

It was found in a previous series of 2,000 Nepalese blood donors (Sharma et al, 1981) that as far as could be ascertained 10.75% of the donors were paid, and of these paid donors 74% were Tamang. It was thus considered of interest to compare the number of Tamangs paid and unpaid with the proportion positive in each group for the present series. The probability of the results reported in Table 1 occurring by chance is about 0.006, or less than 1 in 160. The findings are also compared in Table 1 with results reported from Calcutta and Kanpur on Indian professional and voluntary blood donors also tested by CIEP method.

It will be seen that the results on Nepalese blood donors are similar to the Indian figures and accentuate the fact that paid donors are much more likely to be positive for HBsAg, as has been reported in many series from round the world. The indication is clearly that professional donors should not be used.

It has been established by many workers that "3rd generation" tests for HBsAg are at least twice as sensitive as CIEP, but cost precludes their use for routine purposes in Nepal. However the strongest positives and thus presumably the most dangerous donors, will be picked out by CIEP, and the donation not used for transfusion.

To investigate the results on Nepalese blood donors by a third generation test, 110 random Nepalese blood donor sera found negative by CIEP were sent to Red Cross Blood Transfusion Service, Sydney, NSW, for investigation. By radio-immuno-assay three of these gave strong positive results. The specimens were also tested by radio-immuno-assay for the presence of HBs antibody and 24 were found to have it present in low titre.

These results indicate that Kathmandu blood donors have approximately a 4-5% incidence of HBsAg and 25% of HBs antibody. Comparison with reports from other parts of the world using a third generation tests show Nepal figures to be similar to these from some parts of India, lower than in some tropical countries, for example Papua New Guinea, where 15% of blood donors are reported positive for HBsAg and 65% for HBs antibody (Booth P. B. 1980) higher than from Japan, where 1.85% donors have been reported positive for antigen (Tohyama H. 1980) and also Europe, for example Finland with 0.2% reported positive antigen (Nevalinna H. R. 1980).

In addition to the blood donor sera, 23 jaundiced sera from patients in Kathmandu thought to be suffering from viral hepatitis were tested by the same method (CIEP). Of these only one gave a positive result for HBsAg. It seems therefore that hepatitis E may be an uncommon cause of clinical hepatitis in Kathmandu.

Acknowledgements

The authors are grateful to the Director (Dr. G. Archer) of Red Cross Blood Transfusion Service, Sydney, N. S. W., Australia, for the rabbit antibody to HBs and the original positive control serum.

Table 1

Comparison of Incidence of HBsAg in Nepalese and Indian Paid and Unpaid Blood Donors tested by CIEP

Category	Total No. tested	No. Positive	%Positive
Unpaid Nepalese donors (Tamangs)	114	Nil	Nil
Paid " " "	111	7	6.3
Voluntary Indian donors ¹			
(Calcutta)	5666	107	1.89
Professional Indian donors ²			
(Calcutta)	7416	219	2.95

Voluntary Indian donors ³			
(Kanpur)	15,280	244	1.6
Professional Indian donors ⁴			
(Kanpur)	1596	125	7.8
Total Nepalese Blood donors			
(paid and unpaid)	1000	13	1.3

1, 2 Dutta R. N. 1980

3, 4 Rajynashi V. S. and Jain P. C. 1980

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