

# Leprosy and ABO Blood Groups

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The present study records the distribution of the ABO system of blood groups in 633 leprosy patients as compared with that seen in the general population.

## Material and Methods

Cases were selected from the Skin Out-patients Department and Leprosy Clinic of S.S. Hospital, Banaras Hindu University and the Leprosy Clinic at Chowka Ghat, Varanasi. Patients belonging to any other province or country were excluded. Blood was grouped by the slide method described by Stratton and Renton (1958). The control material consisted of data on 2583 recipients of blood at the hospital. Typing of leprosy was on clinical criteria, supported by bacteriological examination and histopathological studies in disputed cases.

## Results

Table I shows the distribution of ABO blood groups in two groups of leprosy patients set against the data for the controls. It will be seen that when the total of leprosy patients is compared with the controls, the value of  $\chi^2$  is 2.51. This is not significant as the tabular values of  $\chi^2$  for three degrees of freedom are 7.815 (at 5% probability level) and 6.251 (at 10% probability level).

Likewise, if lepromatous leprosy and non-lepromatous leprosy patients are compared with the controls the values of  $\chi^2$  are 3.70 and 2.835, respectively (d.f. 3), which are also not significant.

**Heterogeneity.** The lepromatous and non-lepromatous series of cases do not differ significantly in the pattern of ABO blood groups.

$$\chi^2 = (3.7 + 2.835) - 2.51 = 4.025 \text{ (d.f. = 3) } p < 0.250,$$

## Discussion

Studies on the ABO system of blood groups in leprosy in India have come from Lowe (1942), Hsuen, Thomas, and Jesudian (1963), Verma and Dongre (1965), Gupta and Gupta (1966), and

Povey and Horton (1966). Contributions from abroad have come from Sato (1949), Beigelman (1963, 1964), Yankah (1965), and Lechat (1965).

Apart from Hsuen *et al.* (1963), almost all observers appear to think that there is no difference in ABO blood group pattern between members of the general population and leprosy patients. The higher incidence of leprosy in group O and the

TABLE I  
DISTRIBUTION OF ABO BLOOD GROUPS IN LEPROSY PATIENTS AND CONTROL MATERIAL

Group	Control Series of Consecutive Recipients of Blood (Singh and Shanker, 1966)		Leprosy Patients				Total	
			Lepromatous		Non-lepromatous			
	No.	%	No.	%	No.	%	No.	%
A	639	24.74	54	32.92	139	29.63	193	30.49
B	859	33.26	51	31.10	121	25.80	172	27.17
O	873	33.80	47	28.66	165	35.19	212	33.50
AB	212	8.20	12	7.32	44	9.38	56	8.84
Total	2583	100.00	164	100.00	469	100.00	633	100.00

TABLE II  
TOTAL OF  $\chi^2$  DISTRIBUTIONS CALCULATED FROM DIFFERENT REPORTS AND PROBABILITY VALUES

Reference	All Cases of Leprosy		Lepromatous $\chi^2$	Non-lepromatous $\chi^2$	Degrees of Freedom
	$\chi^2$	Degrees of Freedom			
Hsuen <i>et al.</i> (1963)	6.832	3	4.639	9.247	3
Yankah (1965)	0.610	3	6.840	3.720	3
Verma and Dongre (1965)	7.860	3	6.090	5.030	3
Gupta and Gupta (1966)	2.569	3	—	—	—
Povey and Horton (1966)	0.775	3	0.706	1.070	3
Present series	2.510	3	3.700	2.835	3
Total	21.156	18	21.975	21.902	15

$p < 0.250$

$p < 0.100$   $p < 0.100$

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lower incidence in group B patients, as observed by Hsuen *et al.* (1963) in their series, has been thought by Povey and Horton (1966) to be due to a difference in stock between patients and controls.

Beiguelman (1963), studying different racial samples, observed a higher incidence of tuberculous leprosy in group O patients; but there was no difference in incidence when tuberculous and lepromatous patients were compared within each racial group (which is more appropriate). Beiguelman (1964) also found a predominance of lepromatous leprosy patients in group A and a slight excess of tuberculous patients in group O. Our results do not show any such relationship.

Taking the sum total of observations recorded in the English published reports, it is clear that there is no strong evidence of influence of ABO blood groups on the course of leprosy (Table II). The tabular value of  $\chi^2$  for 18 degrees of freedom is 21.6 (at 25%), for 15 degrees of freedom 25.0 (at 5%) and 22.3 (at 10%). It is thus obvious that the frequency distribution of blood groups in leprosy as a whole or in tuberculous leprosy patients separately does not differ from that in the general population.

### Summary

ABO blood groups were studied in 633 leprosy patients and compared with 2583 controls. No re-

lation between blood groups and susceptibility to disease was observed. Lepromatous and non-lepromatous groups of patients did not differ significantly as regards pattern of ABO blood groups.

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