Incidence of ABO and RH Blood Groups in Pulmonary Tuberculosis in Different Ethnic Groups

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Studies on the association of blood groups with pulmonary tuberculosis date back to 1926 when Halber and Hirszfild first reported their negative finding. Since then conflicting reports have been published from different countries. Trobridge (1956) reported that Rh-negative persons were more susceptible to pulmonary tuberculosis; but in the same year Campbell and in 1961 Lewis could not find any significant difference in the distribution of Rh blood groups in pulmonary tuberculosis from that of the control group. With this background, the present work was undertaken in the three different ethnic group patients of the tuberculosis hospital of the Anti-Tuberculosis Association of Singapore.

Material and Methods

Investigations were done on 1894 patients of both sexes, comprising 1656 Chinese, 122 Malays, and 116 Indians, for ABO blood group, and, out of these, 1202 patients were investigated for Rh blood group. These patients were suffering from pulmonary tuberculosis as confirmed by clinical examination, repeated chest x-ray, and sputum examination, and were permanent citizens of Singapore. They were attending the Singapore

Anti-Tuberculosis Association for their treatment. In each case the serial number, age, sex, and ethnic origin were noted, and care was taken to avoid any duplication. Blood groups were tested by standard methods, using anti-A, anti-B, and anti-D sera. Rh negative blood was always retested. For the controls, the data for the distribution of ABO blood groups in Singapore citizens (Chan, 1962) were taken, and for the frequency distribution of Rh, the unpublished data from the Singapore Blood Transfusion Service, based on several thousand analyses, were used.

Results

Results are presented in the Table, from which it is seen that the distribution of the ABO group in Chinese patients and in controls is respectively O-39.85% and 43.53%; A-27.29% and 25.99%; B-26.51% and 24.99%; AB-6.34% and 5.48%. On comparing O versus not-O in a fourfold table the value of χ^2 is found to be 8.24 for one degree of freedom, which suggests that O group persons are more resistant to pulmonary tuberculosis. The numbers of Malay and Indian patients are too small to come to any conclusion.

The number of Rh-negatives in the series is so rare (only 7 patients) that it is pointless to look for any possible association.

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TABLE

DISTRIBUTION OF ABO BLOOD GROUPS IN 1894 PATIENTS WITH PULMONARY TUBERCULOSIS COMPARED TO NORMAL CONTROLS

Blood Groups	Chinese				Malays				Indians			
	Control*		Pulmonary Tuberculosis		Control*		Pulmonary Tuberculosis		Control*		Pulmonary Tuberculosis	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
O	6644	43.53	660	39.85	2098	38.42	48	39.34	1951	39.02	46	39.65
A	3967	25.99	452	27.29	1369	25.07	36	29.51	1051	21.02	28	24.14
B	3814	24.99	439	26.51	1596	29.23	34	27.87	1680	33.60	30	25.86
AB	837	5.48	105	6.34	398	7.29	3	3.28	318	6.36	12	10.34
Total	15261		1656		5461		122		5000		116	

* Chan (1962).

The present investigation though carried out on three different ethnic groups, and not on one as was done by previous authors, shows that the incidence of pulmonary tuberculosis is less frequent in O group persons among the Chinese.

Summary

ABO blood group investigations were done on 1894 patients with pulmonary tuberculosis of both sexes from three different ethnic groups (Chinese, Malay, and Indian) in Singapore. Out of these, 1202 patients were investigated for the Rh group also with Anti-D serum.

No uniform type of significant difference in the frequency distribution of ABO and Rh blood groups in patients with pulmonary tuberculosis compared with controls could be detected, except that Chinese with blood group O were more resistant than those with the other blood groups.

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