

Frequency of ABO and Rh (D) Blood Groups in Human Population of Southern Sindh (Pakistan)

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The survey was carried out of the allelic frequency of ABO and Rh (D) blood loci of 23910 from Liaquat Medical College Hospital Hyderabad Campus and 14450 from Liaquat Medical College Hospital Jamshoro Campus. The blood was collected from both donors as well as patients from January 1996 to December 1996 at LMC Hospital Jamshoro and from January 1996 to April 1997 at LMC Hospital Hyderabad of different ethnic and rural / urban origin of southern Sindh (Pakistan). The results were not in consistent to the results reported from western Europe descent and Africans. The distribution of ABO blood in present study was significantly 10% higher of 'O' group, 11% higher of 'B' group and 50% lower of 'A' group.

KEYWORDS: ABO and Rh (D) blood groups.

Despite blood transfusion has routine in clinical practice, but some time it imposes definite immunological and infectious problems. It is because blood of every person carries antigen secrete. This antigen is Polysaccharide and is present as glycoprotein on red blood cells. Since the antigen are divided in different group systems these are very important to have complete information before it causes different hazards like haemolysis etc⁸. Mourant, A.E, et.al. (1976). The importance of blood transfusion has been realized since 1666 when Richard-lower made an attempt to transfuse the blood from animal to animal and in 1667 again he attempted and transfer blood from animal to human¹. Professor Denis-Blundell 1829 successfully transfer blood from one person to another². Later on due to lack of knowledge multiple problems were created⁹. Laikeola j.et.al (1973). ABO frequency has been carried out through out the world¹, Mollison et.al(1987), and also in different cities of Pakistan⁶. Mian Afsar et.al (1997). We are presenting our findings of two cities, Hyderabad and Jamshoro (a part of southern Sindh) and are compared with results of other cities of Pakistan and countries also.

Materials and Methods

The data was collected from Liaquat Medical College Hospital Hyderabad and Jamshoro during the year January 1996 to April 1997.

The subjects included were the donors and patients who were bled and transfused blood in LMC Hospital Hyderabad and Jamshoro. Blood samples were collected by finger pricks. Technique used as described by Karl-Landsteiner and Wiener (1940). Proforma was designed for record. ABO and Rh (D) grouping was checked by slide method. Results were observed within 1st one to two minutes before it dried up. Antisera A, B, and anti - D (gamma biological inc) were used. Whenever there was doubt specially for Rh negative, the group were either rejected or rechecked.

Results

The blood groups of total 38360 donors were analysed. 55.94% has blood group 'O', 18.64% had blood group 'A', 22.85% had blood group 'B' while 2.57% had group 'AB' (Table 1).

Table no: 1 ABO blood groups in Hyderabad Division: Pakistan

B. Group	n=	%age
O	21460	56
A	7151	19
B	8764	23
AB	985	2
Total	38360	100

Table No:2 Comparison of ABO and rh blood groups in different cities of Pakistan

B. Groups	Bahawalpur	Peshawar	Hazara	Faisalabad	Jamshoro	Hyderabad
O	37	31	33	31	49	60
A	21	28	24	23	24	16
B	36	34	32	36	24	22
AB	6	7	11	8	3	2
Rh +ve	*	95	94.6	95.4	96	93
Rh -ve	*	5	5.4	4.6	4	7

In present studies the pattern and percentage is consistent to the results of other cities of Pakistan. In our cities 95% subjects were Rh (D) positive in comparison to Faisalabad 95.4%, Hazara 94.6% and Peshawar 95%

Table No: 3 Frequency of ABO in different races of the world

Country	A	B	O	Ab
Pakistan(sindh)	19	23	56	2
Vietnam	21	29	45	5
Australia	56	0	40	0
S. America	0	0	100	0
U.SA	40	10	45	5
UK	42	8	47	3
Germany	42	11	43	4
Caucasian	41	11	45	3
AfricanDescent	29	17	50	4
W. Europe Descent	45	8	43	4
Oriental	38	22	30	10
Black	28	17	51	4

Table No:4 Comparison of rh groups in different nations

B. Groups	Pakistan(sindh)	Europe	China	W. Africa
Rh +ve	96	85	100	95
Rh -ve	5	15	0	5

A comparison of ABO and Rh (D) blood group % frequencies in different cities of Pakistan, U.S.A and U.K is given in (Table 3) and Pakistan with different nations in (Table 3 and 4).

Discussion

The importance of blood groups was realized by Karl-Landsteiner in 1901 and Rh system in 1931 and then in 1940 by Wiener⁴. Then in 1927 the discovery of (MNS) system was followed by Rh system in 1940, Lutheran 1945, Kell 1946, Lewis 1946, Duffy 1950 and Kidd 1951. The surface of the red cells contain an antigen which are direct or indirect products of genes and are classified into blood groups⁶. Though the number recognized blood groups is increasing every year but the basic ABO groups remains the same⁷. RR, Race Sanger, et,al (1975)

The blood groups have got clinical significance depending on two main factors. One is frequency of antibodies in the population and the second is their related potency.

The antigenic specificity resides in the terminal sugars of an oligo saccharide, on cell membrane⁹. Laikola j.et,al (1973). The ABO blood groups are determined by allelic genes. Their importance was realized during blood transfusion, transplant surgery and heredity disease³ Altaf et,al (1993). In early days it was reported that the percentage of blood groups is same in different races of the world but during the continuous study of blood chemistry, suggests that the pattern may be the same, but the percentage varies in different races and in ethnic groups also⁸ Mourant, et,al (1976)

After the discovery of Rh (d) antigen which is slightly different from the human red cells antigen has further highlighted its clinical importance during transfusion and pregnancy⁴ Karl and Wiener (1940).

The present study was carried out to confirm the genetical differences or otherwise of this part of Pakistan (southern Sindh) and also confirm the consistency of previous studies. However the present study shows that the percentage and pattern is slightly different which has Rh positive dominancy than Rh negative (Table 2).⁵ M. Yousif et,al. (1996). In our study the percentage of blood group 'O' is higher i.e 56% while in other cities of Pakistan is 40 or below it, 'B' is slightly higher than blood group 'A' in Pakistan in comparison to other nations of the world except in Veitnam. 'AB' is significantly less than other cities of Pakistan the Rh antigen is also slightly higher in our observations i.c 95% in comparison to other cities/nations which is 85%. In chinese no negetivity is reported. It therefore concluded that patern and percentage varies from nation to nation and among races also.

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