

Frequency of ABO, and Rh (D) Blood Groups at Hyderabad, Sind and its Territory

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ABSTRACT

Objectives: To see the frequency of ABO, subgroup ABO and Rh(D) blood groups in Patients, & donors, who attended the Liaquat university hospital for any type of surgery, Gynaecology & Obstratrical problem, etc, of Hyderabad & its territory.

Study Design: Cross- sectional study.

Place and Period of Study: Department of Pathology and Diagnostic and Research Laboratory, LUMHS, Jamshoro/ Hyderabad, from February,2012 to March, 2012.

Materials and Methods: Donors and patients of both sexes, blood samples were collected under aseptic condition from anti-cubital vein for determination of blood groups. subjects belonging to Hyderabad & its Territory, were included in this study. ABO blood grouping was determined by tile method using commercially prepared anti sera, anti A, anti B, anti AB (Plasmatic Kent, UK). Presence of Rh D antigen was determined by anti-D (Biotec Laboratories Ltd UK). For Rh-negative Du test was done.

Results: Our study shows, A positive-22.88%, A negative-02.31%, B positive-33.85%, B negative -03.27%, AB positive-08.27%, AB negative-0.77%, O positive-26.73%, O negative -01.92%.

Conclusion: regarding the management of blood bank and transfusion services in this area. ABO and Rh antigenic structure differs between regions and nations. Knowledge of blood group distribution may also play an important role for clinical studies, reliable geographical information and for forensic studies in the populations. Such studies need to be carried out at all the regional levels of Pakistan.

Key Words: ABO blood group, Rh D antigen, Hyderabad, Territory.

INTRODUCTION

When blood transfusion was attempted for first time a number of problems were encountered among animals and men alike. In July 1492 Pop Innocent VIII was transfused for as a first suggested case of blood transfusion by three volunteer youth, and the action took lives of the donors and recipient both.¹ Nothing was known regarding blood group at that time. Then in year 1901 Landsteiner reported about ABO blood group system² after performing a series of tests and up to now, it is the most significant blood group system. In 1941, Landsteiner and wiener defined the Rh blood grouping³. The blood groups are classified into A, B, AB and O in ABO system and because of presence and absence of the inherited antigenic substance on the surface of red blood cells, the person is called Rh positive and Rh negative⁴. These antigens may carbohydrates, proteins, glycolipids or glycoproteins in the system of blood grouping.⁵ 400 red blood cell antigens have been described by now, in which most of them are inherited as simple mendelian fashion and act as stable characteristics useful in paternity testing.⁶

The whole human population shares the same system of blood grouping although their frequencies may differ in specific types and may also vary according to the in different parts of the world in different races.

Previously studies have performed on different parts of Pakistan.⁷ Which reflect some differences on racial differences.^{8,9} In modern sciences the relationship of blood group with environment and disease is sought, so one of the reason to be co-related while identifying the risk factor for certain disease.^{10,11} The other major importance to find out blood group antigen is in relation to blood transfusion and organ transplantation,¹² it can also be helpful so for performing certain genetic research, anthropology and training ancestral relation of human.¹³ The present study was performed therefore to document the frequency of ABO and Rh blood group in different populations¹⁴ of Hyderabad and its territory.

MATERIALS AND METHODS

A total of 520 subjects (Donors and patients) of both sex (male and female) were included in this study. Essential information was noted and recorded. From each subject blood samples were collected under aseptic condition from anti-cubital vein for determination of blood groups. subjects belonging to Hyderabad & its Territory, were included in this study. ABO blood grouping was determined by tile method using commercially prepared anti sera, anti A, anti B, anti AB (Plasmatic Kent, UK). Presence of Rh D antigen was determined by anti-D (Biotec Laboratories Ltd UK). For Rh-negative Du test was

done. This data has been reviewed and analyzed for sex distribution and frequency of ABO and Rh blood group.

RESULTS

Male subjects 205 (39.42%) and female 315 (60.58%) out of total 520 subjects, The frequency of ABO system and Rh D (+ve and -ve) shown in Table 1 with gender distribution.

Blood group B +ve 33.85% is the most prevalent group followed by O +ve 26.73%, A +ve 22.88% and AB +ve 08.27%. Among Rh negative blood group B -ve is the most prevalent 03.27% followed by blood group A -ve 02.31%, Blood group O -ve 01.92% and AB -ve 0.77%, as shown in table 2.

Table No.1: Age groups and sex wise distribution of accepted donors and recipients.

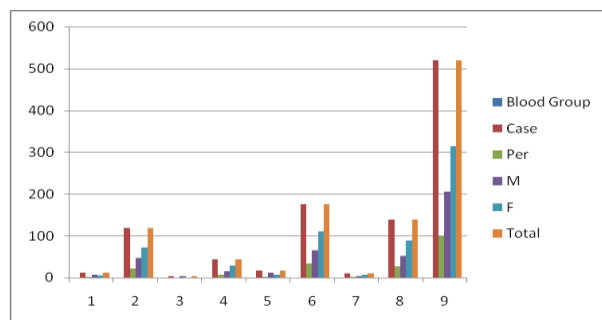
Age groups Years	Male		Female		Total (M/F)	Percentage (%)
	No:	%	No:	%		
0-10	66	12.69	29	05.58	95	18.27%
11-20	30	05.77	33	06.35	63	12.12%
21-30	60	11.54	161	30.96	221	42.50%
31-40	24	04.62	61	11.73	85	16.35%
41-50	13	02.50	17	03.27	30	5.77%
51-60	07	01.35	10	01.92	17	3.27%
61-70	03	00.58	02	00.38	5	0.96%
71-80	02	00.38	02	00.38	4	0.76%
Total	205	39.42	315	60.58	520	100.00%

Table No.2: Shows comparison of Rh positive and Rh negative (%) between male and female subjects.

Blood Group	Cases	Percent	Gender		Total
			M	F	
A Negative (-ve)	12	2.31	07	05	12
A Positive (+ve)	119	22.88	47	72	119
B Negative (-ve)	17	03.27	11	06	17
B Positive (+ve)	176	33.85	66	110	176
AB Negative (-ve)	04	00.77	04	00	04
AB Positive (+ve)	43	08.27	15	28	43
O Negative (-ve)	10	01.92	04	06	10
O Positive (+ve)	139	26.73	51	88	139
Total	520	100	205	315	520

Table No.3: Frequency distribution of ABO and Rh blood groups.

Blood Group	Cases	Percent	Blood Group	Cases	Percent
A (+ve)	119	22.88	A (-ve)	12	02.31
B (+ve)	176	33.85	B (-ve)	17	03.27
AB (+ve)	43	08.27	AB (-ve)	04	00.77
O (+ve)	139	26.73	O (-ve)	10	01.92
Total	477	91.73		43	08.27



Graph: Graph of comparison of Rh positive and Rh negative (%) between male and female.

DISCUSSION

The ABO and Rh blood group systems are vital for the blood transfusion and it carries with it the significance of individual differences among different people. This also plays an important role in hereditary diseases, genetics and migration of races and genetics.⁸

In our study blood group B +ve (33.85%) is the most prevalent blood group followed by O +ve (26.73%), A +ve (22.88%) and AB +ve (08.27%). A study was conducted on population belonging to the district swat and found similar frequencies of blood group.³ Another study was performed in 1994 showed B +ve blood group (36.00%) to be the most prevalent group in population belonging

to sindh.¹⁵ The change in the finding may be due to mass migration of other ethnic groups from other provinces of Pakistan and Afghanistan.¹⁶

Our study is also consistent with other studies performed by Majeed 2002,¹⁰ Zafar N J 1997,¹² Khan M S, 2004.¹⁷ and Amjad H 2004.¹⁸ Other studies were conducted in Punjab and NWFP, group B is the commonest, our results are similar. Whereas Group O is commonest in Baluchistan and Sind, which is contrary to our study.^{19, 20} In our study the frequency of blood group B ⁺ve (33.85%) is the most prevalent, Rh-Positive was 91.73% and Rh-negative was 08.27%.

CONCLUSION

The study will help in the management of blood transfusion services in Pakistan especially in sindh province.

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