ORIGINAL ARTICLE

Frequency of ABO and Rh Blood Groups in an Antenatal Population at a Tertiary Care Hospital, Lahore

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ABSTRACT

Objective: To evaluate the frequency of ABO and Rh blood groups in a gravid female population in the third trimester of pregnancy.
Methods: This cross-sectional observational study of one year duration conducted from April 1999 to April 2000. 500 females in third trimester of pregnancy belonging to all age groups and parity attending Antenatal Outdoor of Gynae & Obs, Sir Ganga Ram Hospital, Lahore. Blood group and Rh factor determination was carried out by antigen-antibody agglutination test by slide method.
Results: The percentage of ABO blood groups were, B: 191 cases (38.2%), O: 165 cases (33%), A: 102 cases (20.4%) and AB: 42 cases (8.4%). The Rh (D) positive cases were; 477(95.2%) and Rh negative cases were 23(4.8%).
Conclusion: In the ABO blood group system, group B was the most common, followed in order by group O, group A, group AB and more than 95% of the population was +ve with Rh antigen.
Key words: Frequency, ABO blood group, Rh blood group, Antenatal population

INTRODUCTION

The ABO blood group system was the first human blood group system to be discovered. It remains the most important in transfusion because of the regular occurrence of the anti-bodies; anti A, anti B and anti AB in persons who lack the corresponding antigens.[1] The Rh system was the fourth to be discovered but it is the second most important in blood transfusion due to the high immunogenicity of the D antigen[2]. ABO system comprises of 4 main groups: Blood groups O, A, B and AB which are confirmed by the presence or absence of A and B antigens. The Rh antigens which are present on the red cells are D, C, E, C and E antigens[3]. The importance of ABO and Rh blood group antigens is in relation to blood transfusion. In addition Rh factor is important in Rh-ve gravid females in causing hemolytic disease of newborn (HDN) when they become sensitized to the Rh antigen by a previous pregnancy with Rh positive fetus[4]. The other important aspects of the blood groups are their usefulness in organ transplantation, genetic research, anthropology and ancestral relations of human beings[5].

PATIENTS AND METHODS

Five hundred female subjects were selected for the out patient department of Obstetrics and Gynecology of Sir Ganga Ram Hospital, Lahore. 2ml of blood was drawn from antecubital vein with a disposable syringe. It was immediately shifted to a tube already containing EDTA. Blood was thoroughly mixed on a roller. Blood grouping was done by slide method by mixing one drop of patient's blood with the commercially prepared sera anti A and anti B and presence or absence of agglutination was observed.

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RESULTS

Blood group B was most common (191 cases; 38.2%). It was followed by blood group O (165 subjects; 33%), blood group A (102 cases; 20.4%) and blood group AB (42 cases; 8.4%). Of the Rhesus blood group system, 477 subjects (95.8%) were positive with Rh blood group and 23 subjects (4.2%) were negative with Rh blood group (Table 1).

DISCUSSION

Prevalence of blood group study is the most important aspect of transfusion medicine. It is important in organ transplantation and genetic research as well. The present study evaluated the frequency of ABO and Rh blood groups. It was found that the relative frequency of various blood groups was the same from different cities all over the country (Table 1)[6,7,9]. Blood group B was the most common followed in order by blood group O, blood group A and blood group AB. This is in consistence with other studies (Table 1)[6-8]. Studies in Sindh and Balochistan show blood O as the most prevalent blood group, followed in order by blood group B (Table 1)[7,9].

Comparison of our data with the different countries of the world shows that blood groups B and O are equally dominant in the Indo-Pak subcontinent[10]. In the UK, USA, KSA and Canada, blood group O is the most dominant, followed in order by blood group A. blood group B is the lesser common and AB is the least common blood group (Table 2)[10,11,12,13]. In the ABO blood group system, blood group AB is the least prevalent all over the world. Of the Rh blood group system, frequency of Rh D positive blood group is very high as compared to the Rh D negative blood group throughout the world.

Table 1: Frequency of blood groups in different areas of Pakistan

Population	A (%)	B (%)	O (%)	AB (%)	Rh D (+)	Rh D (-)	Reference No.
Lahore	20.4	38.2	33	8.4	95.8	4.2	Present study
Rawalpindi/Ismabad	24.2	34.3	31.3	10.1	91	8.9	6
Sindh	24.9	31.8	35.5	6.9	91.3	8.7	7
Balochistan	23.3	27.9	40.9	7.8	92.2	7.8	8
Punjab	21.2	36.1	34.1	9.0	97.2	2.8	7
Multan	21.92	36.95	33.8	7.33	92.2	7.8	7
Gilgit	24.2	40	25.6	10	89.8	10.2	9

Table 2: Frequency of ABO and Rh blood groups in different countries of the world

Population	A (%)	B (%)	O (%)	AB (%)	Rh D (+)	Rh D (-)	Reference No.
UK	41.7	8.6	46.7	3			10
USA	40	11	45	4	83	17	11
India	23.8	29.9	39.8	6.3	94.2	5.79	10
KSA	24	17	52	4	93	7	12
Canada	42	9.0	46.0	4.0	85.1	14.9	13

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