

ABO AND RHESUS BLOOD GROUPS DISTRIBUTION IN MOTHERS AND NEONATES IN A NIGERIAN POPULATION

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ABSTRACT

Objective:

To provide information in the distribution of ABO and Rhesus Blood Group in our population.

Study Population/Methods:

One hundred and twenty one antenatal mothers who were sequentially booked in antenatal care clinic of University of Jos Health Clinic, Jos, Plateau State after their informed consent. Cord blood was obtained from the babies of these mothers at birth. ABO and Rhesus blood groups were determined by Dacie and Lewis Methods.

Results:

Blood group O is the most common blood group representing 74% and 75% in mothers and their babies respectively. The distribution of group B are 13% in mothers and 12% in their babies. The distribution of A and AB groups among mothers and their babies is 10% and 3% respectively. There is a 100% Rhesus positivity in both mothers and neonates.

Conclusion:

The Rhesus negativity is very rare. There should still be need to test intending to marry couples before they start having children.

Key Words: Maternal, Umbilical Cord blood, ABO & Rhesus blood groups.

INTRODUCTION

The blood group is an expression of some inherited characteristics on the human red blood cell membrane. The ABO group distribution has been studied in many Nigerian populations but the results are not in agreement⁽¹⁾. The Rhesus group system has not been well studied particularly in the West African sub-region⁽²⁾.

The importance of the blood group system becomes of great importance particularly in the processes of blood loss and blood transfusion. Rhesus incompatibility is seen in obstetric practice with its grave consequences⁽³⁾. Several workers have studied the blood groups of some ethnic groups in Nigeria^(4,5,6). ABO blood group distribution shows wide variation⁽⁵⁾, but the findings of the Rh group distribution were similar⁽⁴⁾. Data have shown that the Rhesus negative group is very low in Negroes⁽⁷⁾. Report of Rhesus negative distribution of 3.2% has been seen⁽⁸⁾.

In Jos, a previous study has reported on blood group distribution among some ethnic groups⁽⁴⁾. However the relationship in distribution of ABO and Rhesus Blood groups between mothers and their neonates has not been reported. This study therefore was undertaken to provide information in these blood groups distribution between mothers and their neonates.

METHODS

Blood samples were obtained from one hundred and twenty-one (121) pregnant mothers who gave their informed consent. Blood was also taken from the umbilical cord of their babies at birth. The subjects were admitted by sequential booking at the antenatal care clinic of University of Jos Medical Health Centre Jos, Plateau State.

The ABO and Rhesus blood groups were determined using the method of Dacie and Lewis as described elsewhere by Ibu and Adeniyi.

The data were analyzed electronically using Mackintosh Performa 5200CD on stat view Abacus concepts software.

RESULTS

Table I shows the comparison of ABO blood groups distribution in maternal blood and umbilical cord blood. Table 2 shows the distribution of the Rhesus blood group in maternal blood and in umbilical cord blood.

Blood group O is dominant with percentage distribution of 75% in umbilical cord blood and 74% in maternal blood. This represents a difference of 1.35%. Group B is 12% in umbilical cord blood and 13% in maternal blood respectively, representing 8.33% difference. Group A is 10% in both mothers and cord blood, and group AB, 3% in both groups. There was a 100% Rhesus positivity in both mothers' and umbilical cord blood.

TABLE 1: Comparison of ABO Blood Group Distribution in Umbilical Cord Blood and Maternal Blood

Blood Group	Umbilical Cord Blood %	Maternal Blood %
O	75	74
B	12	13
A	10	10
AB	3	3
Total	100	100

TABLE 2: Comparison of Rhesus Blood Group Distribution in Umbilical Cord Blood and Maternal Blood

	RhesusPositive	RhesusNegative
Umbilical Cord Blood	100%	0%
Maternal blood	100%	0%

Discussion

Antigens found on red blood cell membranes are inherited characteristics with practical implications in medicine and anthropology⁽⁴⁾. Several works done on blood groups distribution show marked variations^(1,4,5,7). In the present study, blood group O is the most predominant. This corroborates earlier cited studies. However, the values in this study differ from those of some other studies. In Benin and Lagos environments⁽⁷⁾ blood group O was found to be 57.5%. In Jos, percentage distribution of blood group O has been reported as within a range of 31.0% to 47.4%⁽⁴⁾. The group distribution in this study was selective for pregnant women unlike in the other studies that combined the sexes. Whether this result implies that blood group is associated with a higher reproductive index is not clear. The other ABO groups are distributed in order of decreasing fashion as B, A, and AB. There have been reports of blood group B distribution of 22% in Lagos, 20.5% in Lagos and 24.6% in Benin.^(4,7,8) In Jos the blood group B was ever reported to be as high as 41%. In this study, the group percentage distribution is 12%. The distribution of group A is similar to that of group B, and corroborates earlier reports. Group AB in all cases, including the present study is reported as least in the distribution profile^(1,4,7,9). It was reported as 3% in Lagos⁽⁹⁾ 1.4% in Lagos and Benin⁽⁷⁾, 2.7% in Jos⁽⁴⁾. In this study the distribution was 3%. The ABO group distribution pattern is similar in both mothers' and Umbilical cord blood.

The Rhesus system is highly complex with variants of antigenic determinants⁽⁷⁾. The report on the Rhesus group distribution is also non-uniform. In Port-Harcourt, a value of 1.6% Rhesus negative (Rh) has been reported⁽¹⁰⁾. In Lagos area, Rhesus negative has been reported as 6.85% and 5.8%^(7,9). Reports of Rh negative being 3.2%, 2.9%-6% have also been made^(4,11). In the present study there was no Rh negative group seen. Failure to find the Rh negative might be probably due to the size of the study population⁽⁷⁾, but in any case still indicative of the rarity of the group.

The study of the blood groups is an important subject, and in spite of the earlier studies done, more studies are still needed to make conclusive decision on this.

Acknowledgment

The authors acknowledge the assistance of the Technical staff of the Department of Human Physiology, University of Jos. We also acknowledge the assistance from the Faculty of Medical Science Research Grant.

References

1. Odaibo F. Omada J. And Fleming A.F. Blood groups and Rhesus typing in blood donors in Kaduna, Nigeria Medical J. (1974)4: 127.
2. Mourant AF., Kopec AC. and Damaniewska - Sobezak K. The distribution of the Human blood groups (2nd Ed.) Oxford University Press, London, (1976) Pp. 108-117.
3. Owen RD., Stormout C., Wexter IB. and Wener AS. Medicolegal applications of blood grouping tests. J. Am. Med. Ass. 1975; 164: 2036-2044.
4. Onwukeme KE. Blood group distribution in blood donors in a Nigerian Population. Nig. J. Physiol. Sci. 1990; 6: 67-70.
5. Worlledge s. Ogiemudia SE. Thomas CO., Ikoki BN. and Luzzatto L. Blood antigens and antibodies in Nigeria. Ann. Trop. Med. Parasitol 1974; 68: 249-264.
6. Udeozo IOK. Haematological Studies of Igbos of East Central State. Nig. Med. J. 1974; 4: 127.
7. Iyawe VI., Igboroje, ADA. and Akinlabi GA. Preliminary Survey of Rhesus Inheritance in ABO Blood Groups in Nigerians. Nig. J. Physiol. Sci. 1999; 15(2):18-19.
8. Ezeilo GC. Physiological peculiarities of africans In: Green JH. An Introduction to Human Physiology, African Edition, Oxford University Press, London 1978; Pp. 225-232.
9. Ojo GO, Ajose-Clokes OO. and Balogun OO. Frequency Distribution of A.B.O and Rhesus Blood Groups in the Urban population of Lagos. Conference proceedings in Nig. J. Physiol. Sci. 1987; 3: 79.
10. Korubo-Owiye T. And Igbigbi PS. . Distribution of ABO and Rhesus Genes among Socio-economic classes in Port-Harcourt, Nigeria. Nig. J. Physiol. Sci. 1994; 10(1-2): 22-28.