DISTRIBUTION OF ABO AND RHESUS (D) BLOOD GROUPS IN KANO METROPOLIS

Imoru M[1]., Onwuka C., Kwaru H., Nwankwo E[2]

Departments of [1]Heamatology & Blood Transfusion and [2]Medical Microbiology and Parasitoloty, Faculty of Medicine, Bayero University, Kano.

CORRESPONDENCE: **M. Imoru**
Departments of Heamatology & Blood Transfusion

ABSTRACT

BACKGROUND: To provide information in the distribution of ABO and Rhesus (D) blood groups since there has been no such study carried out in Kano.

STUDY POPULATION/ METHOD: A total of 5,303 blood donors and pregnant women who came for antenatal care at Aminu Kano Teaching Hospital, Kano between January and December, 2003 were determined by Dacie and Lewis method.

RESULT: Blood group O had the highest distribution of 55.3%, followed by similar result of 20.8% and 207% of blood groups A and B respectively while blood group AB had the lowest distribution of 3.2%. The prevalence of Rh(D) negative subjects amongst the population studied was 5.1%. Similar result were obtained when the distribution of A Rh (D) positive, A Rh (D) negative, B Rh (D) positive, B Rh(D) negative, O Rh(D)positive and O Rh (D)negative(20.1%, 1.3%, 19.6%,1.1%, 50% and 2.3% respectively) of pregnant women were compared to 19.6%, 0.83%, 19.7%, 1.0%, 53.9%,and 3.% respectively of blood donor. However, striking differences were observed when AB Rhesus (D) positive (5.4%) and AB Rh(D) negative (0.24%) of pregnant women were compared to 1.6% and 0.1% respectively of blood donors.

CONCLUSION: Similar result of ABO and Rhesus (D)blood groups distribution have been observed in this study when compared to previous studies in Nigeria. However, there is a need for further study to be carried out with regard to tribes since ethnicity and inter-tribal marriage have been found by earlier authors to influence the ABO and Rhesus blood groups distribution most especially in the urban areas.

KEYWORDS: Distribution, ABO and Rhesus (D) groups, Kano

INTRODUCTION

Discovery of the ABO system by Landsteiner in 1901 has marked the beginning of the safe blood transfusion. ABO and Rhesus blood group system are of major clinical importance with Rhesus D antigen being the most immunogenic red cell antigen after A and B which is capable of stimulating anti-D production after transfusion or pregnancy in the majority of Rhesus D negative individuals. (1)

A lot of studies have been carried out in Nigeria on the distribution of ABO and Rhesus blood groups and some of the result have shown

differences on the bases of ethnicity and inter-tribal marriage (2,3,4). Since there is no documentation of the study distribution of ABO and Rhesus blood groups in Kano, it was therefore considered necessary to carryout the study of pregnant women and blood donors at Aminnu Kano Teaching Hospital, Kano, Nigeria as the knowledge of the distribution of blood group antigen and of the corresponding antibodies in any given geographical area is essential for the effective management of blood transfusion centres in the environment

MATERIALS AND METHODS

Pregnant women (antenatal cases) and blood donors were the subjects used for the study at Aminu Kano Teaching Hospital between January and December,2003. A total of 5,303 males and 2,057 females)were used for this study and the ages ranged from 17 to 50 years

Venous blood was collected into a plain 10ml-sterlin container and the red cells were separated from the serum by centrifugation. ABO and Rhesus (D) blood groups were determined using methods of Dacie and Lewis (5) and all the anti-sera were controlled appropriately.

RESULTS

Table 1 shows the distribution of ABO and Rhesus (D) blood groups in 5,303 subject. It has been observed that blood group O had the highest distribution of 55.3% while similarly of distribution was observed when blood A (20.8) was compared to blood group B (20.7). However, blood group AB had the lowest distribution of 3.2% while the prevalence of Rhesus (D) negative individuals amongst the population studies was 5.1%.

Table 2 shows comparison of ABO and Rhesus (D) blood groups between pregnant women and blood donors. Striking difference were obsreved in the distribution of AB Rh (D) positive (5.4%)and AB Rh(D) negative (0.24%)respectively of pregnant women when compared to 1.6% and 0.1% respectively of blood donors . However, distribution of A Rh(D)positive, A Rh (D) negative of 20.1%, 1.3%, 19.6%1.1%,50%and 2.3%respectively of pregnant women when compared to 19.6%,0.83%,19.7%and 3.3%respectively of blood donors showed no striking differences.

TABLE 1

DISTRIBUTION OF ABO AND RHESUS (D)BLOOD GROUPS IN 5,303 SUBJECTS TESTED AT AMINU KANI TEACHING HOSPITAL FROM JANAURY TO DDECEMBER, 2003

ABO Group	Rhesus(D) positive	Rhesus(D) negative	Total	%Total of ABO Group	% Total of Rhesus(D) negative
A	1,050	53	1,103	20.8	4.8
B	1,042	55	1,097	20.7	5.0
AB	162	07	169	3.2	4.1
O	2,780	154	2,924	55.3	5.3
TOTAL	5,034	269	5,303	100.0	5.1

TABLE 2: COMPARISON OF OF ABO AND RHESUS(D) BLOOD GROUPS BETWEEN PREGNANT WOMEN AND BLOOD DONORS.

	A(D) positive (%)	A(D) Negative (%)	B(D) Positive (%)	B(D) Negative (%)	AB(D) Positive (%)	AB(D) Negative	O(D) Positive (%)	O(D) Negative (%)	TOTA
Pregnant Women	413 (20.1)	26 (1.3)	403 (19.6)	23 (1.1)	111 (5.4)	5 (0.24)	1,029 (50.0)	47 (2.3)	2,057 (100.0
Blood Donors	637 (19.6)	27 (0.83)	639 (19.7)	32 (1.0)	51 (1.6)	2 (0.1)	1,751 (53.9)	107 (3.3)	3,246 (100.0

DISCUSSION

Most of the on the distribution of AOB and Rhesus blood groups have been carried out in so many parts of the country but none has been documented so far in Kano, a cosmopolitan city which is predominantly Hausa-Fulani speaking population.

The study shows the blood group O is predominant (55.3%) in the population studied which is consistent with the previous reports on pregnant women and blood donors Nigeria (2,3,6,7,8). The blood group distribution of A (20.8%) is similar to that of blood group B of 20.7% in this study which agrees with the earlier in reports in Nigeria (2,6) while differences in percentage distributions of blood groups A and B in this study when compared to the findings in Jos and East central (7,8) could be to lower numbers of samples used for their studies, ethnicity and inter tribal marriages (2,4). However, blood group AB has the lowest distribution of 3.2% in this study which substantiates the earlier reports in various part of Nigeria (6,7,8,9). The prevalence of Rhesus (D) negative subjects amongst the population studied is 5.1% which agrees with previous report in Nigeria (2,3,4,6). The distribution of A Rh (D) positive, A Rh (D) negative, B Rh (D) negative, O Rh (D) positive and O Rh (D) negative blood groups of 20.1%, 1.3%, 19.6%, 1.1%, 50% and 2.3% respectively of pregnant women are similar to that of blood donors of 19.6%, 0.83%, 19.7%, 1.0%, 53.9% and 3.3% respectively in this study except that blood groups AB Rh (D) positive (5.4%) and AB Rh (D) negative (0.24%) of pregnant women show striking differences when compared to 1.6% and 0.1% respectively of blood donors which could relatively be due to fewer number of antenatal samples. However, the percentage distribution of AB in pregnant women in this study is consistent with the studies carried out in Nigeria (2,3) which further justifies that AB blood group has the least percentage distribution when compared to A, B and O groups.

In conclusion, it has been observed that the result from this study have shown a lot of similarities with most of the studies carried out previously in several parts of Nigeria. However, it is advisable to carry out this study with regard to tribes since ethnicity and inter tribal marriages have been found by earlier authors to influence the distribution of AOB and Rhesus blood groups most especially in urban areas. In addition to this, the study could also serve as a guide to the zonal blood transfusion center when it becomes effective as regard the ratios of groups of blood to be stored.

REFERENCES

1. Dacie JV and Lewis SM. Blood cell antigens and antibodies: Erythrocytes, platelets and granulocytes. Practical heamotology, 9th Edition, Churchill Livingstone, London 2001;431.
2. Worlledge S, Ogiemudia SE, Thomas CO, Ikoku BN and Luzzato L. Blood antigens and antibodies in Nigeria. Ann. Trop. Med. Parasitol 1974;68(3):249-264.

3. Odaibo F, Omada J and Fleming AF. Blood groups and Rhesus typing of blood donors in Kaduna. Nigeria Med. J. 1974;4(2):127.
4. Nwauche CA and Ejele OA. A survey of the status of common Rhesus phenotypes in port Harcourt. Highland Med. Research J. 2004;2(1):22-27.
5. Dacie JV and Lewis SM. Laboratory aspects of blood transfusion. Practical heamotology, 9th Edition, Churchill Livingstone, London 2001;472-476.
6. Odunaiya OA. A serological study of AOB and Rhesus blood groups of 11, 120 pregnant women in Lagos. Nigeria Med. J. 1976;6(3):279-280.
7. Odeh SO and Ibu JO. ABO and Rhesus groups distribution in mothers and neonates in Nigeria population. Highland Medical Research J. 2002;1(1):11-12.
8. Udeozo IOK. Heamatological studies of Igbos of East central state. Nig. Med. J. 1974;4(2):127.
9. Omoregie R, Ogefere HO, Omokaro EU and Omorogbe E. Distribution of ABO and Rhesus blood group and heamoglobin phenotypes among tuberculosis patients in Benin city, Nigeria. Journal of Med. Lab. Sci. 2002;11(1):68-70