

THE DISTRIBUTION OF ABO AND RHESUS BLOOD GROUPS IN UNIVERSITY OF UYO TEACHING HOSPITAL (UUTH), UYO, NIGERIA

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ABSTRACT

Background: The University of Uyo Teaching Hospital (UUTH), Uyo is a tertiary health institution which serves the health needs of the people of Akwa Ibom State and beyond. Blood transfusion service is one of the most important health services provided by UUTH. Organized, efficient and safe blood transfusion practice needs data in blood group serology. This study was carried out because of lack of research based data on human blood group system in UUTH, Uyo and Akwa Ibom State.

Materials and Method: The study is retrospective. Patients' ABO and Rhesus blood group registers in the blood bank of UUTH, Uyo, were reviewed from the year 2000 (when in 2000?) 31st May 2006. The total number reviewed was 10,552.

Results: From the 10,552 patients records reviewed for the ABO blood group, blood group O was the most common with 5,919 (56.10%), followed by blood group A with 2,645 (25.07%), while blood group B was third with 1,728 (16.386) and lastly blood group AB with 259 (2.45%). The distribution of Rhesus antigen shows that Rhesus D positive was the highest with 10,203 (96.68%) while Rhesus D Negative was the lowest with 349 (3.30%).

Conclusion: The baseline data from this study which is in keeping with the observed trend in other studies in Nigeria, hopefully, would assist in the planning and running of an organized, efficient and safe blood transfusion service in UUTH, Uyo and in Akwa Ibom State, Nigeria.

INTRODUCTION

The University of Uyo Teaching Hospital (UUTH) Uyo is a 250 bed tertiary health institution serving the health needs of the people of 31 local government areas within Akwa Ibom State and beyond. Blood transfusion service is one of the most important health services provided by UUTH to the ever increasing number of patients. The provision of such services depends on organized, efficient and safe

blood transfusion practice. Safe blood is blood that does not contain any virus, parasites, drugs, alcohol, chemical substances or other extraneous factors that might cause harm, danger or disease to the recipient.¹

Blood group serology is of utmost importance in the provision of safe blood. The provision of safe blood is further challenged by the current HIV/AIDS pandemic and Hepatitis scourge both of which are transmissible through unsafe transfusion of blood and blood products.

About 300 blood group antigens have been recognized. A blood group system is constituted by antigens that are products of alleles at a single locus or at closely linked loci. Out of the over 15 well defined blood group systems recognized. The ABO and Rhesus blood groups are clinically the most important. Other recognized blood groups include the MNS, P, Lutheran, Kell, Lewis, Duffy, Kidd, and Diego blood groups.²

Karl Landsteiner demonstrated in 1900 and 1901 that human blood could be classified into 3 groups (A, B, O). His associates De Castello and Sturlin in 1902 discovered the fourth group in this system the AB blood group. The Rhesus system was discovered in 1940 by Karl Landsteiner and Wiener².

With a few exceptions blood group antigens can after the age of about 2 years be determined easily and objectively. These antigens remain virtually unchanged throughout the life of their host and therefore provide useful genetic markers in anthropological studies and in settling paternity disputes². The clinical significance of blood groups in blood transfusion is that individuals who lack a particular blood group antigen may produce antibodies that react with that antigen and this may lead to transfusion reactions and/or haemolytic disease of the New-born. Thus, the donor's blood and recipe must be correctly grouped and cross-matched to prevent blood transfusion reactions and mortality.

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Akwa Ibom State has no organized blood transfusion service and UUTH is yet to put up its own hospital blood transfusion committee. There is no research based data on the common human blood group system in Akwa Ibom State and UUTH, Uyo, hence the need to carry out this study on the distribution of ABO and Rhesus blood group system as seen in UUTH, Uyo.

MATERIALS AND METHOD

The study is retrospective. Patients' ABO and Rhesus blood group registers in the blood bank of UUTH, Uyo from year 2000 to 31st May, 2006 were reviewed and information on the number of patients per year, type and distribution of blood groups were

extracted. Analysis was done using simple percentages. The total number reviewed was 10,552.

RESULTS

From the 10,552 patients' ABO and Rhesus blood group systems reviewed, the most common blood group was Blood Group O with 5,919 (56.10%), followed by Blood Group A with 2,645 (25.07%), while Blood Group B was third with 1,728 (16.37%) and lastly Blood Group AB with 259 (2.45%) (Table 2). Also, in the Rhesus blood group, the Rhesus D positive group was the most common with 10,203 (96.68%) while Rhesus D negative group was the least with 349 (3.30%) (Table 3)

TABLE 1 ABO BLOOD GROUP DATA (2000 31ST MAY, 2006)

YEAR	BLOOD GROUP A	BLOOD GROUP B	BLOOD GROUP AB	BLOOD GROUP O	TOTAL
2000	346	218	38	768	1,370
2001	394	273	39	864	1,570
2002	145	113	13	278	549
2003	575	365	81	1,345	2,366
2004	477	338	34	1,050	1,899
2005	496	295	45	1,090	1,926
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May 2006	213	126	9	524	872
TOTAL	2,646	1,728	259	5,919	10,552

TABLE 2- ABO BLOOD GROUP DISTRIBUTION

	BLOOD GROUP A	BLOOD GROUP B	BLOOD GROUP AB	BLOOD GROUP O	TOTAL
TOTAL NUMBER	2,646	1,728	259	5,919	10,552
PERCENTAGE	25.07%	16.37%	2.45%	56.09%	100%

TABLE3 DISTRIBUTION OF RHESUS D ANTIGEN WITH ABO BLOOD GROUP

	BLOOD GROUP A POSITIVE	BLOOD GROUP A NEGATIVE	BLOOD GROUP B POSITIVE	BLOOD GROUP B NEGATIVE	BLOOD GROUP AB POSITIVE	BLOOD GROUP AB NEGATIVE	BLOOD GROUP O POSITIVE	BLOOD GROUP O NEGATIVE	TOTAL RHESUS POSITIVE	TOTAL RHESUS NEGATIVE
TOTAL NO.	2,579	66	1,680	48	252	7	5,629	228	10,203	349
PERCENTAGE	24.44%	0.63%	15.92%	0.45%	2.39%	0.07%	53.93%	2.16%	96.69%	3.3%

DISCUSSION

Two blood group systems were reviewed in this study: ABO and Rhesus D antigen. For the ABO blood group, the result of the study showed that blood group O was the commonest with 5,919 (56.10%). This finding is in keeping with results of previous works done in Nigeria such by Worlledge et al⁵ and C. A. Nwauche and O. A. Ejele⁷. Worlledge et al reported a blood group O of 51.5% among the Yoruba and 50% among the Hausas.⁵ The survey done by C. A. Nwauche and O. A. Ejele in Port-Harcourt showed Blood group O of 56.30%⁷ Blood group A was the next common in this study with 2,646 (25.07%), while the third was Blood B with 1,728 (16.37%) and lastly AB with 259 (2.45%). This also reflects the same pattern as reported by the authors above. Worlledge et al reported Blood A 21%, Blood group B 23%, Blood group AB 4%⁵ while C. A. Nwauche and O. A. Ejele reported 22.65% for Blood group A, Blood group B 19.02% and Blood group AB 2.10%.⁷

This pattern of distribution is also similar to findings in the United Kingdom with 46% for Blood group O, 42% for Blood group A, 9% for Blood group B and lastly 3% for Blood group AB².

Rhesus D antigen study showed a high Rhesus D positivity of 10,203 (96.68%) while Rhesus D negative was low with 349 (2.91%). This finding is also similar to that reported by other workers within and outside Nigeria of high Rhesus D positivity and low Rhesus D Negativity among blacks. Worlledge et al reported Rhesus D positive of 91.7%, Rhesus D Negative 0.83%,⁵ Onwukeme reported 94.97% Rhesus D positive and 2.96% Rhesus D Negative.⁶ Nwauche and Ejele study showed Rhesus D positive of 92.74% and 7.26% Rhesus D Negative.⁷

CONCLUSION

In conclusion, this study has revealed that blood group O with a prevalence of 56.10% is the commonest in the ABO blood group system and a high Rhesus D positivity of 96.69% in Rhesus blood group system in University of Uyo Teaching Hospital,

Uyo. The baseline data from this study which is in keeping with the observed trend in other studies in Nigeria would assist in the planning and running of an organized, efficient and safe blood transfusion service in University of Uyo Teaching Hospital, Uyo and Akwa Ibom State, Nigeria.

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