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Original Research Article

Dangerous Blood Group 'O' Donors Incidents at the Federal Teaching Hospital Abakaliki

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Abstract: To determine the dangerous blood group 'O' donors o reoccurrence at the Federal Teaching Hospital, Abakaliki. One hundred (100) cell grouped and sero-typed blood group '0' donors (94 males and 6 females) aged 18 and 45 years participated in this study between February and September 2007 at the Blood Bank(phlebotomy) section of the Teaching Hospital, Abakaliki after an informed consent. The presence of both the alpha ($\propto$) and beta (β) haemolysin were determined using donors sera for reverse grouping. Haemolysin indicates the presence of haernolysis which is in the sera of the dangerous blood group 'O' donors. The study discovered that 36 male donors out of 100 donors studied were positive to haemolysin. This result was statistically analyzed using student's t- test at 95% confidence interval with P value of 0.05. The numbers of haemolysin positive donors were significantly increased in comparison with the heamolysin negative donors ($P< 0.05$). This result pattern suggests a relatively high level of blood transfusion reactions in this part of the world. Screening test for dangerous group 'O' donors should be carried out routinely in blood transfusion laboratories to order to reduce the occurence of blood transfusion.

Keywords: Dangerous, Blood group 'O' Donors**:** incidence.

INTRODUCTION

Transfusion Medicine is a stem of haematology that deals with the study of blood groups, along the work of a Blood Bank to provide a transfusion service for blood and other blood products [1]. Most routine work of a Blood Bank involves testing blood from both donors and recipients to make sure that every recipient had access to compatible blood that safe as possible.[1]Ideally, patients should receive their own blood group to minimize the danger of a transfusion reaction. Risks can further be minimized by cross-matching donor's blood and recipient's serum before transfusion [2].

In order to make available utmost benefit from each blood donation and to extend shelf life of what blood banks fractionate some whole blood into several products. The most common of these products are packed RBCs, plasma, platelets, cryoprecpitate, and fresh frozen plasma (FFP). FFP is quick- frozen to retain the labile clotting factors (VIII) which are usually administered to patients who have a potentially fatal clotting problem caused by a condition such as advanced liver disease, overdose of anti-coagulant, or disseminated intravascular coagulate (DIC)[3].

Blood group AB individuals have both A and B antigens on the surface of their RBCs, antibodies against either A or B antigen.

Blood group A individuals have the A antigen on the surface of their RBCs and blood serum containing IgM antibodies against the antigen. Blood group B individuals have the B antigen on the surface of their RBCs and blood serum containing IgM antibodies against the A antigen Blood group O individuals do not have either A or B antigens on the surface of their RBCs, but their blood serum contains IgM anti A antibodies and anti B antibodies against the A and B blood group antigens. The dangerous blood group O donors are the group O donors that have very high concentration of IgM anti A and/ or anti B antibodies in their sera**.** These antibodies causes haemolysis of RBCs of group A and B individual if transfused to them.[4]The dangerous blood group 'O' are screened by performing a reverse grouping using sera of already known group 'O' donor in a test tube against standard ABO cells and the reactions will present in form of haemolysis instead of agglutination (haernolysin test). The Omission of this kind of screening test can lead to blood transfusion reactions. Haemolysin test is not very common among many Blood Banks and most of the blood transfusion reaction can attribute to the use of dangerous group 'O' donors as universal donors [5].

Due to the medical significance of these donors, this research was designed to find out the prevalence of dangerous blood group 'O" donors at the University teaching Hospital, Abakalliki, Ebonyi state.

MATERIALS AND METHOD

One hundred confirmed (cell grouped and sero-typed) blood group 'O' donors (94 males and 6 females) between the age 18 and 45 years participated in this study after an informed consent. The study took place between February and September 2010 at the blood bank (phlebotomy) section of Federal Teaching Hospital, Abakaliki. The reverse grouping was carried out on sera of these donors using standard ABO cells as reagent in test tubes. The reactions for the dangerous group 'O' donor's sera presented as haemolysis instead of agglutination.

RESULTS

This study revealed that 36% of cases show haemolysis instead of agglutination. The result was statistically analyzed using student's "t-"test at 95%confidence interval with P- value of 0.05%. The haemolysin positive donors are compared statistically with the haemolysin free donors and the haemolysin positive donors were increase significantly ($P<0.05$). The haemolysis in cell A is alpha haemolysin12 (12%), the haemolysis in cell B is beta haemolysin8 (8%), the haemolysis in both A and B cells is alpha and beta haemolysin 16 (16%). Sixty four donors presented with agglutination and they were not dangerous group 'O' donors. The table below shows the distribution of donors.

DISCUSSION

Compatibility test (cross-matching) need to be performed before blood transfusion can take place in order to avoid blood transfusion reactions [6]. The screening of all blood group 'O' donors for the presence of alpha and beta heamolysin before transfusion to non-group 'O' recipient cannot be overruling because it can lead to an adverse blood transfusion reaction. This screening of dangerous group O donors is not part of the routine compatibility (cross-matching) procedures. Therefore it is not always remembered to be carried out by many blood Bank laboratories. This can contribute to blood transfusion reactions that always occur in this part of the world. However if anybody needs a blood transfusion in a dire emergency and if the time taken to process the recipient's blood would cause a detrimental delay "O rhesus 'D' negative" blood can be issued.

CONCLUSION

The screening for dangerous group '0' dçnors is not done routinely in the blood transfusion laboratories. It is also part of the cross matching procedures. Hence this lack of screening leads to blood transfusion occurring around this area.

RECOMMENDATION

The screening test for dangerous group 'O' donors should be done routinely in blood transfusion laboratories to minimize the rate of blood transfusion reactions

Table-I: Distribution of Donors

	No of Donors Alpha	**Beta**	**Combined Alpha and hae**	**Haemolysin Beta haemolysin**
Haemolysis	36	12	8	16
Agglutination	64	-	-	-
Total	100	-	-	-
Percentage	36	-	-	-

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