



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2018; 4(11): 70-71
www.allresearchjournal.com
Received: 11-05-2018
Accepted: 12-06-2018

Dr. Narayan Chandra Mallik
M.D., Associate Professor,
Department of Pathology,
Government of Odisha, India

Dr. Rupa Das
Associate Professor,
Department of Pathology,
SCB Medical College, Cuttack,
Odisha, India

Dr. Sulata Choudhury
M.D., Associate Professor,
Department of Pathology
SCB Medical College, Cuttack,
Odisha, India

Dr. Biswabara Rout
M.D., Assistant Professor in
Physiology, SCB Medical
College, Cuttack, Odisha, India

Original Research Article

Blood group in 1st semester MBBS students of a medical college of Odisha

Dr. Narayan Chandra Mallik, Dr. Rupa Das, Dr. Sulata Choudhury and Dr. Biswabara Rout

Abstract

Blood group antigens represent polymorphic traits inherited among individuals and populations. The frequencies and phenotypes of RBC antigens are different in populations from different geographic areas and races. Alloantibodies directed to red blood cell (RBC) antigens play an important role in alloimmune-mediated haemolytic transfusion reactions and haemolytic disease of the foetus and newborn. The objective of the study is to ensure that the medical students are aware of their blood group, create a donor database as PRM Medical College, Baripada, A newly developed medical college of Odisha, identify and earmark rare blood groups for immediate availability in case of need to both the patient as well as the students having such blood group. Blood group (ABO and Rh) was determined by the agglutination reaction to antisera. In our study the distribution of blood groups in a sample population of 1st semester students shows blood group A 15%, B 36%, AB 04% and O 45%. 94% were Rh positive and 6% Rh negative. This shall provide a database for future in this medical college.

Keywords: Blood group, MBBS students, medical college

Introduction

Blood group antigens represent polymorphic traits inherited among individuals and populations. At present, there are 34 recognized human blood groups and hundreds of individual blood group antigens and alleles [1]. Alloantibodies directed to red blood cell (RBC) antigens play an important role in alloimmune-mediated haemolytic transfusion reactions and haemolytic disease of the foetus and newborn. The frequencies and phenotypes of RBC antigens are different in populations from different geographic areas and races [2]. Blood group antigens, present on the cell membrane of red blood cells and platelets, can be defined either serologically or predicted based on the genotypes of genes encoding for blood group antigens [3]. Since the time Karl Landsteiner discovered ABO blood groups, agglutination was the method of testing for detecting the presence of blood group antigens and antibodies. Apart from this, adsorption-elution, serum inhibition and anti-human globulin test are some other techniques routinely used in transfusion medicine [4]. However, the agglutination method is routinely used in most laboratories for blood group determination and is fairly accurate as well as cost effective.

The objective of the study is

1. Ensure that the medical students are aware of their blood group.
2. Create a donor database as PRM Medical College, Baripada, a newly developed medical college of Odisha.
3. Identify and earmark rare blood groups for immediate availability in case of need to both the patient as well as the students having such blood group.

Materials and Methods

The procedure and importance of blood group determination was explained to all the 1st semester medical students and their written informed consent was taken to find out their blood group, retain it in the database of the institution and use the same for analysis and research.

Correspondence

Dr. Rupa Das
Associate Professor,
Department of Pathology, SCB
Medical College, Cuttack,
Odisha, India

A slide was divided by a mark in middle using a marker pencil and marked "A" and "B" on either side. Another clean slide was kept beside. Routinely available anti sera from the market, containing monoclonal anti bodies against blood group A(anti A), blood group B (anti B) and Rh (anti D), were used to find out the blood group of each student by agglutination method. One drop of anti A and anti B were placed on either side of the slide marked "A" and "B" respectively. A drop of anti D was put at the centre of the other slide kept beside. A bold prick was made on the sterilized ring finger of each student with sterile needle under aseptic condition. A drop of direct blood was added to the slide bearing anti D. Another 2-3 drops were added to about 5 ml of 0.9% saline taken in a glass test tube and mixed thoroughly. Using a hollow glass rod, a drop of blood was added to both the drops anti A and anti B which were mixed by using opposite ends of the rod taking care to avoid admixture. The blood and antisera on each slide were mixed thoroughly avoiding admixture. The agglutination reaction was almost obvious in minutes, a maximum waiting period of 15 minutes was done keeping the preparation covered by watch glass to prevent drying. In case of doubt to agglutination by naked eye, low power of microscope was used to confirm the clumping of RBC. Clumping with the drop anti A only indicates blood group A, with anti B only indicates blood group B, with both indicates AB and no clumping on either side indicates blood group O. Clumping with anti D indicates Rh positive and no clumping Rh negative.

Result

Out of 100 students, the distribution of blood groups was 45(%), 36(%), 15(%) and 04(%), O, B, A and AB respectively. 94(%) were Rh positive and 06 (%) were Rh negative. The commonest blood group was "O" positive.

Discussion

The sequence of ABO distribution among the rural population in southwestern Uganda is; O > A > B > AB. The distribution of ABO blood group was; blood group O (50.3%); blood group A (24.6%); blood group B (20.7%) and blood group AB (4.5%). The proportions of Rhesus (D) positive and Rhesus (D) negative were 98 and 2% respectively. (5) Results of a retrospective study using data from the hospital's blood transfusion unit at The Aga Khan Hospital, Nairobi, reveal that blood group O was found to be most frequent: 49% in indigenous African donors and ANC attendants, 45% in the general donor population and 34% among Asian donors. The frequency of blood group B was 33% in the Asian donors, 27% in all donors, 25% in African donors, and 24% in ANC attendants. Group AB was seven per cent in Asian donors, five per cent in both the general donor population and the ANC attendants and four per cent in the African donors. The frequency of blood group A was 26% in Asian donors, 23% in all donors and 22% in both the African donors and ANC attendants. Ninety four per cent of the indigenous African donors were Rhesus D positive, 97% of the ANC attendants were Rhesus D positive and 90% of the Asian donors were Rhesus D positive [6]. Gajjar *et al.* state that in their study the antigen frequencies among blood donors from Gujarat were compared with those published for other Indian populations. The frequency of D antigen in their study (95.4%) and north Indian donors (93.6) was significantly higher than in the Caucasians (85%) and lower

than in the Chinese (99%) [7]. The Rh positive in our study is similar to the other Indian populations as described by Gajjar *et al.* [7].

Conclusion

In our study the distribution of blood groups in a sample population of 100 1st semester students shows group A 15%, B 36%, AB 04% and O 45%. 94% were Rh positive and 6% Rh negative. This correlates with the value obtained for Indian populations in other studies and shall provide a database for future in this medical college.

References

1. Cooling L. Blood Groups in Infection and Host Susceptibility. *Clin Microbiol Rev.* 2015; 28(3):801-70.
2. Yu Y, Ma C, Sun X, Guan X, Zhang X, Saldanha J, *et al.* Frequencies of red blood cell major blood group antigens and phenotypes in the Chinese Han population from Mainland China. *Int. J Immunogenet.* 2016; 43(4):226-35.
3. Veldhuisen B, van der Schoot CE, de Haas M. Blood group genotyping: from patient to high-throughput donor screening. *Vox Sang.* 2009; 97(3):198-206.
4. Ajit Gorakshakar, Harita Gogri, Kanjaksha Ghosh. Evolution of technology for molecular genotyping in blood group systems. *Indian J Med Res.* 2017; 46(3):305-315.
5. Apecu RO, Mulogo EM, Bagenda F, Byamungu A. ABO and Rhesus (D) blood group distribution among blood donors in rural south western Uganda: a retrospective study. *BMC Res Notes.* 2016; 9(1):513.
6. SMwangi J. Blood group distribution in an urban population of patient targeted blood donors. *East Afr Med J.* 1999; 76(11):615-8.
7. Gajjar M, Patel T, Bhatnagar N, Patel K, Shah M, Prajapati A. Partial phenotyping in voluntary blood donors of Gujarat State. *Asian J Transfus Sci.* 2016; 10(1): 67-70.