INCIDENCE OF ABO AND RH D BLOOD GROUP AMONG THE PEOPLE ATTENDING IN TRANSFUSION MEDICINE DEPARTMENT OF DHAKA MEDICAL COLLEGE HOSPITAL

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Abstract:

Introduction: *Among 30 blood groups ABO and Rh are major blood groups.*

Objective: *The study was carried out to find out the incidence of ABO and Rh d blood group among the people attending in transfusion medicine department of Dhaka medical college hospital.*

Methods: *This study was carried out in transfusion medicine department of Dhaka medical college hospital between January and December 2010. Total 31941 people of 0 days to 100 years of both sexes were included in this study. After collecting 5ml blood ABO grouping was done by forward and reverse method and Rh typing was done by using two commercial anti D and ICT.*

Results: *Among them blood group A were 8077(25.24%), B were 10434(32.66%), O were 10705(33.51%) and AB were 2725(8.33%). Rh D positive were 30809(96.41%) and Rh D negative were 1132(3.54%).*

Key words: *ABO blood group, Rh type.*

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Introduction:

Karl Landsteiner discovered the ABO blood group in 1901[1].Karl Landsteiner and Weber discovered Rh blood group in 1940[2]. Classification of blood based on the presence of inherited antigenic structure on the red blood cell surface and some body fluids. Several of these antigens can stem from one allele (or very closely linked genes) and collectively form a blood group system[3]. Blood types are inherited and represent contributions from both parents. Total of 30 human blood group systems are recognized by International Society of Blood Transfusion[4]. Over 600 different blood group antigens have been found [5]. Many of them are rare. Some was being found mainly in certain ethnic group. An individual have same blood group for life. But very rarely an individuals blood group changes through addition or suppression of an antigen in infection, malignancy or autoimmune diseases or after liver transplantation, bone marrow transplantation[6,7,8]. Some blood types are associated with inheritance of other disease i.e., Kell antigen is sometimes with McLeod syndrome[9].Certain blood types may affect susceptibility to infection i.e. ,Duffy antigen resistant to plasmodium vivax[10]. The ABO system is the most important blood group system in human. Antigen A and B present in

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all tissue and body fluid except CNS besides red cell[11]. Anti A and anti B antibodies are usually IgM produced in the first year of life by sensitization to environmental substances like food, bacteria, virus. The Rh system is the second most significant blood group system. There are 50 Rh antigens. The most important is D antigen because it is most likely to provoke an immune response. It is common for D negative individuals. Commonly used term Rh positive and Rh negative refers to D antigen only .D negative individuals can produce IgG Anti D following sensitization -fetomaternal transfusion of blood from a fetus in pregnancy or occasionally transfusion of D positive blood [12]. Before blood transfusion compatibility test must be done. If a unit of incompatible blood is transfused a severe acute haemolytic transfusion reaction with haemolysis renal failure, shock is likely to occur and death may occur. Patient should received their own blood or type specific blood to minimize the chance of transfusion reaction .A pregnant woman can make IgG antibodies if her fetus has a blood group antigen that she does not have.

Methodology:

IN between January 2010 and December 2010 total 31941 people of 0 day to 100 years of both sexes were included in this study. From each individual 5 ml of venous blood was drawn by sterile syringe and was collected in a sterile test tube. Serum and cell was separated by centrifugation. After washing four times 10% cell suspension was made. ABO grouping was done by forward and reverse method but in new born only forward grouping was done. Rh typing was done by using two commercial anti D and ICT.

Laboratory method for determination of ABO blood group

Anti B	Anti A	Anti AB	A Cell	B Cell	O Cell	Interpretation
-	+	+	-	+	-	A Group
+	-	+	+	-	-	B Group
+	+	+	-	-	-	AB Group
-	-	-	+	+	-	O Group
-	-	-	+	+	+	Bombay Group

Laboratory method for determination of Rh D blood group

Anti D	Anti D	AB serum	Interpretation
+	+	-	Rh D positive
-	-	-	Rh D negative
+	+	+	ICT
+	-	-	Repeat test

Results:

Table-I

Frequency of ABO blood group (n=31941)

Blood Group	No	%
A	8077	25.28
B	10434	32.66
O	10705	33.51
AB	2725	8.53
Total	31941	100%

Table-II

Frequency of Rh D blood group (n=31941)

Rh D blood group	No	%
Rh D positive	30809	96.41
Rh D negative	1132	3.54
Total	31941	100%

Table III

Frequency of ABO group and Rh D type (n=31941)

ABO group	No of Rh D positive	%	No of Rh D negetive	%
A	7811	24.45	266	.83
B	10067	31.52	367	1.15
O	10307	32.27	398	1.25
AB	2624	8.21	101	.32
Total	30809	96.41%	1132	3.54%

Table IV

Frequency of ABO and Rh D [20,21,22,23]

Country	A+	A-	B+	B-	O+	O-	AB+	AB-
India	22.1%	0.08%	30.9%	1..1%	36.5%	2.0%	6.4%	0.2%
Australia	31%	7%	8%	2%	40%	9%	2%	1%
UK	35%	7%	8%	2%	37%	7%	3%	1%
USA	35.7%	6.3%	8.5%	1.5%	37.4%	6.6%	3.4%	0.6%B

Discussion:

In this study, among 31914, blood group A were 8077 (25.24%), B were 10434 (32.66%), O were 10705 (33.51%) and AB were 2725 (8.33%).In Bangladesh, group A were 22.44%, B were 35.20%, O were 33.97% and AB were 8.39%[13]. In India group A were 22%, B 33%, O 37%, AB 7%. In Japan, group A 38%, B 22%, O 30% AB 10%. In Asia group A 28%, B 27%, O 40%, AB 5%[14]. Blood group B has highest frequency in central Asia. It is believed that it is entirely absent from native American and Australian aboriginal populations[15]. Blood group B is higher in Europe (25-55%), highest in Australian aboriginal populations(45%)[16]. In this study, Rh D negative were 1132 (3.54%) and Rh D positive were 30809(96.41%). In Europe, Rh D negetive35% and Rh D positive 65%. In America Rh D negative 7% and Rh D positive 93%. In Asia Rh D negative less than 1% and Rh D positive 99%[17]. Rh negative blood types are much less in portion of Asian population (1%) than in white (15%)[18.] In Bangladesh, Rh D negative 2.56% and Rh D positive 96.44% [19]. In this study, blood group A+7411(24.45%), A-266(0.83%), B+ 10067(31.52%), B- 367(1.15%), O+ 10307(32.27%), O- 394(1.25%), AB+ 2624(8.21%), AB- 101(0.32%).

Conclusion:

This study will be helpful to the physicians and gynecologist to identify those patients who are at risk of mismatched transfusion and haemolytic disease of newborn.

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