



A Study to Determine the Pattern of Rh Factor and ABO Blood Groups Amongst Medical Students of Era's Lucknow Medical College and Hospital, Lucknow.

KEYWORDS

ABO blood group, Rhesus (Rh) blood group, Male and Female Medical students.

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ABSTRACT The ABO blood group was discovered about one hundred years ago. Since then scientists have searched for an association between different pathologies and ABO group systems of patients.

This study was carried out amongst the medical students of Era's Lucknow Medical College and Hospital (ELMC&H), Lucknow to see the distribution pattern of ABO and Rh(D) blood groups in small group, i.e. medical students of an institute.

Voluntary medical students of Era's Lucknow Medical College and Hospital (ELMC&H), Lucknow. Total numbers of 500 students were included in this study. The ABO and Rh grouping done, data were recorded on specially formed proforma, tabulated and analyzed.

The result shows ABO group pattern as B>O>A>AB. The same pattern seen in Rh positive male and females while in Rh negative females the pattern was O>B>A>AB. The O Negative blood group was 2.24% while AB Negative was at lowest position (0.71%).

This study shows blood group B is more common amongst medical college students in this area (41%). These results are quite similar to the many other studies done at other parts of country. Everyone should have knowledge of their blood group. This will help to save life of patients as the blood transfusion is an emergency.

Introduction

Karl Landsteiner in 1901 discovered the human blood group system which was the ABO group system [1]. Thereafter Rh blood group was defined by Landsteiner and Weiner in 1941[2]. Both these systems played a vital role in blood transfusion services. These discoveries created lot of opportunities in the field of immuno-haematology, blood transfusion, irrespective of natives, unmatched pregnancy, legal medicine, anthropology and the discovery of other blood group systems [3].

The genes of ABO and Rh (D) are located on chromosome 9 and 1 respectively. The major blood group of this system are A, B, AB & O. The AB antigen are expressed on red blood cell and these antigen are inherited co-dominantly over O. These antigen are complex oligosaccharide that differ in their terminal sugar. According to ABO system the blood of each individual carries an antibody directed against the antigen which is absent from the persons red blood cell. In order to avoid danger of mismatched transfusion it is important to determine the blood group of those involved prior to transfusion [4]. The person of blood group A contains antigen A on the surface of RBCs but lacks B antigen and contains anti-B antibodies in plasma. Likewise person of blood group B has antigen B on RBC's surface and anti-A antibodies in plasma, group AB individuals has both A and B antigens on RBC's surface and none of the antibodies in the plasma and lastly group O individual lack both antigen on RBC's surface but contains both types of anti-A and anti-B antibodies in the plasma.

Besides being important for blood transfusion and organ transplantation, it is also utilized in genetic research, forensic pathology, anthropology and training ancestral relation to human [5]. It has been observed that the frequency of blood groups in different nation of world usually varies. Therefore, the pre-

sent study was conducted to determine pattern of ABO and Rh (Rhesus) blood grouping amongst the medical students of Era's Lucknow Medical College and Hospital (ELMC&H).

Material and Methods

A total of 500 random blood samples were collected from medical students of both sexes (in between April 2013 and September 2013) with prior informed consent. The finger-prick method, using disposable lancets and transferred immediately to a tube containing ethylene diamine tetra acetic acid (EDTA). The ABO and Rh blood grouping were done by agglutination test using anti- A, anti-B and anti-D human sera. All weak D groups were considered as Rh positive. The percentage of different blood groups thus obtained were tabulated and an attempt was done to find out the variation of blood group frequencies amongst male and female medical students of ELMC & Hospital, Lucknow.

Results

A total of 268 male and 232 female medical students were studied for blood group ABO & Rh factor and the results were made in tabular form.

Blood group	Phenotype	Hindu (n=372)		Muslim (n=108)		Sikh (n=12)		Christian (n=08)	
		No.	%	No.	%	No.	%	No.	%
ABO	A	63	17%	20	19%	2	16.7%	3	37.5%
	B	171	46%	41	38%	6	50%	2	25%
	AB	15	04%	12	11%	1	8.3%	1	12.5%
	O	123	33%	35	32%	3	25%	2	25%
	Total	372	100%	108	100%	12	100%	8	100%
χ^2		1.065		0.274		1.012		3.827	

Rh	Rh +ve	361	97%	103	95%	11	93%	6	75%
	Rh -ve	11	03%	05	05%	01	07%	2	25%
	Total	372	100%	108	100%	12	100%	8	100%

Table 1: Showing pattern of blood group distribution amongst students belonging to different religion.

Among the Hindu, Muslim and Sikh students, blood group B shows the highest frequency (46%, 38% and 50%, respectively); while blood group A is the most preponderant (37.5%) among the students of Christian communities but it was a very small group. As expected, AB is the least frequent blood group among all the studied populations (Table 1). A very low percentage of Rh-ve individual was found in the present study.

Sl.no.	Group	No. of students having Blood group(n=500)			Percentage of students having Blood group(n=500)			% of different blood groups amongst Indian population	% of different blood groups amongst foreign population
		Male students (268)	Female students (232)	Total (500)	Male students	Female students	Total students (500)		
1.	A	61	53	114	23%	23%	23%	23%	44%
2.	B	118	88	206	44%	38%	41%	44%	10%
3.	AB	11	19	30	04%	08%	06%	03%	03%
4.	O	78	72	150	29%	31%	30%	30%	43%
5.	Rh ^{+ve}	260	223	483	97%	96%	96.5%	93%	83%
6.	Rh ^{-ve}	08	09	17	03%	04%	3.5%	07%	17%

Table 2 : Showing distribution of blood groups amongst students (Indian and foreign students)

In present study total Rh positive medical students were 96.5% and Rh negative were 3.5% (table 2). The blood grouping ABO in this study shows B group on the top of list (41%) followed by O (30%),A (23%) and AB (6%). 93% of Indian medical students were found to be Rh positive while 07% were Rh negative. In contrast to this 83% of foreign medical students under exchange programme visiting ELMC&H were found to be Rh positive and 17% Rh negative.

Discussion

Blood group & Rh antigen are hereditary gene, for ABO antigen is on the 9th chromosome & Rh antigen gene is on the 1st chromosome[6]. The distribution varies geographically, ethnically from one population to another. Studies at many parts of India[7,11] have described similar findings with B blood group being the most common blood group followed by O, A and AB. In Rhesus system our study shows frequency of Rh positive is 96.5%. These figures are similar to the other studies carried out in different parts of India[7-10].

Conclusion

'B' blood group is the commonest blood group found in the study area. The knowledge of blood group distribution is also important for forensic & clinical studies and geographical information from the clinical point of view. It helps to save the lives of lots of patients as the rare blood group are arranged well in advance. The above study will help us in reducing number of pre vernable deaths.

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