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FREQUENCY AND DISRTIBUTION OF ABO AND RHESUS BLOOD GROUP IN NORTHERN AREAS OF KASHMIR VALLEY ADJAECENT TO LINE OF CONTROL.

Pathology

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ABSTRACT

Background: Distribution of blood groups varies demographically. ABO and Rh blood group systems are major clinically significant blood group systems despite that more than 400 red cell antigens have been identified. Blood groups are genetically determined. ABO and Rh blood groups systems besides being most important in blood transfusion, are also important in forensic pathology, disease susceptibility and population genetics. This study aims to determine frequency and distribution of ABO and Rh blood groups among the permanent residents of northern areas of Kashmir valley adjacent to line of control. **Aim and Objective:** The present study was designed to determine frequency and distribution of ABO and Rh blood groups among blood donors in northern areas of Kashmir valley adjacent to line of control and compare the results with data available from studies conducted with in India and other countries. **Material and Methods:** This study was a two and half years prospective study conducted in the department of Pathology Government Medical College Baramulla from January 2020 to June 2022 . Only permanent residents of northern areas of Kashmir valley were included in the study. Blood donors who were not permanent residents of northern areas were excluded from the study. Blood donors were selected after proper history and complete examination. Blood donors fulfilling all eligibility criteria's for blood donation were selected. Determination of ABO and Rh status was done by tile method of agglutination using commercially available anti-Seras. **Results:** Out of total 4609 voluntary blood donors 4104 (89.04%) were Rh positive and 505 (10.96%) were Rh Negative. 1338 (29.03%) were O positive,1333 (28.92%) were B positive, 1025 (22.23%) were A positive, 408 (8.8%) were AB positive, 187 (4.05%) were O negative, 156 (3.38%) were B negative, 102 (2.21%) were A negative and 60 (1.30%) were AB negative. **Conclusion:** In the Northern areas of Kashmir valley adjacent to line of control O Positive is the most prevalent blood group followed by B positive and AB negative is least prevalent followed by A negative.

KEYWORDS

ABO, Rh, Blood group, Line of control

INTRODUCTION:

The ABO and Rh blood group system remains so far the most significant in blood transfusion. The magnificent discovery of ABO blood group system is credited to Austrian scientist Karl Landsteiner in 1900. [1] He discovered three blood groups (A, B & O) for which he was awarded Nobel prize in 1930. Fourth blood group, AB was discovered by Alfred Von Decastello and Adriano Sturli in 1902.[2,3]

Although Rh (Rhesus) system was fourth blood group system to be discovered (1940)[4] but it stands second as far as clinical importance is concerned. It can be Rh positive or Rh negative depending upon the presence or absence of antigen respectively. ABO and Rh system are genetically predetermined, genes located on chromosome 9 and chromosome 1 respectively.

Incidence of ABO and Rh blood groups varies in different parts of world. Factors attributed to such difference includes racial differences, geographical variation, different ethnic groups, external environment and genetic make up [4-6]. Role of ABO and Rh blood group system is not limited to transfusion safety and organ transplant only.

Research on ABO blood group has been of great interest as besides primary role in immunohaematology and blood transfusion, ABO blood group system play vital role in clinical studies, genetic studies, medico-legal issues like disputed paternity and anthropology [7,8]. Further, importance of ABO blood group distribution is greatly increasing because of their association with certain diseases. ABO blood group has also been found to be predictor of national suicide rate and genetic marker of obesity [9,10].

Rh blood group system involved in hemolytic disease of Newborn, commonly arise when Rh negative mother carries Rh positive foetus. Therefore it becomes imperative to have information about distribution of blood groups in any population besides generating data for health planners with multipurpose utilities in future

AIM AND OBJECTIVE:

The present study was designed to determine frequency and distribution of ABO and Rh blood groups among blood donors in northern areas of Kashmir valley adjacent to line of control and compare the results with data available from studies with in India and other countries.

MATERIAL AND METHODS

This study was a two and half years prospective study conducted in the department of Pathology Government Medical College Baramulla from January 2020 to June 2022 . Only permanent residents of northern areas of Kashmir valley were included in the study. Blood donors who were not permanent residents of northern areas were excluded from the study. Blood donors were selected after proper history and complete physical examination. Blood donors fulfilling all eligibility criteria's for blood donation were selected. Determination of ABO and Rh status was done by tile method of agglutination using commercially available anti-Seras.

RESULTS

Out of total 4609 voluntary blood donors 4104 (89.04%) were Rh positive and 505 (10.96%) were Rh Negative. 1338 (29.03%) were O positive,1333 (28.92%) were B positive, 1025 (22.23%) were A positive, 408 (8.8%) were AB positive, 187 (4.05%) were O negative, 156 (3.38%) were B negative, 102 (2.21%) were A negative and 60 (1.30%) were AB negative. (Table 1)

DISCUSSION

The present study has determined the distribution frequency of ABO and Rh blood group in blood donors in a tertiary care teaching hospitals in northern areas of Kashmir valley adjacent to line of control. Our results states that in the northern areas of Kashmir valley blood group O (33.08%) is the commonest followed closely by blood group B (32.30%), blood group A (24.44%) and blood group AB (10.10%) happens to be the rarest among people residing in northern areas of Kashmir adjacent to line of control. Rh positive blood groups constitute 89.04% and Rh negativeblood groups are less common with frequency of only 10.96%. Among the negative blood groups O negative again was the commonest followed by B negative, A negative and AB negative were the rarest (table 1). This study of frequency distribution of blood groups in donor population is very important for generation of simple database of blood groups to find out the easily available ones and the blood groups which are difficult to procure and hence an important tool to determine the direction of recruitment of

voluntary donors as required for each area across the union territory. This information is useful in management of blood bank inventory and transfusion services to needy patients. The distribution of ABO blood groups varies from one population to another. The comparison of frequency and distribution of ABO and Rh blood groups in blood donors in northern areas of Kashmir valley (present study) with the similar studies carried out within India and other countries is given in table (2) and table (3). While looking at the table it can be read that our study was comparable to the studies done in southern India states like Vellore, Bangalore, Chittoor and shimoga while in states like Punjab and Eastern Ahmedabad blood group B happens to be most frequent blood group. In countries like Britain, USA and Niger delta blood group O is the most prevalent followed by blood group A. while in Pakistan blood group B is most common followed by blood group A. In Nepal blood group A is most common followed by blood group O.

Apart from transfusion services, knowledge of blood group systems helps to take preventive measures against the diseases which are associated with different blood groups as there is definite genetic association, like group O has higher incidence of duodenal ulcer [23,24,25] while blood group A carries increased incidence of gastric carcinoma [26]. Likewise blood group B is found to be associated with ovarian carcinoma[27]. Thus present study concludes that blood group 0 is the commonest among the blood donor's in northern areas of Kashmir followed by B, A and AB respectively. Rh +ve are much more than Rh negative donors. The data generated in present study and similar studies in different regions and countries will be useful for health planners for drafting national transfusion policies and also serves to enable insight into possibilities of future burden of disease and make efforts to face further health challenges.

CONCLUSION:

Results of present study show that in the Northern areas of Kashmir valley adjacent to line of control O Positive is the most prevalent blood group followed by B positive and AB negative is least prevalent followed by A negative.

Table 1 Distribution of ABO and Rh Blood groups in the northern areas of Kashmir valley adjacent to line of control.

Serial No.	Blood group	Total No.	Percentage
1	O positive	1338	29.03%
2	B positive	1333	28.92%
3	A positive	1025	22.23%
4	AB positive	408	8.8%
5	O negative	187	4.05%
6	B negative	156	3.38%
7	A negative	102	2.21%
8	AB negative	60	1.30%

Table 2 Comparison of present study with studies in india. (in Percentage)

S.NO	STUDY	A	B	AB	O	Rh +VE	Rh-VE
1	Present study	24.44	32.30	10.10	33.08	89.04	10.95
2	Banglore 12	23.85	29.95	6.37	39.82	94.2	5.79
3	Chittor 13	18.95	25.79	7.89	47.37	90.6	8.42
4	Vellore 14	18.85	32.69	5.27	38.75	94.5	5.47
5	Shimoga 15	24.27	29.43	7.13	39.17	94.93	5.07
6	Davangere 16	26.15	29.85	7.24	36.76	94.8	5.52
7	Ahmedabad 17	23.3	35.5	8.8	32.5	94.2	5.8
8	Punjab 18	21.9	37.6	9.3	9.3	97.3	2.7

Table 3 Comparison of present study with studies done in other countries (In percentage)

S.NO	COUNTRY	A	B	AB	O	RH+VE	RH -VE
1	Niger Delta 8	23.85	20.7	2.8	52.7	93.9	6.1
2	Pakistan 19	23.85	38	10	10	89.1	10.9
3	Nepal 20	34	29	33	33	96.7	3.33
4	Britian 21	41.7	8.6	46.7	46.7	83	17
5	USA 22	41	9	46	46	85	5

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