Surway of ABO Blood groups and Rhesus factor
In a Large Scale Study of different rural areas of Pulivendula Constancy

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Abstract:

Background: India is a great diversity in race, religion and creed. The same diversity has been observed in geographical distribution of blood groups in population within country. ABO and Rh blood groups are most important blood groups in human beings.

Aim: A retrospective study was conducted at Pulivendula constancy in continuously for four years from 2014 to 2018 Government to determine and compare the distribution of ABO and Rh blood groups.

Materials and Methods: A retrospective study of four years was carried out at our programme in Pulivendula constancy in Andhra Pradesh, South India. Data pertaining to the blood groups of donors was collected from the our data register from 2014 to 2018(Annual programme).

Results: The total donors studied from 2014 to 2018 were 1256. The distribution of blood groups was: blood group ‘A’ 135 ( 10.74 % ), ‘B’ 639(50.87 % ), ‘AB’ 153( 12.18 % ) and ‘O’ 329( 26.19 % ). In both Rh D positive and Rh D negative person’s blood group ‘O’ was the commonest followed by blood group ‘B’. Blood group ‘A’ is the least common.

Conclusion: The “B” blood group is significantly high in our population and comparatively low “A” blood group. Every transfusion center should have a record of frequency of blood group system in their population.

Key words: ABO- Blood groups, Ethnicities, Blood donors, Drought area.
1. Introduction

Know present about 400 erythrocyte antigens have been identified. International Society of Blood Transfusion organized them into 30 blood group systems of which ABO and Rh systems are important for transfusion purpose. The discovery of A, B and O blood groups by Karl Landsteiner in 1900 was an important achievement in the history of blood transfusion. Alfred Von Decastello and Adriano Sturli discovered the fourth type AB, in 1902. Later Rh group was discovered by Landsteiner and Weiner in 1941. Blood groups are genetically determined. The vast majority are inherited by Mendelian fashion. The genes of ABO and Rh (D) are located on chromosome 9 and 1 respectively. The incidence of ABO and Rh groups varies markedly in different races, ethnic groups, across geographical boundaries and also from time to time in the same region. Blood groups are also known to have some association with diseases like duodenal ulcer, diabetes mellitus, urinary tract infection, Rh incompatibility, cardiovascular diseases and malignancies. This study is aimed to determine frequency and distribution of ABO and Rh blood group patterns among voluntary blood donors in a tertiary care teaching hospital in South India and compare with other data from similar studies within India and all over the world.

2. Subjects and methods

2.1. Study type

Our study was a descriptive cross-sectional one. The study population included the blood donors visiting to our camps were conducted different villages nearby pulivendula constancy. We used rapid slide method to determine the blood groups. The study was performed for 3 times for every year during 2014 to 2018 on all the donors. On donor forms, the donor ethnicity (race) was asked from every donor in addition to standard questions, and cellular and serum blood grouping was conducted on samples by hemagglutination and hemolytic reactions. As the postal address was recorded on donor forms, data collection was done using interview and laboratory tests. The forms and laboratory test results were then analyzed using MS-exel.

3. Results

Our results showed that blood group B was the most frequent and the O blood group was the second most frequent blood group among all the ethnic groups in Pulivendula constancy (Fig. 1). Thondur AB (03%) lowest and highest B (48%) level of group determination, respectively (Table 1). The highest prevalence of blood groups was related to B and the lowest prevalence to the AB blood group.

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>O group</th>
<th>A group</th>
<th>B group</th>
<th>AB group</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>Simhadripuram</td>
<td>27%</td>
<td>14%</td>
<td>48%</td>
<td>11%</td>
</tr>
<tr>
<td>2015-16</td>
<td>Lingala</td>
<td>40%</td>
<td>19%</td>
<td>34%</td>
<td>8%</td>
</tr>
<tr>
<td>2016-17</td>
<td>Vempalli</td>
<td>34%</td>
<td>13%</td>
<td>40%</td>
<td>13%</td>
</tr>
<tr>
<td>2017-18</td>
<td>Thondur</td>
<td>33%</td>
<td>29%</td>
<td>35%</td>
<td>03%</td>
</tr>
</tbody>
</table>
Types of blood groups in selected areas of Pulivendula constancy

(Table 1 showing different types of blood groups in selected regions.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>O group</th>
<th>A group</th>
<th>B group</th>
<th>AB group</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>Simhadripuram</td>
<td>50</td>
<td>10</td>
<td>120</td>
<td>13</td>
</tr>
<tr>
<td>2015-16</td>
<td>Lingala</td>
<td>60</td>
<td>12</td>
<td>85</td>
<td>10</td>
</tr>
<tr>
<td>2016-17</td>
<td>Vempalli</td>
<td>80</td>
<td>14</td>
<td>116</td>
<td>10</td>
</tr>
<tr>
<td>2017-18</td>
<td>Thondur</td>
<td>90</td>
<td>13</td>
<td>124</td>
<td>11</td>
</tr>
</tbody>
</table>

(Table 2 Rh identification in collecting samples)

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>O group</th>
<th>A group</th>
<th>B group</th>
<th>AB group</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>Simhadripuram</td>
<td>60</td>
<td>133</td>
<td>10.77</td>
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<tr>
<td>2015-16</td>
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<td>72</td>
<td>95</td>
<td>126</td>
<td>135</td>
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<tr>
<td>2016-17</td>
<td>Vempalli</td>
<td>94</td>
<td>26.25</td>
<td>135</td>
<td>165</td>
</tr>
<tr>
<td>2017-18</td>
<td>Thondur</td>
<td>103</td>
<td>135</td>
<td>639</td>
<td>153</td>
</tr>
</tbody>
</table>

(Table 3 percentage analysis of different blood groups)
Discussion

India carries a lot of diversity in the distribution of blood groups. Knowledge of frequency of blood groups is essential in determining the direction of recruitment of voluntary donors as required for different areas of selected region. In India, because of varied cultural habits, social taboos, lack of motivation and fear of blood donation, female donors are very less. In addition large number of females from the menstruating age group is anemic with low weight, so declared unfit for blood donation. In our study we observed a significantly low percentage of female donors (0.3%). Akin to the studies of Mallikarjuna S and Giri PA et al it is observed that the predominant percentage of blood donors is males. Geographic distribution of blood groups in India shows that in Northern, Central and Western parts of India ‘B’ is the commonest blood group whereas in Eastern and Southern India ‘O’ is the most frequently occurring blood group. Pertaining to Rhesus system, in our study frequency of Rh positive was 95.28%, while only 4.72% was Rh negative. Rh positive groups are the predominant groups. In comparison similar frequencies of prevalence of Rh negative groups.

Conclusion

This much of knowledge (blood groups) is highly essential for transfusion services which contribute to patient’s health care. Access to safe and sufficient blood supply will help to reduce the morbidity and mortality rates. Our study has a significant implication of generation of a simple database of blood groups in this area. It not only provides scientific data but also serves to enable insight into possibilities of future burden of blood group associated diseases.

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