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Phenotype of Abo Blood Group in and Around Koodapakkam. A Study from Tertiary Care Hospital, Puducherry

Dr.A.Manoharan[1]. Associate Professor, Department of Pathology, Sri Lakshmi Narayana Institute Of Medical Sciences, Puducherry

Dr. Pammy Sinha[2], Professor and Head, Department of Pathology, Sri Lakshmi Narayana Institute Of Medical Sciences, Puducherry

CORRESPONDING AUTHOR:

Dr. A. Manoharan.

Associate Professor, Department of Pathology

Sri Lakshmi Narayana Institute Of Medical Sciences, Puducherry

Email id : medicomano@gmail.com

ABSTRACT:

BACKGROUND:

The field of transfusion medicine initiated when Karl Landsteiner discovered ABO blood group in 1901. It was the first human blood group system, which is considered to be the safest system in transfusion practices. It constitutes A,B,O blood groups followed by the discovery of the fourth blood group AB group in 1902 by Decastello[1-5]. The Rh grouping was discovered by Landsteiner and Warner in 1941, which plays important role in transfusion services.

AIMS AND OBJECTIVES:

1. To identify the prevalence of various blood groups among the voluntary and replacement blood donors.

MATERIALS AND METHODS:

The subjects in this study were the voluntary and replacement blood donors in the blood bank of Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry.

Study period: One year from June 2017 to May 2018.

RESULTS:

In the present study, the total number of donors were 3500. The predominance blood groups and its distribution were analyzed. In our study, the most common blood groups were found to be O blood group followed by B blood group. The least common blood group is AB.

CONCLUSION:

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Thus this study helps in formulating the ABO phenotype data register in regional wise and State wise for meeting their transfusion demands. These data will be more useful in emergency conditions and also provide adequate knowledge about the prevalence of blood groups in a particular region. It is also helpful in providing safe transfusion service in and around Puducherry.

Keywords: Blood group, donors

INTRODUCTION:

Blood transfusion services plays the key role in life saving in many emergency conditions and in surgeries. These blood transfusion can be used in both prophylactic and therapeutic conditions. It all started when Karl Landsteiner discovered ABO blood group in 1901. But the discovery of Rh group in 1941 helps in safe transfusion practices. ABO blood group system is considered to be the safest system. This is because of the regular occurrence of the antibodies anti-A, anti-B and anti-A,B, reactive at 37°C, in persons whose red cells lack the corresponding antigens[1-3].

These ABO blood groups are highly immunogenic and genetically determined. By transfusing incompatible blood groups, the patients leads to a serious health problems such as intravascular hemolysis and even to death[2,4,5].

The distribution of ABO blood groups differs from region to region. The knowledge of the distribution of ABO blood groups in specific region helps to meet the demand on request particularly in critical situations. Moreover the database provides the clear idea of the stock availability in particular blood bank. So, this data register becomes then essential part in transfusion services[2,5,6].

Hence, this study helps to provide adequate knowledge about the frequency and distribution of ABO blood groups.

AIMS AND OBJECTIVES:

1. To identify the prevalence of various blood groups among the voluntary and replacement blood donors.

MATERIALS AND METHODS:

The subjects in this study were the voluntary and replacement blood donors in the blood bank of Sri Lakshmi Narayana Institute of Medical Sciences, Koodapakkam, Puducherry.

Study period: One year from June 2017 to May 2018.

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RESULTS:

In the present study, the total number of donors were 3500 of which 2500 were replacement donors and 1000 were voluntary blood donors. The predominance blood groups and its distribution were analyzed. In our study, the most common blood groups were found to be O blood group followed by B blood group. The least common blood group is AB. The frequency and distribution were given in the table as follows.

Table 1 : Frequency and distribution of blood groups:

Blood group	Rh positive	Rh negative	Total Number of donors
O	950	275	1225 (35%)
B	920	200	1120 (32%)
A	800	75	875 (25%)
AB	220	60	280 (8%)

DISCUSSION:

The ABO blood group system was discovered by Karl Landsteiner in 1901. He discovered A, B and O blood groups, whereas the fourth blood group AB was discovered in 1902 by Alfred von Decastello and Adrian Sturli. The ABO blood group system is considered to be safe and cost effective in most transfusion. In the present study, the predominant blood group is O blood group as similar with other studies such as Soonam John et al[6] ,Periyavan et al[7], Suresh et al[8], whereas there is conflict in other studies such as Nanu et al[9], Disha et al[10] chandra et al[11], Agarwal et al[12], in which the predominant blood group is B group followed by O group.

Table 2: Comparison with various studies:

Other studies	Predominant blood group
Soonam John et al	O
Periyavan et al	O
Suresh et al	O
Nanu et al	B

Disha et al	B
Chandra et al	B
Agarwal et al	B
Present study	O

This present study helps to maintain a data register and stock availability to meet the transfusion demands. The rare blood group or the low stock availability can be intimated to nearby centers so as to maintain adequate blood supply on demands.

CONCLUSION:

The ABO blood group phenotype in koodapakkam area, puducherry, a part of southern region of India varies from other regions of India and even other countries. Thus this study helps in formulating the ABO phenotype data register in regional wise and State wise for meeting their transfusion demands. These data will be more useful in emergency conditions and also provide adequate knowledge about the prevalence of blood groups in a particular region. It is also helpful in providing safe transfusion service in and around Puducherry.

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