

To Study ABO Discrepancies Observed In Healthy Voluntary Blood Donors And Patient Requiring Blood Transfusion Using Serological Workup At SMS Hospital Jaipur.

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Abstract

Background- To study ABO discrepancies observed in healthy voluntary blood donors and patient requiring blood transfusion using serological workup at SMS hospital jaipur.

Methods- This is an observational, descriptive study of ABO blood group discrepancy in patients requiring blood transfusion and healthy donors at Department of immunohaematology and transfusion medicine SMS medical college, Jaipur from 1st august 2019 to 30 march 2020 till the designed sample size is achieved after approval from institutional ethical committee and research review board.

Results-

The study on analysis of ABO discrepancies showed the incidence in donor population as 23 out of 7821 (0.29%) and 35 out of 38546 (0.09%) in patients population. So in general population incidence of ABO discrepancy was found to be 0.12%. Also p value of patient group is found to be <0.000001 which is significant and donors is 0.4617 which is insignificant indicating that solving discrepancies in patient is more important than donors

Conclusion- To study ABO discrepancies observed in healthy voluntary blood donors and patient requiring blood transfusion using serological workup at SMS hospital jaipur was found statistically Insignificant.

Keywords- ABO, Discrepancies, RH, Disease.

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I. Introduction

In an analysis of ABO discrepancy done by M.H.Kim¹ et al an 8 year study was done and found an incidence of 82 cases out of 93,800 (0.08%) in Korean population. A study by BeenuThakral, Karan Saluja, MeenuBajpai, Ratti Ram Sharma, NeelamMarwaha on Importance of Weak ABO Subgroups in Indian population seventeen weak subgroup discrepancies were found in 86,687 donors units tested, making an overall incidence of 1:5,100 donors or 0.02%². In another Indian study by H.M.Bhatia and Malti.S.Sathe on Incidence of 'Bombay' (Oh) Phenotype and Weaker Variants of A and B Antigen in Bombay (India) it was found an incidence of weak A as 1:3,300, Weak B as 1:9,300 and O_h phenotype as 1:7,600 random persons.³

Most of the studies in Indian literature are on the donor population and on Bombay group. This study was designed to find the incidence of ABO discrepancies (donors and patients) and to analyse the root causes in order to establish correct measures for resolving the discrepancy which will facilitate safe bloodtransfusion.

II. Materials And Methods

This is an observational, descriptive study of ABO blood group discrepancy in patients requiring blood transfusion and healthy donors at Department of immunohaematology and transfusion medicine SMS medical college, Jaipur from 1st august 2019 to 30 march 2020 till the designed sample size is achieved after approval from institutional ethical committee and research review board.

Methods

Inclusion Criteria

1. Patients of either gender and all age groups whose sample is received through blood requisition forms.
2. All the patient and donor samples, with EDTA or citrated anticoagulated blood for forward grouping and clotted blood samples for reverse grouping
3. Voluntary Blood donors who fulfill the criteria for blood donation (age >18, weight >50kg, Hb >12.5 gm%).
4. Patient and donors who are willing to participate in the study

Exclusion Criteria

1. Patients and voluntary donors not willing to participate in the study.
2. Donors who are medically unfit.
3. Hemolysed samples
4. Clotted samples of new born upto 3 months of age for reverse grouping

Statistical Analysis

All data obtained was entered, segregated and tabulated in micro excel software as per mentioned variables.

Statistical analysis was performed with SPSS, version 21 for windows statistical software package (SPSS inc., Chicago, IL, USA).

- Qualitative data was expressed in form of percentage and proportions. Significance of difference was inferred by Chi-square test.
- Quantitative data was expressed in the form of mean +/- standard Deviation.
- Significance of difference was inferred by t-test.
- Probability was considered to be significant if p value <0.05.
- Potential association between parameters was assessed by performing a correlation study.

III. Result

Table 1: Comparison of Causes of Discrepancies in Patients

Cases	Causes	No: of patients with discrepancy	No. of donors With discrepancy
TECHNICAL ERROR		3	
GROUP 1	NEONATES	3	0
	WEAK EXPRESSION OF ANTIGEN	2	10
GROUP 2	SUBGROUPS	3	2
	WEAK EXPRESSION OF ANTIBODY	1	8
	MALIGNANCY	1	
GROUP 3	MULTIPLE MYELOMA	1	
	ABNORMAL PLASMA PROTEINS	1	0
GROUP 4	AIHA	11	
	OTHER DCT, ICT + ves	4	3
	ITP	2	
	PREGNANCY	3	
	TOTAL	35	23

Among the 38546 patients age group distribution of discrepancy were calculated and found to be in the age group of 0-9 years i.e. 3 out of 35 (8.6%). This is mainly due to absence/reduced development of antibodies in infants >3 months old.

When coming to age group 21-30 there is a female predominance (10 out of 35 cases).The condition persist in most age groups except 50-60yrs in which there is a predominance ofmales.

Increase in the no. of discrepancies in females in an age group 21-39 is clinically significant.

On grouping the discrepancies based on their causes 35 cases were grouped and found that:

● Group 1	5 cases
● Group 2	5 cases
● Group 3	2 cases
● Group 4	23 cases

In this group 4 discrepancies were found to be most frequent which included AIHA, ICT,DCT +ves cases in which atypical antibodies may be the probable reason. Group 3 were found to be least (2 out of 35 cases).

IV. Discussion

A discrepancy exists when the results of red cell tests do not complement that of serumtests.

- When a discrepancy is encountered,the discrepant results should be recorded, but interpretation must be delayed until the discrepancy isresolved.
- If the specimen is from a donor unit, the unit may not be released for transfusion until discrepancy isresolved.

When blood is from a potential recipient,it may be necessary to administer group O red cells of the appropriate Rh type before the investigation is completed. It is important to obtain patient's pretransfusion blood to complete any additional studies required⁴

Conclusion

The study on analysis of ABO discrepancies showed the incidence in donor population as 23 out of 7821 (0.29%) and 35 out of 38546 (0.09%) in patients population. So in general population incidence of ABO discrepancy was found to be 0.12%.Also p value of patient group is found to be <0.000001 which is significant and donors is 0.4617 which is insignificant indicating that solving discrepancies in patient is more important than donors. A problem solving strategy was formulated based on the existing guidelines which will help to reduce mismatched blood transfusion rates due to problems inside blood bank.

References

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