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Original Research

A Study of blood group protection to severe malarial complication in children

Dr. Kruttika Naik

Assistant Professor, Department of Pathology, Sri Siddhartha Institute of Medical Sciences and Research Centre, T Begur, Karnataka, India

ABSTRACT:
Time and again various studies done in different parts of the world have suggested a link between the ABO blood group and the susceptibility as well as severity of malarial disease. However limited studies have been done in the Indian subcontinent and this study puts in a sincere effort to find if there is a link between the same.
Keywords: Blood group, Protection, Malaria

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Corresponding Author: Dr. Kruttika Naik, Assistant Professor, Department of Pathology, Sri Siddhartha Institute of Medical Sciences and Research Centre, T Begur, Karnataka, India

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INTRODUCTION
Numerous studies that have linked the ABO blood group to severity of malarial infections, however there needs more conclusive evidence through large scale studies. [2,3]. Most data are from studies with limited sample size. This calls for definitive large scale comparative studies to signify the relationship. Meta-analysis of several such studies done in different parts of our country would then provide a conclusive report. The present study hopes to decipher local trends that could help contribute to the bigger picture.

AIMS AND OBJECTIVES
To find the link between the ABO blood grouping and the severity of malarial infection.

MATERIALS AND METHODS
The study was a prospective study conducted on 200 patients in the Department of Pathology in a tertiary care centre and hospital from November 2018 to April 2019.
The diagnosis was based on peripheral smear study following which both forward and reverse blood grouping was done. Only the smear positive malaria cases were included in the study.
Additionally, clinical data was collected retrospectively from the departmental archives and case sheets and analyzed for association of susceptibility and severity of disease.

EXCLUSION CRITERIA
Any other known hematological disorders.

RESULTS

Figure 1: Percentage wise distribution : Male Vs Female.

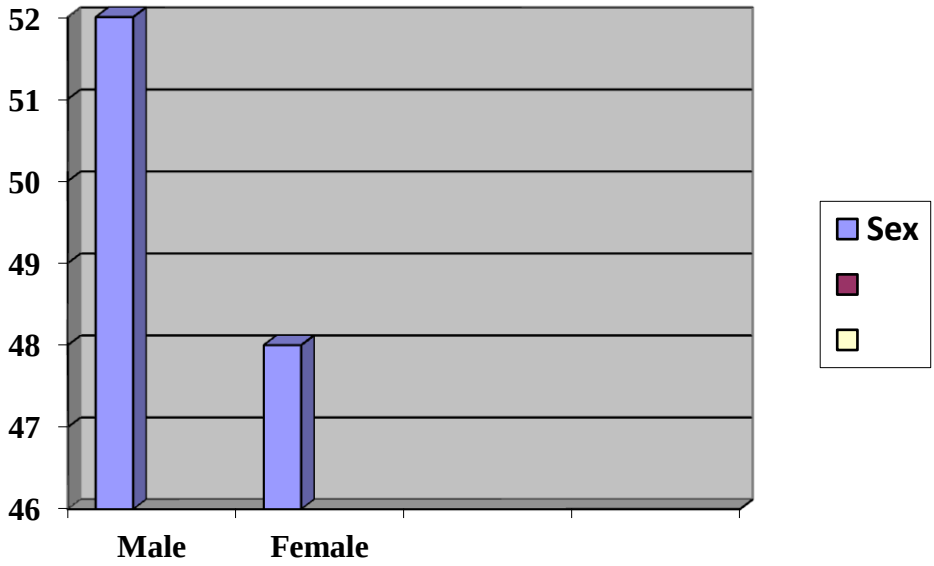

Table 2: Blood groups association for each type of malarial parasite.

Blood Group	Percentage wise distribution of type of Malaria Parasite.		
	Falciparum	Mixed	Vivax
A+ve	27	57.2	56.9
AB+ve	10	0.0	5.6
AB-ve	0.0	0.0	0.0
A-ve	0.0	0.0	1
B+ve	20	15.4	15.1
B-ve	1.2	0.0	0.0
O+ve	36.7	27.4	19.1
O-ve	5.1	0.0	2.4
Total	100	100	100

Table 3 : Ratio of complicated to uncomplicated malarial infection in different blood groups.

Blood group	Severity of Malarial infection	
	Complicated	Uncomplicated
A+ve	23.0	77.0
AB+ve	0.0	100
AB-ve	0.0	0.0
A-ve	0.0	0.0
B+ve	0.0	100.0
B-ve	0.0	100.0
O+ve	75.0	25.0
O-ve	66.0	34.0

DISCUSSION

Malarial infections have seen resurgence off late in many parts of the world. Of the different host factors suggested to contribute towards susceptibility of host, Blood group is one of important ones. Data suggest that blood group 'A' patient was found to be more common in malaria cases than in individuals with group 'O'[1].

In blood group O, the feature of Plasmodium falciparum resetting on peripheral smear examination,

that is uninfected RBCs forming a ring around the plasmodium Falciparum infected RBC , is recognized as a parasite virulence phenotype which is associated with severe malaria. This feature is reduced in blood group O erythrocyte compared with groups A, B and AB[4].

Both P.falciparum and P.vivax infections provides supporting evidence in favor of an effect of ABO group on disease severity as O group provides advantage over non O groups[5].

There is increased susceptibility of individuals with blood group A and B than individuals with blood group O; however the severity of infection varies due to differential host susceptibility[6].

This study tries to determine if any particular ABO blood group types confers any degree of protection against severe malarial complications.

Red blood cell grouping is an expression of genetic constitution; and the influence of this on the cells susceptibility to malaria was the cornerstone of the study[7,8]. In a developing country like ours, malaria has been a major national health problem contributing to considerable morbidity and mortality with both national and international bodies putting in tremendous efforts for an effective control[13,14,15].

CONCLUSION

The O group in our study is found to be more associated with the severity of the disease and an individual with Blood group A is found to be more susceptible to infection with malarial parasite.

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