

INCIDENCE OF EMMETROPICS AND MYOPICS IN ABO BLOOD GROUPS.

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Abstract: Background & objective: Association of various diseases with blood group exist in literature. We, therefore, like to investigate whether myopia, ie; one of the refractive error that exists in general population has any relationship with the blood groups and there by inheritance. **Material and method:** 401 myopics and 500 emmetropics who are randomly selected were examined by hemagglutination rapid slide technique and the results were compiled, compared with each other and a conclusion was drawn **Results:** It is found that the percentage of blood group O is significantly reduced in myopics as compared to emmetropics. Statistical analysis was done by using Chi-square: $\chi^2 = 21.26$ with d.f. = 3 and $P = 0.001$ (SPSS software) **Conclusion:** Blood group O individuals are more prone to develop myopia and A/B/both antigens (A gene or B gene) may be the prime suspect in inducing myopia.

Key Words: blood group; emmetropia; myopia.

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Introduction:

Karl Landsteiner was the first person to discover the ABO blood group system in 1901.¹ The ABO antigens are considered as the major and clinically significant blood group system.¹ Apart from the importance of ABO antigens in blood transfusion, the ABO blood group system has been associated with several diseases.

Several studies have reported the association of ABO blood groups with diseases which is shown in Table 1. The present study was taken up to find out if there is any association between myopia and ABO blood groups and thereby genetic involvement. In this study 401 myopics were investigated for their blood group by haemagglutination rapid slide technique and the frequency of which in different ABO blood groups was found out and compared with those of 500 emmetropics i.e., normal controls.

Disease associated	Type of associated risk	Blood group
H.Pylori infection and G.I ulceration ²³⁴	High	O
Gastric carcinoma ⁵	High	A
Lung cancer ⁶	High	B

Breast cancer ⁶	High	O
Cervical cancer ⁶	High	B&O
Venous thromboembolism ⁷	High	A,B,AB
Ischemic heart disease ⁸	High	AB
Otitis media with effusion ⁹	Low	O

Material and Methods:

A cross-sectional study was conducted in Ophthalmology outpatient department of Mamata Medical College. Selection of cases was done randomly selecting myopics from the patients attending Ophthalmology OPD of Mamata Medical College Khammam, Telangana and the emmetropics were selected randomly from the general population of Khammam, after their complete eye check-up served as control. The blood group of these individuals were determined by haemagglutination rapid slide technique using monoclonal Anti-A and Anti-B having a titer of 256. In total 401 myopics and 500 emmetropics were investigated. Only those cases had been included in this study who are myopics and the cases with hypermetropia, astigmatism or any other eye related complaint had been excluded from the study.

The study was approved by human ethical committee of Mamata Medical College Khammam, Telangana, as well as the selected cases were first explained the purpose of this study and the willing cases had been included in the study before any further proceedings was done. After compiling the results the observed difference in myopics as compared to emmetropics were statistically analysed to find out the level of significance using Chi-square test (SPSS software).

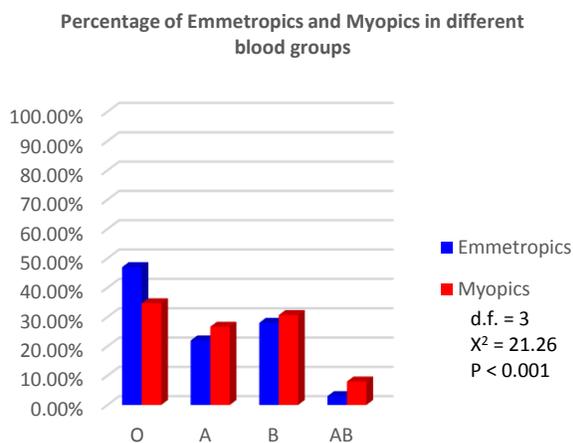
Result:

Frequency of different ABO blood groups in a series of emmetropics and myopics is shown in Table 2 .

Table 2: Distribution of ABO blood groups in series of emmetropics (500) and myopics (401)

Blood group	Emmetropics	Myopics
O	235 (47.00 %)	139 (34.66 %)
A	110 (22.00 %)	107 (26.68 %)
B	140 (28.00 %)	123 (30.67 %)
AB	15 (03.00 %)	32 (07.99 %)
Total	500	401

Figure: 1



Discussion:

Many studies have reported the association of ABO blood groups with several diseases. The most significant correlation exists between blood group O and Peptic ulcer.²³⁴ The present study was undertaken to find out incidence of myopics and emmetropics in ABO blood groups. The table 2 shows that the percentage of myopics 139/401 (34.66%) in blood group 'O' is reduced as compared to emmetropics 235/500 (47.00%) by (12.34%) and there is increase in percentage of myopics in other blood groups collectively by (12.34%) which is statistically significant (d.f.= 3; Chi-square = 21.26; P = 0.001). Similar study carried out by other authors¹⁰ have not found any significant relationship between ABO blood group and myopia.

Conclusion: From the above observation it is concluded that the incidence of myopia is reduced significantly in individuals of blood group 'O' as compared to other blood groups of ABO system. In other words, 'O' blood group individuals are less prone to develop myopia and that A/B/AB individuals are more prone to develop myopia. Probably A/B/both antigen induce myopia and therefore A/B gene may be the prime suspect in genesis of myopia.

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