

ABO and Rh Blood Groups in Patients with hypertension: Association with Secretor Status

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Aims and objective of the study is to find ABO and Rh blood groups association with secretor status in patients with hypertension. ABO and Rh blood grouping was done by direct agglutination test and secretor status by agglutination inhibition test. 50 controls and 50 hypertensive patients were selected. No association of ABO and Rh blood group with secretor status was found in patients with hypertension.

Key words: ABO, Rh blood group, secretor, HTN

The blood group antigens are determined genetically and specific anti-sera are used to detect these antigens on red cell surface. ABO is the most important blood group system. Individuals of A, B and AB groups contain A, B, and AB antigens respectively. People with A and B groups have anti-A and Anti-B antibodies respectively while group AB contains no antibodies. Blood group O has no antigen but has antibodies against A and B antigens^{1,2,3}. Rh blood group is complex system. Rh antigens C, c, D, E and e are determined by three pairs of closely linked allelic genes. The d gene is amorph and D gene is strong and clinically important. Naturally occurring Rh antibodies are rare except anti-E. Practically all Rh antibodies result from immunization³.

The individuals who secrete the water soluble A, B and H antigens in saliva and other body fluids like gastric secretions, tears, urine, bile, milk, semen, amniotic fluid and some pathological fluids as well known as secretors where as others who lack this property are called non-secretors^{4,5}. The antigens expressed on both the red cells and in the secretions are determined by the interaction of Hh, Sese, and ABO genes^{1,2}. There is an association between blood groups and certain diseases. The strongest relationship is between duodenal ulceration and blood group O⁶. Blood group is considered a non-modifiable risk factor of different diseases⁷. The association of blood group A with IHD (ischemic heart disease) is known and is considered as minor risk factor for IHD⁸⁻¹⁸. The present study was carried out to find out the association of ABO and Rh blood groups in hypertensive patients with secretor status.

Materials and methods

Forty five hypertensive patients (according to WHO criteria) were selected from medical units of Services Hospital and Mayo Hospital. Any individual with systolic >140 and diastolic >90 on more than two occasions is considered hypertensive. Another 50 individuals from blood banks were taken as controls. ABO and Rh blood grouping was done on blood samples of patients and controls by direct agglutination method. Both forward and

reverse grouping were done by tube method described by Dacie and Lewis¹⁹. One ml non-stimulated saliva was used for secretor status analysis by Wiener agglutination inhibition test adopted by Vidas et al⁵. Chi square test and "p" value were used to analyze the results and data in the present study.

Results

The ABO blood group observed in controls and hypertensive patients are shown in Table 1. The blood group A was more in patients with hypertension as compared to other groups ($\chi^2=0.1653$ with 1 df, $p>0.05$ - non significant). But there was no association between hypertension and blood group A and secretor status.

Table 1 ABO Blood Group Distribution in Controls and HTN

Blood Group	HTN%	Controls%
A	57.8	22
B	17.8	36
O	20	34
AB	4.4	08
Total	100	100

Association with blood group A

$\chi^2 = 0.1653$ with 1 df, $p>0.05$ - non significant

Association with blood group O

$\chi^2 = 0.152$ with 1 df, $p>0.05$ - non significant

The Rh blood group observed in controls and hypertensive patients are shown in table 2. The Rh+ blood group in patients with hypertension was compared to other groups ($\chi^2 = 0.0061$ with 1 df, $p>0.95$ - non significant). No association between hypertension, Rh blood group and secretor status was found.

Table 2 Rh Blood Group Distribution in Controls and Hypertensive Patients

Blood group	HTN%	Controls%
Rh +	93	94
Rh -	7	6
Total	100	100

Association with Rh+ group $\chi^2 = 0.1767$ with 1 df, $p>0.05$ - non significant

The distribution of secretor status among control group and hypertensive patients was determined and the results are given in Table 3.

Table 3 Secretor Status.

Secretors status	HTN%	Controls%
Secretor	82.2	80
Non-secretor	17.8	20

Discussion

It was found that in hypertensive patients, blood group A was the predominant group. It was found in HTN patients that 82.2 % were secretors with rest of 17.8% non-secretors (table3). In a study carried out in Rawalpindi /Islamabad showed that secretors and non-secretors were 85.3% and 14.7% respectively⁴. Hook-Nikanne et al²⁰ found 80% of blood donors as secretor and 20% as non-secretors in Helsinki urban population. Secretors were 73% and non-secretors were 27% in the study of Collier et al²¹. Lamey et al²² (1994) found secretor as 64% and non-secretors as 36% in Sri-Lankan population.

Since the identification of blood groups in man, a relationship between different blood groups and certain diseases has been established. Blood group antigens can act as receptor as well as protective.²³ Meshalkin et al¹⁵ found prevalence of A gene and Rh+ phenotype in ischemic heart disease. Nydegger et al¹⁶ found B blood group as an independent risk factor for myocardial infarction. Galeazzi et al¹⁷ found association of blood group A with hypertension but Gillum¹⁸ found that ABO blood group was not significantly associated with hypertension and no consistent associations were found between Rh types or ABH secretor status. Further carefully controlled studies are needed to find relationship between blood group antigens, hypertension and secretor status which may reveal the basis of this association.

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