Original Article

Physiology

Incidence of ABO Blood Groups in Patients with Stroke

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ABSTRACT

Aim: To assess the incidence of ABO blood groups in patients with stroke.
Study Design: Cross – Sectional Study
Place and Duration of Study: This study was performed in KPK on the patients admitted in departments of cardiovascular diseases and medicine from January 2009 to December 2012.
Patients and Methods: One Thousand Forty (1040) patients (before the age of 70 years) with stroke were evaluated from departments of cardiovascular diseases and medicine of teaching hospitals of KPK for the period four years.
Results: When results were summed up and test parameters were compared, it was seen that most of the patients with stroke were blood group A individuals(41%). A significant difference ($P < 0.05$) was noted, when analyzed statistically. The second most common blood group found among stroke patients was blood groups (35%).
Conclusion: Finally it is concluded that patients with blood group "A", are most prone to develop cardiovascular disease as described earlier in our articles.
Key Words: ABO Blood groups, stroke, CVD.

INTRODUCTION

The cardiovascular diseases are the most common causes of death in developed countries and their prevalence rate is rapidly growing in developing countries. Stroke is defined as focal neurological deficit due to vascular lesion[1]. It is the third most common causes of death among cardiovascular diseases[2]. The presence of A blood group antigen, expresses on Red blood cells has been associated with increases risk of atherosclerosis. The ABO gene codes for several glycosyltransferases that add sugar residues to H(O) antigen thus forming the A and B antigens. Most recent studies of ABO blood groups and associated risk of cardiovascular diseases have been reported [3-9]. There is an strong relation of hyper lipidemiaand blood group A. Fewer studies have investigated ABO blood group system in stroke [10-12, 22]. We aimed to investigate whether ABO blood group system us associated with over all stroke, by using wide scale series of patients.

PATIENTS AND METHODS

This is first comprehensive report in Pakistan. The study was performed in KPK. One Thousand Forty (1040) patients (with ages between 40-70 years) with stroke admitted in departments of cardiovascular diseases and medicine, from periods between January 2009 to December 2012 were selected for the study. All patients were examined personally. Their records were carefully analyzed. All underwent neuroimaging. Then the incidence of ABO blood groups was seen among these patients. Student's"t"-test was applied to investigate any significant relationship among various parameters.

RESULTS

When results were summed up and test parameters were compared, it was seen that mean age of patients was 50 years. The incidence of ABO blood groups among over all stroke patients was, blood group A: 41% (n=448) B: 12% (n=138), O: 35% (n=390), and AB was 6%(n=64). The difference was found highly significant ($P<0.05$), when patients with group A were compared with other blood group.

Table No.1: Percentage wise distribution of patients.

Blood Group	Overall stroke patients (n = 1040)	Percentage
A	448	41%*
O	390	35%
B	138	12%
AB	64	6%

*$P<0.05$ (highly significant)

DISCUSSION

A number of studies elucidated that ABO blood groups are associated with major cardiovascular risk factors and increases rate of cardiovascular events. Stroke is a disease caused by a disturbance of blood flow to the brain. A new research suggests that people with blood

type AB are at a higher risk of stroke[16]. In the thrombosis cases, there was an excess of blood groups A and B and a deficiency of O and B, in cerebral hemorrhage, this situation was reversed[17]. Another study found that the non-O phenotypes were more frequent in patients with ischemic stroke [18-19]. Another recent study suggests that blood group "O" is related to cerebral hemorrhage and may serve as a risk factor for hypertensive intra-cerebral hemorrhage[20]. Another case control study found that risk of arterial and venous thrombosis with presence of A and B allele [21]. They could not found any relation of ABO genotype and hemorrhagic stroke. Our study is in contrast with studies done by Wiggen et al, as we found significant relation between blood group A and stroke[21]. However our study is compatible with study done Chen et al, as we also found blood group O as second most common in stroke patients[20]. The difference reflects differences in blood group glycoprotein on the surface of RBCs, which in turn affects how the immune system develops. Dr. Manson suggests that these differences in blood types may affects the stiffness of RBCs so that some types of blood form clots more easily. Although a person's blood type cannot be changed, but knowing this information may help identify the risk of stroke. The people with higher risk blood types have their other risk factors assessed so they know their overall profile, and furthermore, they may follow healthy life style recommendations, through an intensive exercise at healthy diet.

CONCLUSION

Finally we conclude that blood group A has strong association with development of stroke, as described in recent studies. We also suggest that incidence of ABO types of stroke (ischemic and hemorrhage) separately may also be evaluated along with any correlation of other risk factors.

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