

Evaluation of Lipid Profile of Different ABO Blood Groups

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ABSTRACT

The clinical significance of the ABO blood group which is the major blood grouping, is not limited to just transfusion science. Incidentally, recent studies have shown their roles in the development of certain genetic disorders. This study is aimed at determining and comparing the blood pressure and serum lipid profile in healthy individuals with different ABO blood groups. Eighty subjects comprising of twenty (20) for each blood group (A, AB, B and O) were evaluated. The subjects were between the ages of 20-48 years of both sexes, all within Aba Metropolitan. Pregnant women and subjects with disorders were excluded in this study, their blood groups. Blood pressure and lipid profile such as Total cholesterol (TC), Triglyceride (TG), High density lipo-protein (HDL), and Low density lipo-protein (LDL) were evaluated from the blood collected from the subjects using standard methods. Data were analyzed for statistical significance using one way ANOVA. The study revealed that the low density lipo-protein was significantly higher in subjects in blood group A compared to other groups. Equally observed in the same group was that the High density lipo-protein was remarkably reduced ($p < 0.05$). Considering the results of this study, there is the tendency that individuals of blood group A may be genetically predisposed to cardiovascular disease and individuals with blood O may have a protective anti-atherogenic factor because of increased High density lipo-protein content inherent in their blood.

Keywords: Total cholesterol, Triglyceride, High density lipo-protein, Low density Lipo-protein, Blood group.

INTRODUCTION

ABO blood groups system is the most important blood group system in transfusion science. The human blood is classified based on the inherited properties of the red cells (erythrocytes) and this is determined by the presence or absence of antigens A and B which are carried on the surface of the red cells. The ABO antigens are well developed before birth and remain throughout life (Akpan, 2006). The central principle of the ABO system is that antigens differ between individuals who have immunological tolerance only toward what occurs in their own bodies. O'Rourke (1999) suggested that ABO blood type is associated with the risk of ischemic heart disease, the relationship between lipids and ABO blood groups are based on carbohydrates primary attached to lipids. The combination of blood pressure and cholesterol are risk factors which

has additive effects on cardiovascular disease and coronary heart disease (Cullen, 2004, Ellison 2004, Thomas et al, 2005). Most previous studies have reported that A blood group are predisposed to cardiovascular disease and that type O blood group is a protective anti-atherogenic factors (Platt et al, 2000, Stakistsaitis, 2002).

Incidentally, in different parts of the world, studies have been carried out on blood pressure and lipid profile in relation with ABO Blood groups. This has been associated with development of cardiovascular disease and hypertension. There is very little data with respect to the relationship between blood pressure, blood grouping and lipid profile in our locality. Therefore, this research is aimed at studying the blood pressure and the profile of individuals with different ABO blood groups in the locality. (David, 2006)

RESULT AND DISCUSSION

Table showing Blood groups, Blood pressure reading, Total Cholesterol, Triglyceride, High

Density Lipoprotein and Low density lipoprotein.

Blood Group	Systolic (Mmhg)	Diastolic (Mmhg)	Total Cholesterol (Mmol/L)	Triglyceride (Mmol/L)	High Density Lipoprotein (Mmol/L)	Low density Lipoprotein (Mmol/L)
Group A n=20	122.50±7.09	77.00±2.52	3.13±0.61	0.91±0.27	1.00±1.21	1.88±0.70
Group B n=20	122.55±7.09	80.50±2.24	2.85±0.45	1.06±0.03	1.07±0.24	1.63±0.53
Group AB n=20	120.40±3.38	80.00±7.79	2.96±0.53	0.99±0.29	1.08±0.29	1.66±0.64
Group O n=20	166.35±3.58	80.50±2.24	3.00±0.47	1.02±0.25	1.19±0.30	1.61±0.64
ANOVA	2.613	1.010	0.06	0.038	0.284	0.004
Value	NS	NS	S	S	NS	S

Result expressed as mean ± standard deviation, $P < 0.05 = S$ (Significant), $P > 0.05 = NS$ (Non significant)

The study revealed that the low density lipoprotein was significantly higher in subjects in blood group A compared to other groups. Equally observed in the same group was that the High density lipoprotein was remarkably reduced ($p < 0.05$). The ABO blood group system, a well-known genetic risk factor, has clinically been demonstrated to be linked with thrombotic vascular diseases (Liumbruno and Franchini, 2014, Biswas, *et al*, 2013). Again, the studies of Peter. (2011) reported the tendency of AB blood groups to influence heart diseases. The patients with blood group O had high level of HDL compared to others and this was attributed to the deficiency of glycotransferase enzyme that encodes the blood group O phenotype which was previously proposed to protect against myocardial infarctions.

However, there are many factors that play major role to produce clinical cardiovascular diseases example is soluble adhesion factors like E- Selection which promote arterial inflammation in the presence of clotting factor such as factor Vii (antihaemophilic factor). Again, it may be linked to elevated cholesterol, though these factors are associated with blood group A Horny *et al* (2001), Platt *et al*, (2000), Statsaitis (2002). Considering the results of this study, there is the tendency that individuals of blood group A may be genetically predisposed to cardiovascular disease than individuals with blood O. Again, the individuals with blood group O may have a protective anti- artherogenic factor because of increased High density lipoprotein content inherent in their blood.

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