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LEVELS OF LIPIDS AND SERUM GAMMA-GLUTAMYL TRANSPEPTIDASE IN YOUNG ADULT PATIENTS OF NON-COMPLICATED ESSENTIAL HYPERTENSION

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Abstract:

Introduction: *Gamma-glutamyl transpeptide, which was initially used as an indicator of alcohol consumption, is now seen as a sensitive marker of subclinical inflammation. Recent clinical studies have shown its association with blood pressure and lipid profile. Because GGT lowers glutathione, the antioxidant GGT can be considered a pro-inflammatory marker that plays a role in aerogenesis and hypertension. The aim of this study was to determine the levels of lipids and serum gamma-glutamyl transpeptidase in young adults with uncomplicated essential hypertension.*

Place and Duration: *In the Medicine department of District Headquarters Hospital, Rawalpindi for one-year duration from April 2019 to March 2020.****Materials and methods:*** *65 subjects with Essential hypertension and 50 age and sex matched healthy controls both male and female between 18-50 years of age were recruited from General Medicine department. Serum GGT was measured by calorimetric kinetic assay. Fasting Serum Triglycerides, Total Cholesterol and HDL cholesterol by standard enzymatic procedures and LDL cholesterol by Fried-wald equation.****Results:*** *GgT significantly increases in cases of hypertension (mean SD 64.2-18.62 IU/L) compared to controls (SD mean 26.20-8.91IU/L) (P value 0.001). GGT is significantly associated with systolic blood pressure (r-0.26 p<a.01).* ***Conclusion:*** *Our results suggest that an increase in ggt levels in young adults may contribute to predisposition to hypertension and provide additional evidence for a new role in cardiovascular risk assessment. Introduction: Gamma-glutamyl transpeptidase initially used as an indicator of alcohol ingestion is now viewed as a sensitive marker of sub clinical inflammation. Recent clinical studies have shown its association with blood pressure and lipid profile. As GGT degrades glutathione, an antioxidant GGT can be considered as a pro inflammatory marker playing a role in atherogenesis and hypertension. Materials and methods: 65 subjects with Essential hypertension and 50 age and sex matched healthy controls both male and female between 18-50 years of age were recruited from General Medicine department of Narayana Medical college and Hospital, Nellore, A.P. Serum GGT was measured by calorimetric kinetic assay. Fasting Serum Triglycerides, Total Cholesterol and HDL cholesterol by standard enzymatic procedures and LDL cholesterol by Friedwald equation. Results: GGT is significantly elevated in hypertensive subjects (Mean± SD 64.2±18.62IU/L) compared to controls (Mean± SD 26.20±8.91IU/L) (P value less than0.001). GGT is significantly correlated with systolic BP (r= 0.26 p less than 0.01) and diastolic BP (r= 0.28 p less than 0.01).*

Conclusion: Our findings suggest that elevated GGT in young adults may contribute to their susceptibility to hypertension and provide an additional evidence of novel role of GGT in cardiovascular risk evaluation.

Keywords: *Serum -transpeptides Glutamine, Lipid profile, Young adults, Hypertension.*

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INTRODUCTION:

Hypertension is growing rapidly among younger generations due to changes in eating habits and lifestyle changes Hypertension is one of the most important risk factors for cardiovascular disease. Early death in young adults depends mainly on cardiovascular diseases[1-3]. Therefore, the diagnosis and treatment of hypertension as soon as possible is very important. Recent studies have shown that GGT is a pro-zapnal marker that includes atherosclerosis and cardiovascular risk. Gamma-glutathytrans-peptide, which was initially used as an indicator of liver function, has now been found to be high in other metabolic disorders such as diabetes not insulin, hypertension, etc[4-6]. GGT is a glycoprotein consisting of two polypeptide chains. GGT is mainly caused by the liver, but also occurs in other tissues of organs such as the kidneys, lungs, pancreas and blood vessels. Glutathione is a peptide with glutamic acid, glycine and cysteine in the structure. Glutathione is an important antioxidant and comes from both degraded and oxidized forms in the cell[7-9]. The main function of GGT is to create dipeptide by lowering glutathione. LDL in the vascular endothelium is oxidized by the action of free radicals and forms a plaque lining the blood vessels. The progressive formation of plaque causes atherosclerosis, which leads to hypertension.

MATERIALS AND METHODS:

This study is a case control study, 65 case control studies, 65 people with hypertension and healthy controls combined for men and women between the ages of 50 and 25-60 held in the Medicine department of District Headquarters Hospital, Rawalpindi for one-year duration from April 2019 to March 2020 for one-year duration from May 2019 to May 2020. This study was approved by the Institutional Ethics Board Sample Size: 65 spontaneous hypertension and 50 years and healthy controls were included in the study, which was combined with both male and female. Exclusion criteria: Pregnant and lactating women and patients with medicines that may affect diabetes, liver disease and serum lipid levels and GGT levels were not included in the study. Methodology: Blood pressure (BP) was measured by a doctor. Patients with systolic blood pressure (SBP) were considered hypertension at more than 90 mmHg over three consecutive days with 140 mmHg and/or diastolic blood pressure (DBP). 5 ml of blood samples were taken under aseptic conditions from all study subjects with regard to the serum GGT forecast. All samples were centrifugal and analyzed within 3 hours of sampling. Serum ggT was measured using a metric kinetic test. Fried-wald's equation for total serum cholesterol, triglycerides, HDL and LDL cholesterol is analyzed by statistical analysis: all data is analyzed in SPSS-13. P.01 was considered significant.

RESULTS:

A total of 115 blood samples were taken, grouped in patients with normal subjects and hypertension. The median age in cases is 38.71 to 8.48 years and 32.72 to 11.28 years for control.

Table 1: Main characteristics of hypertensive cases and controls

Biochemical parameters	Cases n=65	Controls n=50	p-value
GGT (IU/L)	70.10±25.08	23.34±8.42	<0.0001
Cholesterol (mg/dl)	359.35±70.13	148.25±28.60	<0.0001
Triacyl glycerol (mg/dl)	238.87±110.1 5	79.13±28.88	<0.0001
HDL(mg/dl)	35.69±6.52	75.12±18.32	<0.0001
LDL(mg/dl)	160.39±15.48	89.26±20.34	<0.0001
SBP(mm/Hg)	148.06± 9.23	93.81±4.56	<0.0001
DBP(mm/Hg)	115.31± 7.61	75.29± 3.78	<0.0001

Table 1 shows that Ggt increased significantly in cases of hypertension (SD mean 64.2-18.62 iu/l) compared to controls (SD mean 26.20-8.91 iu/l) (P<0.001). Total serum cholesterol, triglycerides and LDL cholesterol increased significantly in people with hypertension. HDL cholesterol is significantly reduced as controlled (p<0.001).

DISCUSSION:

The present study shows that GGT levels are elevated in patients with hypertension compared to those with normal blood pressure[9-11]. Our results showed a positive association between higher serum GGT levels and clinical hypertension. These results are consistent with previous studies in which a positive relationship was found between higher serum GGT levels and clinical hypertension [13,14,15,16]. In this study, the age of patients with arterial hypertension was 38.71 ± 8.48 years, compared with 32.72 ± 11.28 years in the group with normal blood pressure[12-14]. The ratio of men to women between the two groups did not show any significant statistical difference. The present study suggests that serum GGT levels are elevated in hypertensive patients compared with their age and gender matched with normal blood pressure (p

<0.001). Our results are consistent with the current role of GGT in the development of hypertension [17, 18]. A previous study by Ruttmann et al. In a large Finnish cohort of both sexes, serum GGT was independently associated with alcohol consumption and as a prognostic marker for myocardial ischemia. recent insights into the role of serum GGT in the development of hypertension and some metabolic disorders such as type 2 diabetes deepen our understanding of the evolution of these diseases and allow the disease to be prepared for better treatment[15].

CONCLUSION:

Our findings show that the increase in GGT in young adults can contribute to predisposition to hypertension and provide additional evidence for a new role in cardiovascular risk assessment.

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