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ORIGINAL ARTICLE

Metabolic Abnormalities in Hypertensive patients and their Risk Factors

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ABSTRACT

Background: Metabolic syndrome is a disorder which is categorized by the presence of various features like hypertension, obesity, insulin resistance and dyslipidemia. One of the basic features of this syndrome is hypertension that may lead to increased incidence of cardiovascular incidents.
Aim: To determine the gender based comparison of metabolic syndrome among the hypertensive patients who reported in the outpatient department.
Study Time: The present study was conducted from January 2019 to June 2019 over a period of six months.
Methods: Known hypertensive patients aged between 20 to 50 years who fulfilled the selection criteria were included in this study. After informed written consent, the physical examination and required laboratory investigation were done. The data was entered and analysed by using SPSS version 23 Mean±standard deviation was recorded for the quantitative variables while frequency was utilized for the qualitative variable. The p-value of ≤0.05 was taken as significant.
Results: A total of 85 known patients of hypertension were included in the study comprising (70.12%) males and (35.40%) females. They were evaluated for the metabolic syndrome using the Adult Treatment Panel III- A (ATP –III A) criteria. Their blood pressure was recorded and fasting blood sample were taken to determine the levels of serum glucose, HDL-cholesterol and triglyceride.
Conclusion: Metabolic syndrome is more prevalent in the hypertensive patients
Keywords: Metabolic syndrome, Hypertension, Dyslipidemia

INTRODUCTION

Metabolic syndrome is a disease state which is manifested by hypertension, obesity, insulin resistance and dyslipidemia. The principle factor considered responsible for the Metabolic syndrome the insulin resistance. It has been observed that adipose tissue releases inflammatory cytokines due to infiltration of macrophages resulting in enhanced insulin resistance.

The disorders associated with the metabolic syndrome also lead to various clinical hazards. Hypertension which is one of the basic components of the MS can induce renal damage, peripheral vascular disease and cardiac myopathy. Literature review shows a study conducted which reveals that about one third of the hypertensive patients were having MS.According to suggestion of Vague (1947) obesity may promote the development of atherosclerosis, calculi, gout and diabetes. It has been observed that obese patients who suffer from dyslipidemia show improvement when they are kept on low carbohydrate diet.

MS related with the hyperuricemia, fatty liver and hyperlipoproteinemia. The prevalence of MS was found to be 28.5% in 2005 but further rise up to 32% is expected till 2030. The prevalence depends upon criteria used for the diagnosis along with the age, gender and race of the population. The patients of MS are more prone to develop cerebrovascular accidents, diabetes mellitus, ischemic heart disease and cardiovascular associated deaths.

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MATERIAL AND METHODS

It is conducted in the hospital after permission from Ethical Committee from January 2019 to June 2019. The study population consisted of 85 patients aged 20 to 50 years. The study subjects were taking antihypertensive medicines. They were divided into two groups depending upon presence and absence of MS. The ATP-III-A criteria were used to diagnose the MS in the study subjects. Those who fulfilled the criteria were placed in group A and others were placed in group B. The non-probability purposive sampling technique was applied for the study. Informed written consent was taken before proceeding to clinical examination and laboratory evaluation. The mercury sphygmomanometer was used to take the blood pressure. It was recorded three times and mean value was calculated. Early morning fasting blood sample in a quantity of five milliliters was taken under aseptic conditions. It was transferred to clot activator and then centrifuged to

separate serum for analysis of glucose, triglyceride and HDL-cholesterol levels.

Early morning (between 7.00am to 9.00am) fasting sample of five milliliters (ml) of blood wasdrawn by venipuncture under aseptic measures with the help of a new disposable syringe. The blood wastransferred to clot activator tubes and allowed to clot. Then it was centrifuged to separate the serum from cellular components. Serum was stored in serum cups at a temperature of -20^{0}C for analyzing the serum leptin and cortisol along with the glucose, triglyceride and HDL-cholesterol levels.

RESULTS

The study contains 85 patients including both males &females with the age group of 20 to 50 years. They were known patients of hypertension receiving the treatment in the form of antihypertensive medicines. After taking informed consent, clinical examination was done. They were evaluated through laboratory investigations for the metabolic syndrome. It was observed that insulin resistance marked by fasting blood sugar level >100mg/dl was significantly higher in group A (134.20±49.26mg/dl) than in group B(90.49±8.01mg/dl) having a highly significant p-value of <0.002. It was also found in this study that mean HDL-cholesterol level of group A was 39.49±6.23mg/dl as compared to 50.01±5.06mg/dl in group B (p-value <0.002).The mean triglyceride level in group A was 149.07±88.49mg/dl while it was significantly lower (p<0.001) in group B at 139.21±32.44mg/dl.

Table 1: Distribution of Metabolic Syndrome among study groups

Group	No. of patients	Percentage
A	55	70.12
B	30	35.40

Table 2: Distribution of biochemical parameters among study groups

Parameter	Group A	Group B	P value
Fasting Blood Sugar (mg/dl)	134.20±49.26	89.56±7.36	<0.002
HDL-Cholesterol (mg/dl)	39.49±6.23	50.01±5.06	<0.002
Triglycerides (mg/dl)	149.07±88.49	139.21±32.44	<0.001

DISCUSSION

Hypertension is a common health issue encountered in clinical practice. It is one of the major causes of cardiovascular problems. The patients mat present very late with its complications like renal failure or cardiac failure.

Metabolic syndrome is condition which is manifested by cardiovascular risk factors including insulin resistance. Obesity and insulin resistance are considered as key factors in the pathogenesis of hypertension leading to Metabolic Syndrome. It has been observed that all the components of Metabolic Syndrome play their role in the elevation of blood pressure and endothelial damage in vital organs of the body.

Elevated level of fasting blood sugar indicates hepatic insulin resistance. Diabetes is caused by beta cell dysfunction and insulin resistance. The high value of triglyceride is a characteristic of insulin resistance and related with the cardiovascular disease. It has been shown in the studies that hyperglycemia is significantly associated withincreased frequency of dyslipidemia and may increase the risk of cardiovascular disease.

CONCLUSION

Linking the separate factors of MS among the two groups exposed that these parameters dyslipidemia and fasting blood sugar were significantly higher in the hypertensive patients with MS (group A) than the hypertensives alone (group B). Based on the results of present study, it is recommended that all the hypertensive patients should undergo regular screening for metabolic syndrome to prevent the grave outcomes.

Conflict of interest: Nil

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