Dr. Karthik Sharma
Department of medicine,
Government Medical College
Kottayam, College in
Kottayam, Kerala, India

To evaluate the cases of metabolic syndrome in general population

Dr. Karthik Sharma

Abstract
Background: The present study was conducted to evaluate the cases of metabolic syndrome in general population.
Materials & Methods: This study was conducted on 76 metabolic syndrome patients. All patients subjected to fasting blood sugars and fasting lipid profile level measurements. Blood pressure was also recorded.
Results: In group I, there were 46 males and 30 females and in group II, there were 41 males and 35 females. In group I, 78% patients had hypertension while in group II, 24% had hypertension. The difference was significant ($P< 0.05$). Group I had higher TG, total cholesterol, HDL, LDL and VLDL than group II. The difference was significant ($P< 0.05$).
Conclusion: Authors found that patients with metabolic syndrome pose high total cholesterol, LDL, HDL, VLDL level.

Keywords: hypertension, diabetes, metabolic syndrome

Introduction

Metabolic syndrome (MS) is a cluster of anthropological and biochemical abnormalities that predispose an individual to coronary artery disease. The metabolic and underlying risk factors that are components of metabolic syndrome include abdominal obesity, atherogenic dyslipidemia, elevated blood pressure, insulin resistance with or without glucose intolerance, low-grade inflammation, and a prothrombotic state [1]. During the past 20 years, this clustering of metabolic health risks has been known by several names (e.g., insulin resistance syndrome, syndrome X, the deadly quartet, hypertriglyceridemic waist) [2]. However, the term most commonly used in clinical practice today is metabolic syndrome. Although the predictive and clinical utility of metabolic syndrome has been debated in some circles, it generally is accepted that metabolic syndrome serves as a construct to identify individuals who have an increased long-term risk of atherosclerotic cardiovascular disease (ASCVD) with or without type 2 DM [3].

There is general agreement that insulin resistance is the underlying cause of metabolic syndrome. Insulin resistance and the resulting hyperinsulinaemia have been implicated in the development of glucose intolerance and the progression of type 2 diabetes mellitus, hypertension, polycystic ovarian syndrome, hypercoagulability and vascular inflammation as well as eventual development of CVD. Recently IDF has proposed central obesity as an important component of metabolic syndrome because it is highly correlated with other components of metabolic syndrome and is easily measured using waist circumference.4 The present study was conducted to evaluate the cases of metabolic syndrome in general population.

Materials & Methods

This study was conducted in department of Internal medicine. It comprised of 76 metabolic syndrome patients of both gender. Equal sex and gender matched subjects were taken as controls. All were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study.
General data such as name, age, gender etc. was recorded. General information such as name, age, gender etc. was recorded. All patients subjected to fasting blood sugars and fasting lipid profile level measurements. Blood pressure was recorded in right upper limb with patient in sitting posture using standard sphygmomanometer and stethoscope. Blood samples for lipid profile were taken after 12 hours overnight fast. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.
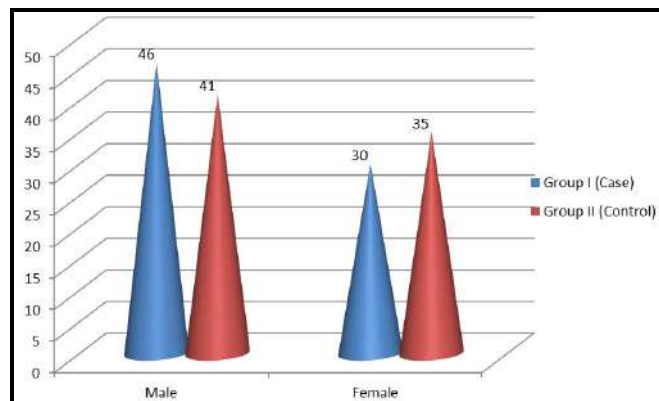
Corresponding Author:
Dr. Karthik Sharma
Department of medicine,
Government Medical College
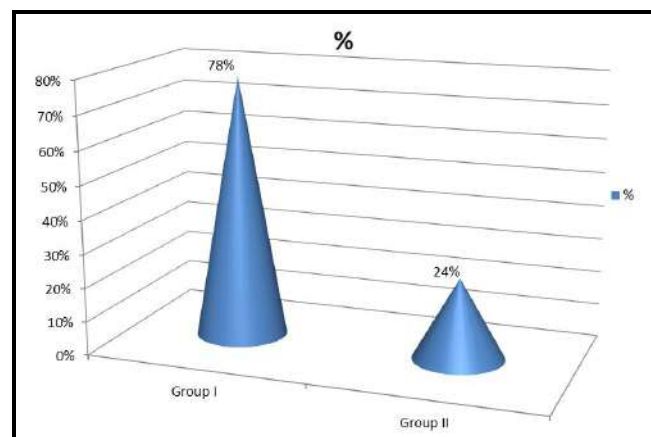Kottayam, College in
Kottayam, Kerala, India

Results

Table I: Distribution of subjects

Groups	Group I (Case)	Group II (Control)
Male	46	41
Female	30	35

Table I shows that in group I, there were 46 males and 30 females and in group II, there were 41 males and 35 females.

Graph I: Distribution of subjects

Graph II: Presence of Hypertension in both groups

Graph II shows that in group I, 78% patients had hypertension while in group II, 24% had hypertension. The difference was significant ($P < 0.05$).

Table III: Lipid profile in both groups

Lipid profile (mg/dl)	Group I	Group II	P value
High total cholesterol	78%	10%	0.01
High Triglycerides	80%	5%	0.05
High LDL	72%	15%	0.04
High VLDL	95%	12%	0.02
High HDL	69%	14%	0.02

Table III shows that group I had higher TG, total cholesterol, HDL, LDL and VLDL than group II. The difference was significant (P < 0.05).

Discussion

One of the important aspects of management for metabolic syndrome is weight reduction. A realistic goal for weight reduction is to reduce body weight by 7-10% over a period of 6-12 months.[5] This is achieved by encouraging patient to focus on exercise and improve their personal level of activity. Great benefit occurs when sedentary persons incorporate moderate intensity exercises into their lifestyle. Regular physical training and endurance exercise training can induce body fat loss and a mobilization of abdominal and visceral adipose tissue can increase insulin sensitivity and improve the atherogenic lipoprotein profile. However, the goals set must be realistic and achievable, and should be adjusted according to the patient's level of acceptance and compliance [6]. The present study was conducted to evaluate the cases of metabolic syndrome in general population.

We found that in group I, there were 46 males and 30 females and in group II, there were 41 males and 35 females. Janghorbani *et al*. [7] in their cross‑ sectional study found that MS was observed in 16.8% of the study population. High blood pressure and hyper‑ triglyceridemia were the commonest abnormalities. The prevalence of other cardiovascular risk factors were high body mass index (65.6%), hypertension (37.7%), diabetes (7%), smoking (10%), and alcohol use (48%).

We found that in group I, 78% patients had hypertension while in group II, 24% had hypertension. The difference was significant ($P < 0.05$). Group I had higher TG, total cholesterol, HDL, LDL and VLDL than group II. The difference was significant ($P < 0.05$). Other signs of metabolic syndrome include high blood pressure, decreased fasting serum HDL cholesterol, elevated fasting serum triglyceride level (VLDL triglyceride), impaired fasting glucose, insulin resistance, or prediabetes. Associated conditions include hyperuricemia, fatty liver (especially in concurrent obesity) progressing to nonalcoholic fatty liver disease, polycystic ovarian syndrome (in women), erectile dysfunction (in men), and acanthosis nigricans [8].

We observed that group I had higher TG, total cholesterol, HDL, LDL and VLDL than group II. Thayyil *et al*. [9] found that 35 cases (70%) had hypertension and majority of them had hypertension duration between 1 to 10 yrs. 74% cases had SBP between 120 to 160mmHg whereas 82% control group had SBP between 90 to 120mmHg. 50% cases had total cholesterol >200mg/dl, all controls had total cholesterol <200mg/dl. 82% cases had TGL >150mg/dl, 96% controls had TGL<150mg/dl. Significant difference was noted with respect to lipid profile parameters - total cholesterol, triglycerides, LDL, VLDL among cases and control groups.

Abdominal obesity and insulin resistance are viewed as the core defects underlying the pathophysiology of metabolic syndrome. These two risk factors are highly interrelated; therefore, it is difficult to ascertain which one plays the predominant role in metabolic syndrome pathogenesis and progression. In addition, metabolic syndrome pathophysiology is complicated by contributing factors such as dysregulation of adipose tissue–derived cytokines, inflammation, genetics, race/ethnicity, physical inactivity, diet, hormone imbalances, drugs, and age [10].

Conclusion

Authors found that patients with metabolic syndrome pose high total cholesterol, LDL, HDL, VLDL level.

References

1. Von Eckardstein A, Hersberger M, Rohrer L. Current understanding of the metabolism and biological actions of HDL. Curr Opin Clin Nutr Metab Care 2005; 8:147-152.

2. Berneis KK, Krauss RM. Metabolic origins and clinical significance of LDL heterogeneity. J Lipid Res. 2002; 43:1363-1379.

3. Swati Chhatrapati, Abhijeet B Shitole. Efficacy of intravenous clonidine to attenuate cardiovascular stress response to laryngoscopy and tracheal intubation- A prospective randomized double blind study. Inter J of Contemp Med Res. 2016; 3:1462-1467.

4. Bo S, Gentile L, Ciccone G *et al*. The metabolic syndrome and high c reactive protein: prevelance and difference by sex in a southern European population based cohort. Diabetes Metab Res Rev 2005; 21:515-24.

5. Dekker JM, Girman C, Rhodes T, Nijpels G, Stehouwer CD, Bouter LM *et al*. Metabolic syndrome and 10-year cardiovascular disease risk in the Hoorn Study. Circulation. 2005; 112:666-73.

6. Citrome L. Metabolic syndrome and cardiovascular disease. Journal of Psychopharmacology. 2005; 19:84-93.

7. Janghorbani M, Amini M. Metabolic syndrome in type 2 diabetes mellitus in Isfahan, Iran: prevalence and risk factors. Metabolic syndrome and related disorders 2007; 5:243-54.

8. Qiao Q, Gao W, Zhang L, Nyamdorj R, Tuomilehto J. Metabolic syndrome and cardiovascular disease. Annals of clinical biochemistry. 2007; 44:232-63.

9. Thayyil J, Jayakrishnan TT, Raja M, Cherumanalil JM. Metabolic syndrome and other cardiovascular risk factors among police officers. North Am J Med Sci 2012; 4:630-5.

10. Galassi A, Reynolds K, He J. Metabolic syndrome and risk of cardiovascular disease: a meta-analysis. The American journal of medicine. 2006; 119:812-9.