Harsukh Educational Charitable Society
International Journal of Community Health and Medical Research
Journal home page: www.ijchmr.com doi: 10.21276/ijchmr
Official Publication of "*Harsukh Educational Charitable Society*" [Regd.]
ISSN E: 2457-0117 **ISSN P:**2581-5040 **Index Copernicus value 2016** = 52.13

Original Research

Evaluation of metabolic syndrome patients- A clinical study

Yasha Singh[1], Durg Vijay Singh[2]

[1,2]Assistant Professor , Department of Medicine, Mayo Institute Of Medical Sciences, Gadia Barabanki UP, India

***ABSTRACT*:**
Background: Metabolic syndrome (MS) is a cluster of anthropological and biochemical abnormalities that predispose an individual to coronary artery disease. The present study was conducted to assess blood pressure and lipid profile in metabolic syndrome patients. **Materials & Methods:** This study was conducted 110 MS patients and equal control. All were subjected to fasting blood sugars and fasting lipid profile level measurements. Blood samples for lipid profile were taken after 12 hours overnight fast. **Results:** In group I, 74% patients had hypertension while in group II 12% had hypertension. The difference was significant (P- 0.01). The duration of hypertension was 0-5 years (group I- 7%), 5-10 years (group I- 10%, group II- 5%), 10-15 years (group I -12%, group II- 5%) and >15 years (Group I- 45%, group II-2%). Group I had higher TG, total cholesterol, HDL, LDL and VLDL than group II. The difference was significant ($P < 0.05$). **Conclusion:** Authors found significant difference in total cholesterol, LDL, HDL, VLDL level among patients and controls. The diet and change of life style is required to prevent complications.

Key words: Hypertension, Lipid**,** Metabolic syndrome

Corresponding author: Dr Durg Vijay Singh, Assistant Professor , Department of Medicine, Mayo Institute Of Medical Sciences, Gadia Barabanki UP, India

This article may be cited as: Singh Y, Singh DV. Evaluation of metabolic syndrome patients- A clinical study. HECS Int J Comm Health Med Res 2018; 4(4):122-124

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INTRODUCTION

Metabolic syndrome (MS) is a cluster of anthropological and biochemical abnormalities that predispose an individual to coronary artery disease. It is a clustering of at least three of the five following medical conditions such as abdominal (central) obesity, elevated blood pressure, elevated fasting plasma glucose, high serum triglycerides and low high-density lipoprotein (HDL) levels.[1] Two recent prospective population‐based studies confirmed that MS identified a high‐risk group of persons who would have been missed by only consideration of the conventional risk factors. Insulin resistance, metabolic syndrome, and prediabetes are closely related to one another and have overlapping aspects.[2] The syndrome is thought to be caused by an underlying disorder of energy utilization and storage. The metabolic risk factors consist of those factors that seemingly have a direct effect on atherosclerotic disease. Among these, atherogenic dyslipidemia consists of an aggregation of lipoprotein abnormalities including elevated serum triglyceride and apoB, increased small LDL particles, and a reduced level of HDL-C.[3] Most patients with metabolic syndrome are older, obese, sedentary, and have a degree of insulin resistance. The most important risk factors are diet, genetics, aging, sedentary behavior or low physical activity, disrupted sleep, mood disorders/psychotropic medication use, and excessive intake of alcohol. Stress is one of the contributing factors.[3] Asian Indians have traditionally been considered a high-risk population with respect to diabetes and CVD and the numbers are consistently on the rise.[4] The present study was conducted to assess the metabolic syndrome patients.

MATERIALS & METHODS

This study was conducted in department of general medicine. It comprised of 110 metabolic syndrome patients of both genders (males- 50, females- 60). All were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study. Patients with waist circumference ≥90 cm in male or ≥80 cm in females, patients with triglycerides ≥150 mg/dL, HDL-C < 40 mg/dL in male or <50 mg/mL in female, fasting glucose ≥100 mg/dL or treatment for hyperglycemia, blood pressure ≥130/85 mmHg or treatment for hypertension were included. Equal sex and gender matched subjects were selected as controls. 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 with palpatory method. 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.

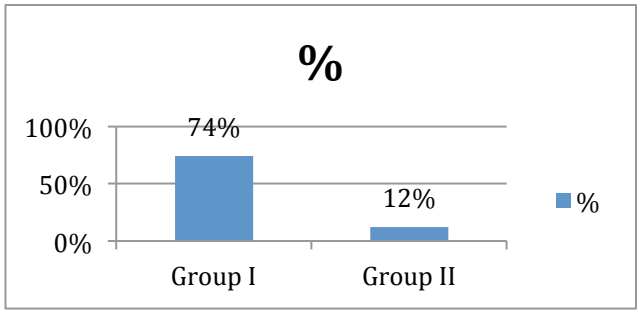
RESULTS

Table I Distribution of subjects

Total- 220		
Groups	**Group I (MS)**	**Group II (Control)**
No.	110	110

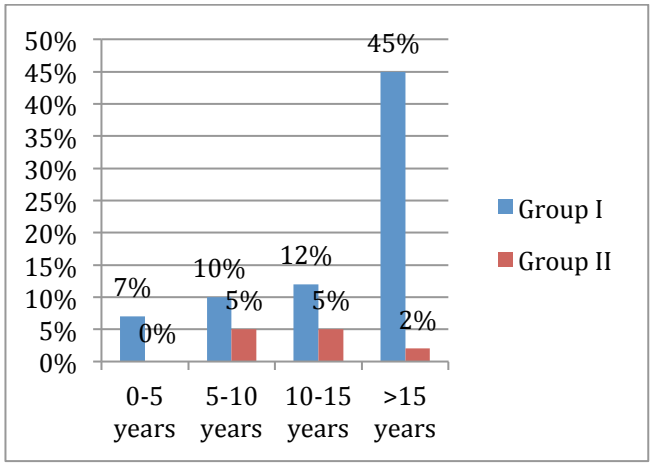
Table I shows that total of 220 subjects. Group I was MS patients (110) and group II were controls (110).

Graph I Hypertension in both groups



Graph I shows that in group I, 74% patients had hypertension while in group II 12% had hypertension. The difference was significant (P- 0.01).

Graph II Duration of hypertension in both groups



Graph II shows that duration of hypertension was 0-5 years (group I- 7%), 5-10 years (group I- 10%, group II- 5%), 10-15 years (group I -12%, group II- 5%) and >15 years (Group I- 45%, group II-2%). The difference was significant (P- 0.01).

Table II Distribution of lipid profile in both groups

Lipid profile (mg/dl)	Group I	Group II	P value
Total cholesterol			
150-200	70%	2%	0.01
>200	30%	5%	
Triglycerides			
<150	15%	89%	0.02
>150	85%	11%	
LDL			
<150	20%	90%	0.01
>150	80%	10%	
VLDL			
<40	5%	92%	0.001
>40	95%	8%	
HDL			
>40	70%	10%	0.05
30-39	25%	2%	
<29	5%	88%	

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

According to the WHO, a person with diabetes has the metabolic syndrome if he or she fulfills 2 or more of the following criteria: hypertension (systolic pressure >160 mm Hg and diastolic pressure >90 mm Hg, or receiving blood pressure lowering therapy), dyslipidemia (triglycerides >150 mg/dl and high density lipoprotein [HDL] cholesterol <35 mg/dl in men or <40 mg/dl in women), obesity (BMI>30 and WHR>0.9 in men or >0.85 in women), and microalbuminuria (24 h urinary albumin excretion rate >30 mg).[5] The present study was conducted to assess metabolic syndrome patients. We found that in group I, 74% patients had hypertension while in group II 12% had hypertension. Duration of hypertension was 0-5 years (group I- 7%), 5-10 years (group I- 10%, group II- 5%), 10-15 years (group I -12%, group II- 5%) and >15 years (Group I- 45%, group II-2%). This is similar to Ajanta et al.[6] 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.[7] We observed that group I had higher TG, total cholesterol, HDL, LDL and VLDL than group II. This is in accordance to study conducted by Qiao Q et al.[8] Various strategies have been proposed to prevent the development of metabolic syndrome. These include increased physical activity (such as walking 30 minutes every day) and a healthy, reduced calorie diet. A study by Vidyasagar 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 ($p < 0.001$) was noted with respect to lipid profile parameters - total

cholesterol, triglycerides, LDL, VLDL among cases and control groups. A study by Janghorbani et al[10] 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%). This study identified police officers as a high‑risk group for developing CVDs. The findings underscore the need for regular surveillance and lifestyle interventions in this important occupational group.

CONCLUSION

Authors found significant difference in total cholesterol, LDL, HDL, VLDL level among patients and controls. The diet and change of life style is required to prevent complications.

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Source of support: Nil **Conflict of interest:** None declared