

Frequency of Metabolic Syndrome in Hyperuricemia

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ABSTRACT

Aim: To estimate the frequency of metabolic syndrome in hyperuricemia

Methods: This study was conducted at the indoor and outdoor departments of East Medical Ward Mayo Hospital, Lahore, during the 2015-16. A total 90 patients with the age 18 years and above of either gender were selected for this study whereas those having Leukemia, Chronic renal failure, Alcohol addiction, diabetes mellitus and hypoparathyroidism were excluded. All the subjects were assessed for the five components conditions of metabolic syndrome. Blood pressure was measured by using a standard sphygmomanometer after the subject had been seated for at least 5 minutes. The mean value of two measurements taken at least one minute apart was used in the analysis. Fifth-phase Korotkoff sound was used for diastolic blood pressure. Abdominal obesity based on waist circumference was measured at narrowest point between umbilicus and bottom of ribcage by measuring tape with same observer. Fasting blood samples were drawn for glucose and lipid profile. Metabolic syndrome was defined by the presence of central obesity (waist circumference >40" for males or >35" for females or BMI > 30 for any waist circumference) and any two derangements of following parameters; fasting plasma glucose > 100 mg/dl; Serum triglycerides >150 mg/dl; high density lipoprotein cholesterol <40/50 mg/dl (men/women); Blood pressure > 130/85 mmHg.

Results: Mean age of patients was 47.64±12.19 years, 26(28.89%) female and 64(71.11%) were male patients and there were only 44(48.88%) patients who suffered from metabolic syndrome.

Conclusion: The Metabolic syndrome was seen in significant number of patients of hyperuricemia. The incidence of hyperuricemia and metabolic syndrome was found to be high in male patients. Mean waist circumference, fasting blood sugar level, fasting plasma triglycerides, fasting HDL cholesterol and serum uric acid level was higher in patients who had metabolic syndrome.

Keywords: Lipid profile, Metabolic Syndrome, Hyperuricemia

INTRODUCTION

Metabolic syndrome (MetS), a clustering of cardiovascular risk factors such as insulin resistance, hypertension, glucose intolerance, hypertriglyceridemia and low high density lipoprotein (HDL) cholesterol levels, is a major worldwide public health problem.¹ The incidence of MetS is increasing in Pakistan because of the westernization of the lifestyle, such as a high-fat and high-calorie diet and less physical activity. The prevalence of Metabolic Syndrome (MetS) in Pakistan is alarmingly high, and is reported to range from 18% to 46%.² It is associated with development of diabetes mellitus³ and cardiovascular problems.⁴ Frequency of metabolic syndrome in type-2 diabetic patients of Pakistan has been found to be 66.5% according to IDF criteria⁵.

Uric acid is the final product of purine metabolism⁶. Hyperuricemia (i.e., elevated serum uric acid) is associated with gouty arthritis, kidney stones, Lesch-Nyhan syndrome⁷. Over recent years its

association with cardiovascular diseases has also been noted⁸. It is found that hyperuricemia is associated with various components of metabolic syndrome such as central obesity, triglycerides, systolic blood pressure, BMI^{9,10,11}. In a study conducted in 2007, Choi HK. et al¹² found that the frequency of metabolic syndrome was 62% in patients of hyperuricemia. As the two conditions are related pathogenically and frequently found together, early screening of hyperuricemic patients for metabolic syndrome can lead to prompt measures for prevention of metabolic syndrome. It can help in prevention and management of cardiovascular and other complications associated with metabolic syndrome.

MATERIAL AND METHODS

This study was conducted at the indoor and outdoor departments of East Medical Ward Mayo Hospital, Lahore A total 90 patients with the age 18 years and above of either gender were selected for this study whereas those having Leukemia, Chronic renal failure, Alcohol addiction, diabetes mellitus and hypoparathyroidism were excluded. All the subjects were assessed for the five components conditions of

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RESULTS

Mean age of patients was 47.64±12.19 years respectively. Mean age of patients was 24 and maximum age of patients was 65 years respectively. There were 8 patients in age group of 20-29 years, 20 patients age was in between 30-39, 18 patients were in the age group of 40-49, 23 patients age group lies in between 50-59 and 21 patients had age in the age group of 60-69 years. Gender distribution of patients shows that there were 26 female and 64 male patients and M:F Ratio was 2.5:1 (Table 1). There were 44 patients who suffered from metabolic syndrome (Table 2). There were 34(53%) male and 10(38%) females who suffered from metabolic syndrome.

Table 1: Gender (n=90)

Gender	Frequency	%
Male	26	28.9
Female	64	71.1

Table 2: Frequency distribution of metabolic syndrome (n=90)

Metabolic syndrome	Frequency	%
Yes	46	51.1
No	44	48.9

DISCUSSION

The metabolic syndrome is characterized by abdominal obesity, dyslipidemia (elevated triglyceride and reduced HDL cholesterol levels), hyperglycemia and hypertension and is a major public health problem. It is well known that patients with metabolic syndrome are at increased risk for mortality and morbidity from cardiovascular disease. Our study is

the first of its kind in Pakistan to evaluate the relationship between metabolic syndrome and hyperuricemia.

The patients presented to us did not represent a specific area of population or class; however, majority belonged to middle or lower socio-economic status. We investigated a total of 90 patients of hyperuricemia and determined the frequency of metabolic syndrome and its individual components. We compared our study results with other internationally published data. In 2007 Hyon K in his study showed the mean age of the patients was 44 years and 50% were male. In our study the mean age was 47.64 years with 71% were male. The study showed that prevalence of metabolic syndrome increased with increase in level of serum uric acid i.e., for uric acid levels from 6 to 6.9 mg/dL, 40.8%, for uric acid levels from 7 to 7.9 mg/dL, 59.7% (95% CI, 53.0-66.4) for uric acid levels from 8 to 8.9 mg/dL, 62.0% (95% CI, 53.0-66.4) for uric acid levels from 9 to 9.9 mg/dL, and 70.7% for uric acid levels of 10 mg/dL or greater. In our study it is 28%, 36%, 55%, 58%, 61% respectively. The overall prevalence of metabolic syndrome was 48.88% in our study which was significant.

In another study Choi HK et al described the association of serum uric acid levels with various components of metabolic syndrome. In that study they found that serum uric acid levels were high in both males and females who had MetS than those who didn't have. We found same relationship in our study. Secondly, the incidence of MetS was increasing with increase in uric acid level and in our study we observed that with high levels of uric acid the prevalence of MetS was high.

Qin Li et al¹¹ in 2011 in a study showed that the patients with higher levels of serum uric acid had higher waist circumference and triglyceride levels in our study the waist circumference, triglyceride levels and fasting blood sugar levels were high in patients with high serum uric acid level. Qin Li study also showed that the levels of fasting HDL cholesterol were lower in patients with high uric acid levels and our study also showed the same result.

Unfortunately, no such study, either with metabolic syndrome or with its components, has yet been carried out in Pakistan. Our study is the first of its kind in Pakistan to evaluate the relationship between hyperuricemia and metabolic syndrome. Our study showed positive relation between hyperuricemia and metabolic syndrome. Further studies should be done to probe into the relationship between hyperuricemia and metabolic syndrome, which could help us in better managing the hyperuricemia patients in future.

CONCLUSION

Metabolic syndrome was seen in 48.88% of the patients. Mean waist circumference, fasting blood sugar level, fasting plasma triglycerides, fasting HDL cholesterol and serum uric acid level was higher in patients who had metabolic syndrome. The outcomes of metabolic syndrome in terms of cardiovascular mortality and morbidity warrant prompt medical checkup of every patient of hyperuricemia to prevent life threatening complications.

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