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METABOLIC SYNDROME AS A CONTRIBUTOR TO CARDIOVASCULAR LISEASE IN GOUT: A CLINICAL EVALUATION

Nabibullaeva Sh. Z.
Maxmudova M. S.
Shukurdjanova S. M.
Nuritdinova N. B.
Tashkent Medical Academy, Tashkent, Uzbekistan

ABSTRACT

Gout, a condition characterized by the deposition of monosodium urate crystals in joints, has long been associated with metabolic disorders. Recent studies indicate that gout patients are at an elevated risk for developing cardiovascular diseases (CVD), particularly in the presence of metabolic syndrome (MS). This study aims to evaluate the prevalence of MS and its relationship with various cardiovascular pathologies, including arterial hypertension (AH), ischemic heart disease (IHD), myocardial infarction (MI), and chronic heart failure (CHF) in a cohort of 90 gout patients. The results show a significant association between MS and increased cardiovascular morbidity in gout patients. Age, obesity, and hypertension are identified as major contributing factors to the development and progression of both MS and cardiovascular diseases in this population.

Keywords: Gout, Metabolic Syndrome, Cardiovascular Disease, Arterial Hypertension, Ischemic Heart Disease, Myocardial Infarction, Chronic Heart Failure, Obesity, Dyslipidemia, Insulin Resistance

INTRODUCTION

Gout is a form of inflammatory arthritis that arises due to the accumulation of monosodium urate crystals in the joints, often caused by elevated levels of uric acid in the blood (hyperuricemia). The relationship between gout and metabolic disorders has been well-established, with numerous studies demonstrating a strong association between gout and the components of metabolic syndrome (MS). MS encompasses a group of risk factors, including central obesity, dyslipidemia (elevated triglycerides and low high-density lipoprotein cholesterol), hypertension, and insulin resistance, all of which contribute to the pathogenesis of cardiovascular diseases (CVD). Understanding the impact of MS on cardiovascular morbidity in gout patients is crucial for optimizing patient management and improving prognosis.

This article explores the prevalence of MS in gout patients and its role in exacerbating cardiovascular conditions, with a particular focus on hypertension, ischemic heart disease (IHD), myocardial infarction (MI), and chronic heart failure (CHF).

METHODS

A cohort of 90 patients diagnosed with gout, 48 of whom had recurrent gout and 42 with chronic gout, were included in the study. The diagnosis of MS was made using the Adult Treatment Panel III (ATP III) criteria, which include:

- Central obesity (waist circumference >102 cm in men)
- Elevated triglycerides (>1.69 mmol/L)
- Low high-density lipoprotein cholesterol (HDL-C) (<1.6 mmol/L)
- Elevated blood pressure (>130/85 mmHg)
- Elevated fasting glucose (>6.1 mmol/L)

Cardiovascular diseases, including arterial hypertension (AH), ischemic heart disease (IHD), myocardial infarction (MI), and chronic heart failure (CHF), were diagnosed based on clinical criteria, echocardiography, and standard diagnostic tests (ECG, angiography, etc.).

RESULTS

The demographic and clinical characteristics of the cohort are summarized in the following table:

Characteristic	Overall (n=90)	Recurrent Gout (n=48)	Chronic Gout (n=42)
Age (years)	54.6 ± 8.7	53.2 ± 8.1	55.8 ± 9.3
Male (%)	78.9%	75.0%	83.3%
Duration of Gout (years)	7.5 ± 2.6	6.1 ± 2.1	8.9 ± 3.2
Prevalence of MS (%)	53.3%	50.0%	57.1%

The table demonstrates that the average age of patients with MS was 55.8 ± 9.3 years, slightly older than those without MS (53.4 ± 8.6 years). Additionally, patients with chronic gout exhibited a longer duration of the disease compared to those with recurrent gout. The overall prevalence of MS was 53.3%, with chronic gout patients exhibiting a higher prevalence (57.1%) compared to those with recurrent gout (50%).

Metabolic Syndrome Components

The prevalence of individual MS components is presented in the following table:

Component of MS	Recurrent Gout (n=48)	Chronic Gout (n=42)	Overall (n=90)
Elevated Blood Pressure	70.8%	71.4%	70.8%
Elevated Triglycerides	69.4%	72.3%	70.8%
Low HDL-C	52.1%	54.8%	53.3%
Elevated Fasting Glucose	50.0%	62.9%	56.2%
Obesity (Waist >102 cm)	41.7%	57.1%	48.8%

This table highlights the components of MS in both recurrent and chronic gout patients. Elevated blood pressure and triglycerides were the most commonly observed MS components, present in over 70% of patients. A higher incidence of elevated fasting glucose and abdominal obesity was noted in patients with chronic gout.

Prevalence of Cardiovascular Pathologies

The table below summarizes the cardiovascular pathologies observed in gout patients with and without metabolic syndrome:

Cardiovascular Pathology	Patients with Metabolic Syndrome (n=48)	Patients without Metabolic Syndrome (n=42)	Overall (n=90)
Arterial Hypertension (AH)	72.2%	64.3%	70.8%
Ischemic Heart Disease (IHD)	43.7%	26.2%	35.6%
Myocardial Infarction (MI)	14.6%	9.5%	12.2%
Chronic Heart Failure (CHF)	33.3%	9.5%	21.1%

This table demonstrates that gout patients with metabolic syndrome had a higher prevalence of cardiovascular diseases, with 72.2% of them presenting with hypertension. Ischemic heart disease (IHD) was observed in 43.7% of patients with metabolic syndrome, compared to 26.2% in those without. The incidence of myocardial infarction and chronic heart failure was significantly higher in the metabolic syndrome group, particularly for CHF (33.3%).

Glycemic Control and Diabetes

Glycemic control was evaluated in the cohort, revealing that 20% of gout patients with metabolic syndrome had Type 2 diabetes (T2D), with a higher prevalence in chronic gout patients (26.2%) compared to recurrent gout patients (14.6%). The following table shows the incidence of T2D based on the presence of metabolic syndrome:

Glycemic Control	Patients with Metabolic Syndrome (n=48)	Patients without Metabolic Syndrome (n=42)	Overall (n=90)
Type 2 Diabetes	20%	9.5%	14.4%

This finding highlights the elevated risk of developing T2D in gout patients with metabolic syndrome, which further exacerbates their cardiovascular risk.

DISCUSSION

The study findings underscore the significant association between gout, metabolic syndrome, and cardiovascular disease. MS, which includes central obesity, hypertension, dyslipidemia, and insulin resistance, is prevalent in over half of gout patients. The presence of MS exacerbates the risk for arterial hypertension, ischemic heart disease, myocardial infarction, and chronic heart failure in these individuals.

The relationship between elevated serum uric acid levels and increased blood pressure is well documented, and our results reinforce the need for vigilant blood pressure management in gout patients. Additionally, the heightened risk of ischemic heart disease and myocardial infarction in gout patients with metabolic syndrome further emphasizes the need for comprehensive cardiovascular risk assessment in this population.

Age was identified as a significant risk factor, with older patients being more likely to present with both MS and cardiovascular pathologies. The strong association between visceral obesity and MS also highlights the importance of weight management, as abdominal obesity is a major predictor of both gout and cardiovascular diseases.

CONCLUSION

The findings of this study clearly demonstrate that metabolic syndrome is prevalent among gout patients and significantly contributes to the development of cardiovascular diseases. Effective management of MS components—such as controlling blood pressure, reducing triglyceride levels, managing blood glucose, and addressing obesity—should be prioritized in the treatment of gout patients. Clinicians should adopt a holistic approach to the management of gout, focusing not only on uric acid control but also on mitigating the cardiovascular risks associated with MS. Further research is required to explore the underlying pathophysiology of the relationship between gout, MS, and cardiovascular diseases and to develop targeted therapies for this high-risk population.