

UDK: 616.12-008.331.1:616-008.9:613.86

THE IMPACT OF METABOLIC SYNDROME ON HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH ARTERIAL HYPERTENSION

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Abstract: Arterial hypertension (AH) is recognized as one of the principal components of metabolic syndrome (MetS) and remains a major public health challenge in the Republic of Uzbekistan. The interaction between genetic predisposition and environmental factors contributes to the development of cardiometabolic disorders, which adversely affect patients' quality of life and substantially increase the risk of cardiovascular complications, disability, and premature mortality. In individuals with MetS, multiple metabolic abnormalities simultaneously accelerate cardiovascular damage and disease progression.

The presence of arterial hypertension should prompt comprehensive evaluation for additional cardiovascular risk factors, including subclinical target-organ damage and other metabolic abnormalities. Early identification and timely management of these conditions are essential for reducing cardiovascular risk, preventing long-term complications, and improving patients' overall health status.

Keywords: arterial hypertension, metabolic syndrome, cardiovascular risk, quality of life, Republic of Uzbekistan.

ВЛИЯНИЕ МЕТАБОЛИЧЕСКОГО СИНДРОМА НА КАЧЕСТВО ЖИЗНИ ПАЦИЕНТОВ С АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ

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Аннотация: Артериальная гипертензия является одним из ключевых компонентов метаболического синдрома и представляет собой важную медико-социальную проблему в Республике Узбекистан. Сочетанное влияние генетических факторов и неблагоприятных условий окружающей среды

способствует развитию кардиометаболических нарушений, которые ухудшают качество жизни пациентов и повышают риск сердечно-сосудистых осложнений, инвалидизации и преждевременной смертности. Наличие артериальной гипертензии требует своевременного выявления сопутствующих метаболических нарушений и субклинического поражения органов-мишеней для комплексной оценки сердечно-сосудистого риска. Ранняя диагностика и комплексное лечение компонентов метаболического синдрома могут способствовать улучшению качества жизни и снижению частоты неблагоприятных сердечно-сосудистых исходов.

Ключевые слова: артериальная гипертензия, метаболический синдром, качество жизни, сердечно-сосудистый риск, Республика Узбекистан.

Introduction: Arterial hypertension (AH) is one of the leading cardiovascular disorders worldwide and represents a major cause of morbidity and mortality. It is frequently associated with metabolic syndrome (MetS), a cluster of metabolic abnormalities including abdominal obesity, insulin resistance, dyslipidemia, and impaired glucose metabolism. The coexistence of these conditions markedly increases the risk of cardiovascular complications, chronic kidney disease, and premature death.

In recent decades, the prevalence of metabolic syndrome has increased because of sedentary lifestyles, unhealthy nutrition, and the growing incidence of obesity. Patients with both AH and MetS are more likely to develop target-organ damage and experience poorer clinical outcomes than those with hypertension alone. Therefore, comprehensive assessment of metabolic abnormalities has become an essential part of cardiovascular risk evaluation.

Health-related quality of life (HRQoL) has emerged as an important indicator of treatment effectiveness in patients with chronic diseases. It reflects the patient's physical, emotional, and social well-being in addition to conventional clinical parameters. The Medical Outcomes Study Short Form-36 (MOS SF-36) questionnaire is widely used to evaluate HRQoL in patients with cardiovascular and metabolic disorders. Understanding the relationship between metabolic

syndrome and quality of life may help optimize therapeutic strategies and improve long-term patient outcomes.

Aim of the study: To assess health-related quality of life in patients with arterial hypertension and metabolic syndrome and to investigate its association with the principal components of metabolic syndrome, including obesity, dyslipidemia, impaired glucose metabolism, and blood pressure levels.

Materials and methods. A cross-sectional observational study was conducted among patients diagnosed with stage II arterial hypertension associated with metabolic syndrome. The study included 46 patients receiving outpatient treatment and 18 apparently healthy volunteers matched for age and sex who served as the control group. The diagnosis of arterial hypertension and metabolic syndrome was established according to current international clinical guidelines. Patients with secondary hypertension, severe cardiovascular diseases, malignant neoplasms, acute inflammatory disorders, chronic kidney failure, or other serious comorbidities were excluded from the study.

All participants underwent a comprehensive clinical examination, including medical history, physical assessment, anthropometric measurements, blood pressure evaluation, and laboratory investigations. Body mass index, waist circumference, fasting blood glucose, lipid profile, and fibrinogen levels were recorded. Health-related quality of life was assessed using the Medical Outcomes Study Short Form-36 (MOS SF-36) questionnaire, which evaluates eight domains of physical and mental health. Statistical analysis was performed using IBM SPSS Statistics software. Continuous variables were expressed as mean $\pm$ standard deviation. Group comparisons were performed using the Mann–Whitney U test, while correlations between quality-of-life scores and metabolic parameters were analyzed using Spearman's correlation coefficient. A p -value < 0.05 was considered statistically significant.

Results. A total of 46 patients with stage II arterial hypertension associated with metabolic syndrome and 18 apparently healthy individuals were included in the study. Patients with metabolic syndrome demonstrated significantly lower health-

related quality-of-life scores than the control group across most domains of the SF-36 questionnaire. The greatest reductions were observed in General Health (GH), Physical Functioning (PF), Bodily Pain (BP), and Vitality (VT), indicating a marked impairment in physical performance and overall well-being.

Correlation analysis revealed significant negative associations between quality-of-life scores and the principal components of metabolic syndrome. Increased body mass index, waist circumference, fasting blood glucose, triglyceride concentration, systolic blood pressure, and fibrinogen levels were associated with lower scores in several SF-36 domains. In contrast, higher high-density lipoprotein cholesterol levels showed positive correlations with selected quality-of-life indicators.

Patients with longer disease duration tended to report lower scores in the physical functioning and vitality domains, although these differences did not reach statistical significance. The presence of abdominal obesity was associated with a greater decline in overall health perception compared with patients without central obesity. Individuals with multiple metabolic abnormalities demonstrated poorer physical performance and reduced daily activity than those with fewer metabolic risk factors. These findings suggest that effective control of metabolic syndrome components may contribute to better health-related quality of life and improved functional capacity in patients with arterial hypertension. Among all evaluated domains, Physical Functioning demonstrated the strongest relationship with clinical and metabolic parameters, suggesting that metabolic abnormalities primarily affect patients' daily physical activity. No significant correlations were identified between most metabolic variables and the domains of Social Functioning or Mental Health. Overall, the findings indicate that the severity of metabolic syndrome is closely associated with deterioration in health-related quality of life and emphasize the importance of comprehensive management of cardiometabolic risk factors.

Conclusions: The present study demonstrated that metabolic syndrome has a significant negative impact on health-related quality of life in patients with arterial hypertension. Physical functioning, general health, vitality, and bodily pain were

the most affected domains of the SF-36 questionnaire. The severity of metabolic abnormalities was associated with poorer quality-of-life outcomes. Early diagnosis and comprehensive management of metabolic syndrome may improve both cardiovascular prognosis and patients' overall quality of life.

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