UDK: 616.399-06:616.61-008.6-07

EARLY RENAL DYSFUNCTION AND HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH METABOLIC SYNDROME

Uzokov Jurabek Baxtiyorovich, Assistant
Department of Propaedeutics of Internal Diseases
Samarkand State Medical University

Abstract:

The study examines the relationship between early microalbuminuria, renal filtration decline, and health-related quality of life in patients with metabolic syndrome. A clinical and laboratory screening was performed on one hundred and five individuals. The initial decrease in glomerular filtration rate was closely associated with severe insulin resistance, abdominal obesity, and arterial hypertension. This early renal dysfunction contributed to increased fatigue, sleep disturbances, and physical limitations, significantly lowering physical health domains. Early nephroprotective interventions are required within the metabolic syndrome management structure to prevent progression and sustain patient quality of life.

Keywords: metabolic syndrome, renal dysfunction, microalbuminuria, quality of life, insulin resistance.

Аннотация:

В исследовании изучается связь между ранней микроальбуминурией, снижением почечной фильтрации и качеством жизни пациентов с метаболическим синдромом. Клинико-лабораторный скрининг проведен у ста пяти человек. Начальное снижение скорости клубочковой фильтрации было тесно связано с тяжелой инсулинорезистентностью, абдоминальным ожирением и артериальной гипертензией. Эта ранняя дисфункция почек способствовала повышенной утомляемости, существенно снижая показатели физического компонента здоровья. Ранняя нефропротекция необходима для сохранения качества жизни пациентов.

Ключевые слова: метаболический синдром, дисфункция почек, микроальбуминурия, качество жизни, инсулинорезистентность.

INTRODUCTION:

Metabolic syndrome represents a highly dangerous clinical cluster of metabolic abnormalities, explicitly including visceral obesity, arterial hypertension, atherogenic dyslipidemia, and significantly impaired glucose tolerance. This pathological cluster acts as a major primary driver for both accelerated cardiovascular disease and progressive chronic kidney injury within internal medicine. Early renal impairment in metabolic syndrome patients often develops completely silently through pathophysiological mechanisms of hyperfiltration, endothelial dysfunction, and severe podocyte damage. Persistent microalbuminuria and mild reductions in the calculated glomerular filtration rate serve as vital early warning signs of progressive nephropathy. Despite the absence of overt uremic symptoms, early renal dysfunction systematically induces subtle changes, including mild fluid retention, subclinical anemia, and worsening somatic fatigue. These early metabolic changes frequently cause chronic fatigue, noticeable physical limitations, and sleep disturbances, which directly affect the patient's daily performance. The cumulative burden of obesity, high blood pressure, and declining kidney function heavily limits remaining physical capacity and impairs psycho-emotional stability. Consequently, health-related quality of life parameters begin to decline significantly long before advanced stages of renal failure are reached. Conventional metabolic management protocols focus heavily on intensive glycemic control, often underestimating the independent impact of early nephropathy on patient well-being. Evaluating how early kidney changes directly relate to quality of life is essential for developing comprehensive, multi-organ protective strategies.

Aim of the study: To identify early laboratory markers of renal dysfunction in metabolic syndrome patients and evaluate their direct relationship with health-related quality of life scores.

MATERIALS AND METHODS

The targeted clinical screening strictly involved exactly one hundred and five selected adult patients completely meeting the standardized international diagnostic criteria established for metabolic syndrome. Individuals presenting with pre-existing primary glomerulonephritis, acute urinary tract infections, or advanced diabetic nephropathy complications were entirely excluded from the final research cohort. Visceral adiposity levels were reliably determined by meticulously measuring waist circumference, and tissue insulin resistance was precisely quantified using the homeostatic HOMA-IR model equations. Renal functional status was thoroughly assessed by calculating the estimated glomerular filtration rate using the validated CKD-EPI formula and measuring persistent microalbuminuria in daily urine samples. Health-related quality of life parameters across multiple functional domains were carefully and meticulously recorded using the standard generic SF-36 health survey instrument scales. Statistical correlation, regression, and comprehensive variance analyses were rigorously executed using the modern Statistica 6.0 software package, setting the mathematical significance threshold at p less than 0.05.

RESULTS

The detailed laboratory screening clearly demonstrated that exactly 34.3% of the metabolic syndrome patients exhibited early subclinical microalbuminuria, and 28.5% showed a mild reduction in their glomerular filtration rate. Elevated baseline HOMA-IR values (greater than 3.5) and severe abdominal obesity parameters were strongly and positively correlated with increased urinary albumin excretion (r=0.46). The subsequent quality of life evaluation clearly indicated that patients with early renal impairment had significantly lower physical component summary scores compared to those with preserved kidney function (38.4 vs 49.2). The clinical vitality scales and physical role functioning subscales were determined to be the most severely compromised domains. Multivariate regression analysis fully confirmed that microalbuminuria was an independent negative predictor of

overall physical well-being scores (p=0.008). Targeted nephroprotective therapy utilizing specific renin-angiotensin-aldosterone system blockers over a two-month period resulted in a highly significant reduction in albuminuria and a concurrent 15% increase in physical functioning scores.

CONCLUSIONS:

Early silent renal dysfunction is a common chronic complication of metabolic syndrome that significantly impairs overall health-related quality of life parameters. The initial gradual decline in kidney filtration and the early emergence of microalbuminuria are tightly linked to worsening tissue insulin resistance and clinical visceral obesity. This early asymptomatic nephropathy systematically causes worsening somatic fatigue and severe physical role limitations, deeply reducing patient well-being across multiple functional domains. Therefore, actively incorporating early renal tracking methods and prompt nephroprotective therapy protocols into metabolic syndrome management structures is essential to prevent advanced chronic kidney disease and maintain long-term quality of life.

REFERENCES.

1. Khusainova, M. A., Vakhidov, J. J., & Uzokov, J. B. (2024). Comprehensive assessment of somatic symptoms and health-related quality of life indices in metabolic syndrome complications. Journal of Biomedicine and Practice, 9(1), 142-149.
2. Iminova, D. A., & Alyavi, A. L. (2019). Clinical and genetic features of metabolic liver disease in patients of Uzbek nationality. Central Asian Journal of Medicine, 2019(4), 45-52.
3. Sobirova, G. N., & Karimov, M. M. (2018). Genetic polymorphisms and metabolic syndrome components in chronic visceral organ progression. Eurasian Journal of Gastroenterology, 12(2), 88-94.
4. Polyakov, V. A., & Drapkina, O. M. (2021). Evaluation of health-related quality of life and asthenic syndrome in patients with metabolic-associated internal diseases. Russian Journal of Gastroenterology, 31(1), 14-22.

5. Tajibaeva, A. B., & Nabieva, D. A. (2022). Adiponectin gene polymorphism as a predictor of insulin resistance, dyslipidemia and early renal changes. Therapeutic Archive, 94(6), 710-716.
6. Islomovich, S. I. (2024). Gender characteristics of metabolic syndrome progression and chronic complications. International Journal of Medical Sciences, 4(10), 3-8.
7. Yarmatov, S., Khusainova, M., & Djabbarova, N. (2023). Study of quality of life indicators in patients with metabolic and coronary heart disease using the SF-36 questionnaire. Bulletin of Students of New Uzbekistan, 1(7), 58-64.
8. Alavi, A. L., & Karimov, M. M. (2023). Pathogenetic pathways linking metabolic disorders, tissue resistance, and functional well-being. Uzbekistan Medical Journal, 5(2), 33-39.