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Features of urinary albumin in the management of hypertension

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Purpose: The kidney is an important organ in the management of hypertension and damage to this organ may form vicious circle of hypertension and kidney damage. On the other hand, there may be a close connection between kidney function and cardiovascular disease. Indeed, albuminuria, even below the threshold level adopted to define microalbuminuria, is proved to be a marker of cardiovascular risk. The present study was designed to investigate the prevalence and characteristics of albuminuria in patients with hypertension.

Methods: Outpatients with essential hypertension under medical treatment were enrolled in this study (70.0±11.4 years old, n=355, male 47.9%). Urine samples were collected for the measurement of albumin concentrations (analytical range ≥5mg/L), which were expressed as the ratio of urine albumin to creatinine concentrations (UACR [mg/g Cr]), and patients were divided into 5 categories according to UACR (<5, stage 1; 5–10, stage 2; 10–20, stage 3; 20–30, stage 4; 30–300, stage 5; ≥300, stage 6). Cross-sectional analyses were performed to investigate relationships between UACR and other variables. Data are expressed as mean±SD except for UACR, C-reactive protein (CRP), and B-type natriuretic peptide (BNP), which are expressed as median±median absolute deviation.

Results: Their office blood pressure was 137.9±20.3/78.7±12.3 mmHg and urine albumin was detected in 312 patients (12.1% [stage 1], 11.3% [stage 2], 24.5% [stage 3], 16.1% [stage 4], 29.9% [stage 5], and 5.9% [stage 6]). Blood pressure, CRP, and BNP were increased with increasing stages of UACR (p<0.0001). In patients with detectable albuminuria, systolic blood pressure (standardized coefficient 0.160, p<0.05), CRP (0.132, p<0.05), and BNP (0.305, p<0.001) independently correlated with UACR after adjustment for age, gender, serum creatinine, hemoglobin A1c, and the prescription of renin-angiotensin system inhibitors. Multivariate logistic regression analysis revealed that systolic blood pressure (odds ratio, 1.014; 95% confidence interval [CI], 1.001 to 1.027, p<0.05), CRP (odds ratio, 2.907; 95% CI, 1.040 to 8.125, p<0.05), and BNP (odds ratio, 1.114; 95% CI, 1.026 to 1.210, p<0.01) were the independent predictors of UACR.

Conclusions: Most hypertensive patients under medical treatment had detectable albuminuria though only 35.8% showed abnormal albuminuria (≥30 mg/g Cr). Urinary excretion of albumin was closely associated with systolic blood pressure, CRP, and BNP in hypertensive patients, indicating that the severity of albuminuria is parallel to that of systemic inflammation, a marker of systemic arterial damage, and cardiac load.

Biography

Uzokov Jamol is the masters student at the Cardiology Department of Tashkent Medical Academy. He also earned Bachelor degree at Tashkent Medical Academy. He investigates in the area of Cardiology. Mr Uzokov's primary area of research has focused on the optimization of antihypertensive therapies in patients with Metabolic syndrome. He often participates in Conferences. In his spare time works with patients.

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