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Antiproteinuric Effect of Febuxostat in Patients with Advanced Chronic Kidney Disease and Asymptomatic Hyperuricemia

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Objectives : Serum urate levels rise in patients with chronic kidney disease (CKD) as their kidney function declines. However, few studies have focused on asymptomatic hyperuricemia in patients with advanced CKD. This study aimed to investigate the antiproteinuric effect of febuxostat in patients with advanced CKD and asymptomatic hyperuricemia.
Methods : Advanced CKD patients with overt proteinuria and asymptomatic hyperuricemia were enrolled in this multicenter, open-label, randomized, controlled trial. The inclusion criteria were estimated glomerular filtration rate (eGFR) of 15.0–45.0 mL/min/1.73 m^2, serum urate levels of 7.0–11.0 mg/dL, and urinary protein/creatinine ratios (UPCR) of 0.3–3.5 g/gCr. Patients were randomly assigned to the low-urate group (targeting serum urate levels of 4–6 mg/dL with febuxostat) or the high-urate group (targeting serum urate levels of 7–9 mg/dL with conventional treatment). The primary endpoint was UPCR 24 weeks after randomization.
Results : The analysis included 17 and 15 patients in the low- and high-urate groups, respectively. The mean age in both groups was 62 years, with a male predominance. At baseline, the mean serum urate levels in both groups were 8.0 mg/dL and UPCR did not differ between the two groups. At 24 weeks, the mean serum urate levels decreased to 5.09 and 7.15 mg/dL in the low- and high-urate groups, respectively, while the mean UPCRs (90% confidence interval) were 0.978 (0.717–1.240) g/gCr in the low-urate group and 1.413 g/gCr (0.905–1.922) in the high-urate group. The point estimate of the mean difference between the two groups was –0.435 (–0.968–0.098) with no statistical significance. Both UPCR and urinary albumin/creatinine ratios did not decrease from baseline in either group. Moreover, eGFR did not differ between the two groups.
Conclusions : Febuxostat could adequately and safely lower serum urate levels. However, febuxostat had no antiproteinuric effect in advanced CKD patients with overt proteinuria and asymptomatic hyperuricemia.