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Clinical characteristics and longterm outcomes of urolithiasis according to different stone composition

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Objectives: Recent studies have showed the urolithiasis patients are increasing and known to be associated with CKD/ESKD. Although kidney and ureter stones are heterogenous in composition, it is usually considered as single entity. The aim of this study was to compare the different clinical characteristics and outcomes of kidney/ureter stone diseases according to compositions.

Methods: We performed a single-center retrospective study of symptomatic stone formers with known stone compositions (n=758). Baseline characteristics, blood and urinary excretory profiles, prevalence of diverse comorbid conditions including AKI and long-term outcomes including ESKD and death were compared.

Results: Mean age was 58.6 yrs with male predominance. Calcium oxalate stone was the most common type followed by struvite stone, uric acid stone and mixed stones. Uric acid stone formers were significantly older with higher male predominance. The prevalence of diabetes mellitus, hypertension as well as IHD/HF, dementia was significantly higher in uric acid stone formers. Incidence of AKI at the time of admission was also significantly higher. Urinary excretory profiles showed the significantly lower urine PH in uric acid stone formers and higher calcium excretion in calcium oxalate stone formers. There were no differences in urinary levels of oxalate, citrate, uric acid or protein according to compositions. During the mean follow up of 428 days, fourteen patients developed ESKD and 10 patients died. Although there was no difference in rate of ESKD among different stone composition, mortality was significantly higher in uric acid stone formers. The presence of AKI was found to be an independent predictor of ESKD but not mortality.

Conclusions: Kidney stone disease is thought to be a heterogenous condition with different clinical characteristics and longterm outcomes. Occurrence of AKI regardless of stone composition is an important predictor for progressive kidney disease. Better understanding of epidemiology, risk factors and longterm outcomes are needed.