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Concomitant Acute Pyelonephritis Affects Renal Outcome in Obstructive Uropathy by Urolithiasis

Jin ho HWANG, Eunghyun LEE, *Su-hyun KIM, Jung-ho SHIN

Internal Medicine, Chung-Ang University Hospital, Korea, South

Objectives : Urolithiasis related obstructive uropathy is one of increasing causes of CKD, which commonly encountered in clinical field. Obstruction release from urolithiasis can be easily delayed with a lack of suggested golden time to prevent renal function deterioration. Here, we investigated the clinical significance and renal outcomes of urolithiasis related obstructive uropathy.

Methods : This is a pilot study of 274 from 2315 patients in urolithiasis related obstructive uropathy cohort which is recruited between Jan. 2005 and Dec. 2015. Clinical outcomes were evaluated with respect to obstruction duration and acute pyelonephritis (APN) accompanied by obstructive uropathy.

Results : Median duration of obstruction (elapsed time to release obstruction) was 5 days and APN was accompanied in 20.1% of patients. In the patients whose obstruction was relieved within 2 days from the symptom onset, 17% showed spontaneous release of obstruction. In the patients with concomitant APN, mean age was older (57.6 vs 51.6 years old, $P=0.011$) and estimated GFR (eGFR) at the time of admission was lower (63.8 vs. 83.6 ml/min/1.73m², $P<0.001$). The eGFR decrease of >30% from baseline ($P<0.001$) and eGFR decrease of >50% ($P<0.001$) occurred significantly more in patients with concomitant APN (Figure). In a multivariate analysis, APN (HR 3.63, CI 2.002–5.492; $P<0.001$) and the use of nonsteroidal anti-inflammatory drug (NSAID, HR 0.418, CI 0.252–0.693; $P<0.001$) were independently associated with eGFR decrease of >30%. These two factors also associated with eGFR decrease of >50% (HR 4.333, $P=0.002$ for APN; HR 0.194, $P=0.001$ for NSAID). The duration of obstruction did not affected to renal outcomes ($P=0.13$ and $P=0.417$).

Conclusions : In urolithiasis related obstructive uropathy patients, concomitant APN was strongly associated with renal function deterioration after obstruction release. The elapsed time to release obstruction did not affect to renal function.

Keywords : Obstructive uropathy; Urolithiasis; Acute pyelonephritis; Chronic kidney disease