KSN 2018
Seoul, Korea · May 17 - 20

Abstract Type : Poster
Presentation No. : PAK 007

Long-term outcomes of acute tubular necrosis and acute tubulointerstitial nephritis

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Objectives: Renal damage of acute tubular necrosis (ATN) and acute tubulointerstitial nephritis (ATIN) are considered reversible. However, the prevalence and long-term outcome of ATN and ATIN were unknown.

Methods:

We included 4690 adult patients who had underwent kidney biopsy in Korea University Anam hospital (2001-2017) and Seoul National University (1979-2008). We excluded patients with biopsy confirmed end stage renal disease (ESRD), previous kidney transplantation, malignancy, and inadequate biopsy specimen.

Results:

Mean age was 39.0±15.5 years and 55% was male. Primary glomerulonephritis (PGN) was 3466 (65.4%), secondary glomerulonephritis (SGN) was 1088 (20.5%), and ATN or ATIN was 136 (2.6%). Patients with ATN or ATIN were significantly older compared than PGN or SGN (P<0.001) and had lower eGFR (P<0.001; 31.9±28.0, 74.5±36.6, and 70.9±38.5ml/min/1.73m^2, respectively). Mortality was the highest in patients with SGN (18.0%). Mortality was 8.7% in patients with PGN, and 7.4% in ATN or ATIN (P<0.001). ESRD was developed in 2.9 % of patients with ATN or ATIN. The incidence of ESRD was much lower in patients with ATN or ATIN compared than PGN (14.4%) or SGN (15.0%) (P=0.001). During 156.8 ± 101.8 months follow up period, the adjusted risk of mortality was higher in patients with SGN compared than PGN (RR 2.156; 95% CI, 1.795-2.590). However, risk of mortality was not significantly different between PGN and ATN or ATIN. The adjusted risk of ESRD was significantly lower in patients with ATN or ATIN (RR 0.100; 95% CI, 0.037-0.268) compared than PGN, and the risks of ESRD was not different between PGN and SGN during 155.3±105.8 months.

Conclusions:

ESRD was developed a small number of patients with ATN or ATIN. However, the risk of ESRD was significantly lower in patients with ATN or ATIN compared than GN. The risk of long-term mortality was not different between PGN and ATN or ATIN.