THE KOREAN SOCIETY OF NEPHROLOGY
APCN & KSN 2024
June 13(Thu) - 16(Sun), 2024 Coex, Seoul, Korea
APSN
Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

Abstract Submission No.: A-1276

Clinical manifestations of acute interstitial nephritis (AIN) according to infiltrating cells

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Objectives : AIN is not an uncommon cause of acute kidney injury (AKI). Although interstitial lymphocyte infiltration is a key feature for AIN diagnosis, various leukocyte subsets including macrophages, plasma cells, and eosinophils are also known to infiltrate. However, clinical manifestations and prognosis according to specific cell types remain unclear.
Methods : Twenty-one biopsies diagnosed as AIN were analyzed with semi-quantitative detection of T, B lymphocytes as well as CD 68 macrophage. Clinical manifestations and short and long-term renal outcomes were compared according to dominant cell types.
Results : Eighty-two percent of patients (18 out of 21) had AKI. Sixty-two percent showed T-cell predominant infiltration (T-group), while 38% showed macrophage dominant infiltration (M-group). There was no B cell dominant case. Baseline characteristics including age, gender, and comorbidities were not different. However, albuminuria (1541mg/24hr vs 107mg/24hr, p 0.028) and diastolic blood pressure (80mmHg vs 68mmHg, p 0.035) were significantly higher in T-group. Additionally, T-group showed a higher prevalence of Antinuclear Antibody(ANA) positivity.(63.6% vs 0%, p 0.013). The percentage of stage 3 AKI was significantly higher in the macrophage dominant group (54.5% (6/11) vs 100% (7/7, p=0.05). The steroid was administered in 83.3% of cases with the recovery of renal function and there were no differences in mean estimated glomerular filtration rate (eGFR) at 3, 6, and 12 months after kidney biopsy.
Conclusions : This is the first study to analyze cell distribution in biopsy-confirmed AIN. A substantial proportion of AIN was found to have macrophage-predominant infiltration instead of well-known T-cell infiltration and was associated with more severe AKI. T-cell dominant infiltration might be associated with connective tissue disease as an etiology of AIN and also simultaneous glomerular damage. Larger-scale, future studies are needed to uncover the potential value of cellular analysis in AIN.