DELTA NEUTROPHIL INDEX AS A MARKER FOR DIFFERENTIAL DIAGNOSIS BETWEEN ACUTE GRAFT REJECTION AND ACUTE GRAFT PYELONEPHRITIS

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Introduction and Aims: Delta Neutrophil Index (DNI) is the fraction of circulating immature granulocytes, which represent to be infectious and/or septic condition. It was recently reported that DNI may be useful index for differential diagnoses between SLE flares and infection in SLE patients presenting with fever. However, little is known about the clinical usefulness of DNI in differential diagnosis between acute graft pyelonephritis (AGPN) and acute rejection among renal transplant recipients.

Methods: 110 episodes in 89 febrile renal transplant recipients with sign of urinary tract infection were evaluated at Kangdong Sacred Heart Hospital between January 2010 and February 2014. We performed retrospective analysis of demographic, clinical, and laboratory parameters. All episodes were divided into two group, acute graft pyelonephritis (AGPN) and acute rejection. Receiver operating curves and multivariate logistic regression were conducted to ascertain the utility of DNI discriminating between acute rejection and AGPN.

Results: AGPN group showed significantly higher white blood cell counts, neutrophil counts, C-reactive protein and procalcitonin than acute rejection. Recipients in AGPN group had significantly higher DNI than those in acute rejection group (4.46 ± 4.35% vs. 2.23 ± 1.09%, P = 0.003). The area under the ROC curve was 0.762 (95% CI; 0.643 - 0.857; P < 0.001) for DNI to discriminate between AGPN and acute rejection. When we selected a DNI value of 2.4% as the cutoff for AGPN, renal transplant recipients with DNI ≥ 2.4% were found to be at higher risk for infection than those with DNI < 2.4% (OR 9.93; 95% CI 3.312 - 21.721; p < 0.001). In a multivariate logistic regression analysis, only DNI was a significant independent factor for the presence of AGPN (OR 9.93; 95% CI 3.312 - 21.721; P < 0.001).

Conclusions: This study showed that DNI was effective a marker to differentiate AGPN from acute rejection in febrile renal transplant recipients with sign of urinary tract infection. Therefore, the utility of DNI to discriminate between acute rejection and AGPN is warranted in these patients.