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급성 신우신염 환자에서 중증도 예측인자로서 델타 뉴트로필 인덱스의 효용성

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Delta Neutrophil Index is a Predictive Marker of Disease Severity in Patients with Acute Pyelonephritis

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Background: Delta neutrophil index (DNI) is the fraction of immature granulocytes provided by a complete blood count analyzer. Previous studies demonstrated that DNI is a novel marker to predict outcomes in sepsis patients. Therefore, this study aimed to evaluate DNI as a predictive marker of disease severity in patients with acute pyelonephritis (APN).

Methods: Patients diagnosed with APN at Yonsei University Health System from December 2009 to June 2014 were retrospectively investigated. We excluded patients, who were treated on outpatient clinic and aged less than 18 years. DNI levels were measured at the time of admission. The patients were classified into two groups according to the median value of DNI at baseline. Hospitalization duration and all-cause mortality rates were analyzed.

Results: A total of 718 patients were included in this study. The mean age was 56.8±17.9, 618 patients (86.1%) were female, and the median DNI level was 2.0%. The duration of hospitalization was significantly longer in the high DNI group compared with the low DNI group (16.1±18.6 days vs. 13.3±17.9 days, p=0.045). Twenty-eight patients died during the period of hospitalization. However, there was no significant difference in mortality rate between low and high DNI group (3.3% in low DNI group vs. 5.1% in high DNI group, p=0.231). Pearson's correlation analysis showed that DNI levels were positively correlated with white blood cell count (r=0.147, p<0.001), C-reactive protein level (r=0.098, p=0.012), and procalcitonin concentration (r=0.569, p<0.001), and negatively correlated with systolic blood pressure (r=-0.125, p=0.001), diastolic blood pressure (r=-0.102, p=0.006) and platelet count (r=-0.208, p<0.001).

Conclusion: High DNI level is significantly associated with longer hospitalization in APN patients. DNI levels at admission might be helpful to assess the severity of patients with APN.

Key Words: 델타 뉴트로필 인덱스, 급성 신우신염, 중증도
Delta neutrophil index, Acute pyelonephritis, Disease severity