The Clinical Impact of Bacteremia in Acute Pyelonephritis

Introduction and Objective: Bacteremia has been considered as a surrogate marker of severe infection in several infectious diseases. However useful predictive clinical characteristics for identifying patients at high risk of bacteremia in acute pyelonephritis (APN) are lacking. This study attempted to provide whether the presence of bacteremia correlates with severe infection in patients with APN.
Material and Methods: We performed a retrospective study to investigate the difference between with and without bacteremia in APN. To do this, we reviewed medical records from 179 patients diagnosed with APN admitted to Fujita Health University Hospital, Japan between January 2009 and June 2011. In our analysis, we compared clinical presentation, causative bacteria, treatment response, and outcome in patients with and without bacteremia.
Results: Sixty-two of 179 patients (34.6%) were bacteremic. The results of statistical analysis for the 18 clinical factors demonstrated the correlations with the presence of bacteremia were older age (75Y.O.<: odds ratio[OR], 2.19; 95% CI, 1.14-4.22; P=0.018), general visiting time (OR, 30.19; 95% CI, 12.9-70.68; P<0.01), usage of ambulance (OR, 3.23; 95% CI, 1.66-6.3; P<0.01), sepsis (OR, 8.81; 95% CI, 3.29-23.58; P<0.01), septic shock (OR, 4.19; 95% CI, 1.21-14.51; P=0.035), and complication of DIC (OR, 18.35; 95% CI, 4.04-83.4; P<0.01). In the laboratory data at the administration, the bacterimic group presented higher level of white blood cell [WBC] (P=0.018) and C-reactive protein (P=0.016) and lower level of platelet (P<0.001) than the nonbacteremic group. Following treatment, the bacteremic group took a longer time to become defervescent and the normalization of WBC than the nonbacteremic group (5.3 +/- 2.7 vs. 4.0 +/- 2.0 days, P<0.001, 5.5 +/- 2.8 vs. 4.4 +/- 2.7 days, P<0.01). Also, the bacteremic group had a greater mean duration of intravenous antibiotics administration and longer hospital stays (P<0.001).
Conclusion: This study attempted to provide useful predictive clinical factors for identifying patients at high risk of bacteremia at APN. It also showed that bacteremia is a useful clinical indicator of severe disease and, if found, should influence patient management. Therefore, we recommend that blood culture samples should be taken in all patients with APN.