

Association of white blood cell count on admission with acute kidney injury in acute aortic dissection

Purpose: Acute kidney injury (AKI) is reported to be a significant predictor of poor outcome in patients with acute aortic dissection (AAD). Because inflammatory response plays a key role in the development of AKI, we sought to determine the relationship between white blood cell (WBC) count on admission and the incidence of AKI after AAD.

Methods: We studied 112 consecutive patients with AAD, consisting of 54 with Stanford type A and 58 with type B, who were admitted to our hospital within 48 hours of the onset of symptoms. We assessed clinical characteristics, extent of dissection, patency of false lumen, WBC count, serum C-reactive protein level (CRP), Cr level, and in-hospital complications. Patients were divided into two groups according to the median of WBC count on admission. AKI was defined as either an increase in serum creatinine (Cr) level by 0.3 mg/dl or more within 48 hours or an increase in serum Cr level to 1.5 times or more the reference level.

Results: More smokers and open-typed AADs were found in the high WBC group (10,800/ μ l or more, n=58) than in the low WBC group (less than 10,800/ μ l, n=54). The time from symptom onset to hospital admission was longer in the high WBC group than in the low WBC group (p=0.02). Patients with higher WBC count had a higher incidence of AKI (65% vs 35%, p=0.009) as well as a higher mortality rate (19% vs 6%, p=0.04) than those with lower WBC count. There were no differences in serum CRP and Cr levels on admission between the groups. Multivariate analysis showed that age, body weight, Stanford type A, history of hypertension, and increased WBC count on admission were independent predictors of AKI after AAD.

Conclusion: Increased WBC count on admission was associated with poor outcomes and the incidence of AKI in patients with AAD.