한국교와하코기린 신진연구비

원내 급성 신손상 발생에 대한 조기 발견과 치료의 효과: 전향적 연구

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Benefit of Early Detection and Nephrologic Intervention for Acute Kidney Injury in Hospital (BENECIA): A Prospective Study

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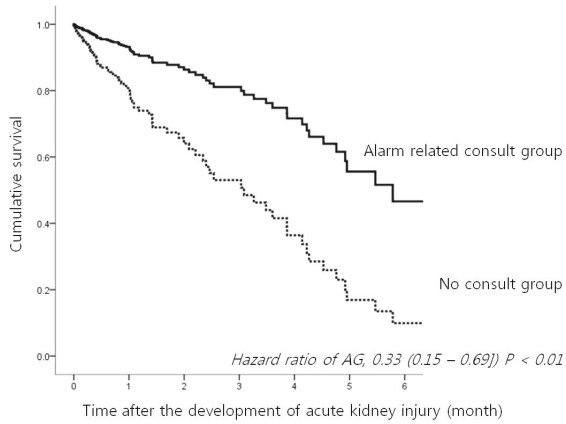
Acute kidney injury (AKI) is closely associated with the deterioration of renal function and mortality, which leads to high economic burden, although its prevalence has still been increased. Delayed nephrologic intervention may be associated with high mortality in critically ill AKI patients. Electronic alerting system based on serum creatinine that we developed can be a method to help detect AKI early and facilitate physicians' action, which may lead to improve clinical outcomes. We performed a prospective large cohort observational study to verify the beneficial effect of electronic system-based early detection of AKI and connected-early nephrologic intervention on the progression of AKI and clinical outcomes in hospitalized patients. We enrolled admitted patients with measuring serum creatinine levels once or more from 2014 June to 2014 November in Seoul National University Bundang Hospital. During 6-month period, 1171 out of 17627 patients were detected with AKI (incidence, 6.6%), of whom 201 patients (alarm related consult group, AG) were referred to the nephrologists using the early alert referral system, and 769 patients (no consult group, NG) were not referred after duty physicians got alarm signals. The referral time between AKI development and nephrologic consultation was 1.26±2.88 day in the AG. Although stage 2 or 3 of AKI at the diagnosis was 13.9% in the AG and 9.6% in the NG (p=0.208), the in-hospital mortality rate was decreased in the AG by 14.5% (8.0% in the AG vs. 22.5% in the CG, p<0.01). The early alert referral system reduced the in-hospital mortality risk by 67% (Hazard ratio of AG, 0.33 [0.15-0.69], p<0.01). Survey to the responsive physician showed that 90% of physician answered that this system was useful for patients and clinical practice, which helped rapid clinical diagnosis of AKI and quick referral to the nephrologic experts. These results found that BENECIA system improve in-hospital mortality, and encouraged physicians' awareness and rapid therapeutic intervention. This is the first clinical study to found the beneficial effect of early alert referral system using electronic medical record system. Electric alerting and connecting system to intervention may apply to other acute illnesses as well as AKI.



Key Words: 급성 신손상, 사망률, 전산 경고 시스템
Acute kidney injury, Mortality, Electronic alarm system