KSN 2016 Abstract Submission

Acute Kidney Injury

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The synergistic effects of pre-existing hyponatremia and hospital acquired acute kidney injury on in-hospital mortality: a retrospective cohort study

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Background: Both hyponatremia and acute kidney injury (AKI) are common and harmful in hospitalized patients. However, their combined effects on patient mortality have been little studied.
Methods: We retrospectively enrolled 19191 adult patients who were admitted for 1 year. Pre-existing hyponatremia was defined as a serum sodium level < 135 mmol/L on the first measurement of their admission. AKI was defined as a rise in serum creatinine by ≥ 0.3 mg/dL or ≥ 1.5 times of the baseline value of creatinine during the hospital stay.
Results: The prevalence of pre-existing hyponatremia was 8.2%. During a median 6.0 days of hospital stay, the incidence rates of AKI and in-hospital patient mortality were 5.1% and 0.9%, respectively. Pre-existing hyponatremia independently predicted AKI development and in-hospital mortality (adjusted hazard ratio [HR] 1.306, $P = 0.004$; HR 7.236, $P < 0.001$, respectively). Both multiplicative and additive interactions between hyponatremia and AKI for in-hospital mortality were found. In subgroup analysis, the AKI group showed higher rates of de novo hypernatremia than the non-AKI group during the admission. De novo hypernatremia in whole study patients was significantly associated with in-hospital mortality with adjusted HR 3.274 ($P <0.001$), compared to the non-de novo hypernatremia group.
Conclusion: Pre-existing hyponatremia may be associated with the development of AKI in hospitalized patients, and both hyponatremia and hospital-acquired AKI could have a synergistic effect on short term patient mortality, which might be related to the inappropriate correction of hyponatremia in AKI patients.

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