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Comparison of Outcomes according to Urine Chemistry Testing Time for the Causes of Acute Kidney Injury patients admitted to the emergency room

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Objectives:

Rapid identification and treatment of acute kidney injury can help to restore kidney function. In order to differentiate between prerenal AKI and intrinsic AKI, we perform a urine chemistry test to determine the function of the renal tubule. However, there is no report that it is helpful to arrive at the hospital as early as possible and to perform these urine chemistry tests as soon as possible.

Methods: We analyzed the timing of urinary chemistry in AKI patients who were admitted to our hospital through the emergency room for 3 years and divided into two groups. Early group was defined as patients who performed the test within 3 h of arrival in the emergency room. Late group was defined as patients who were late or not. The prognostic factors were change in 30 day eGFR and duration of hospital stay. We also compared the usefulness of urine chemistry test between pre renal AKI and intrinsic AKI in each group.

Results: The changes of eGFR after 30 days in each group are 41.6 ± 27.6 mL/min/1.73 m^2 (Early group, n = 92) vs 30.4 ± 26.8 mL/min/1.73 m^2 (Late group, n = 180) (P = 0.0013). Early group patients were discharged more quickly than patients in the late group (Hospital day: 11.5 ± 10.1 vs 13.8 ± 10.5, P = 0.0450). When analyzed according to the causes of AKI, these changes showed differences in prerenal AKI rather than intrinsic AKI(Figure).

Conclusions: A urine chemistry test is a test to help determine the cause of AKI. Based on the results of urine chemistry performed within 3 h after arrival at the hospital, patients with AKI who visited the emergency room had better improved kidney function and less hospitalization.

Figure. Comparisons of changes of eGFR and length of stay between early and late analysis groups(A: p=0.0013, B: p=0.0405 by unpaired t-test)