

Acute Kidney Injury Recovery Patterns in ST-Segment Elevation Myocardial Infarction Patients

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Background: Acute kidney injury (AKI) is a frequent complication in patients with ST-segment elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention (PCI). Identification of different AKI recovery patterns may improve patient risk and prognostic stratification. We investigated the clinical relevance of AKI recovery patterns among STEMI patients undergoing primary PCI.

Methods: We conducted a retrospective study of 2943 STEMI patients undergoing primary PCI. The incidence of renal impairment and in-hospital complications, as well as short and long-term mortality, were compared between patients without AKI, patients with early AKI recovery defined as a return to baseline creatinine within 72 hours from renal insult, and no AKI recovery defined as all AKI cases not meeting the definition of early recovery AKI.

Results: A total of 255 patients (8.7%) developed AKI, of whom 124/255 (49%) patients had an early recovery, whereas 131/255 (51%) had no AKI recovery. Patients without recovery were more likely to have in-hospital complications and had higher long-term mortality (36.64% vs. 7.25%; $p < 0.001$). In a multivariable regression model, the mortality hazard ratio for long term mortality remained significant for patients with non-resolving AKI (HR 7.76, 95% CI 4.69 to 12.86, $p < 0.001$), and a strong trend among patients with resolving AKI (HR 2.09, 95% CI 0.933- 4.687, $p = 0.071$).

Conclusions: Among STEMI patients undergoing PCI, the recovery pattern of AKI is a valuable prognostic marker. Non-resolving AKI could be associated with a worse prognosis compared with AKI recovery but even early resolution of renal function allied with adverse short and long-term outcomes.

