

Abstract

Background: Contrast induced acute kidney injury (CI-AKI) is a serious complication of primary percutaneous coronary intervention (PPCI) and is associated with adverse outcomes.

Objectives: The aim of this study was to compare the effect of ionic versus non-ionic contrast media on the development of contrast induced acute kidney injury (CI-AKI) in patients undergoing primary percutaneous coronary intervention (PPCI).

Methodology: This prospective study included 102 patients with STEMI who were subjected to primary PCI. They either received the ionic contrast medium (CM) ioxitalamate (53 patients) or the non-ionic CM iohexol (49 patients). The incidence of CI-AKI was compared between the 2 groups as well as different demographic data, risk factors, routine labs, clinical and procedural data. Daily serum creatinine (SCr) was recorded for all patients in the first 72 hours following the intervention and until discharge for patients who developed CI-AKI. CI-AKI was defined as a rise in SCr by ≥ 0.3 mg/dl or by more than 1.5 times baseline, or urine volume < 0.5 ml/kg/h for 6 hours in the 72 hour period following PPCI.

Results: Overall, CI-AKI occurred in 17 patients (16.7%). There was no significant difference in the incidence of CI-AKI between the ionic and the non-ionic groups. Univariate regression showed that CI-AKI had significant correlation with older age (61.8 ± 8.0 years) ($p = 0.006$), hypertension ($p = 0.016$), pre-existing renal dysfunction ($p = 0.025$), hemodynamic instability ($p = 0.03$), complete revascularization ($p = 0.031$) and high contrast volumes exceeding the MACD ($p = 0.027$). After multivariable adjustment, old age and hypertension were still independent correlates of CI-AKI. CI-AKI was significantly associated with mortality ($p < 0.001$).

Conclusions: CI-AKI frequently complicates primary PCI and is associated with higher incidence of mortality. The use of the ionic CM didn't significantly increase the risk of CI-AKI when compared to the non-ionic CM. Insuring peri-procedural haemodynamic stability and using the least possible contrast volume can be of value in minimizing the risk of CI-AKI.

Key words: contrast-induced, ionic, non-ionic, kidney, injury, primary PCI