Abstract: 379

Predictors of contrast-induced nephropathy in patients with acute coronary syndrome undergoing cardiac catheterization

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Introduction: Contrast-induced nephropathy (CIN) is a major cause of hospital-acquired acute kidney injury, and it’s associated with a significant increase in morbidity and mortality in patients (pts) undergoing angiographic procedures.

Objective: To determine the incidence, predictors, and outcome of CIN after cardiac catheterization in pts with acute coronary syndrome (ACS).

Methods: We analysed retrospectively 1794 ACS pts admitted for six years in our coronary care unit. CIN is defined as the impairment of renal function (25% increase in serum creatinine (SCr) from baseline or a 0.5mg/dL increase in absolute SCr value) within 48-72 hours after intravenous contrast administration. All patients received intravenous prophylactic hydration for CIN. Patients were divided into two groups: group 1 - pts with CIN (n=500, 27.9%); group 2 - pts without CIN (n=1294, 72.1%). For each group we compared clinical and laboratory features to identify independent predictors of CIN. Primary endpoint was the occurrence of death at 6 months; follow-up was completed in 100% of patients.

Results: The sample was formed by 1411 (78.7%) men and 500 (21.3%) women, with mean age of 63 ± 13 years. The incidence of CIN was 27.9%. A multivariate analysis identified age > 75 (HR 4.23, 95% CI 2.56 to 7.09; p<0.001), peripheral arterial disease (HR 2.10, 95% CI 1.11 to 3.98; p=0.023), anemia (HR 1.68, 95% CI 1.07 to 2.66; p=0.026), left ventricular dysfunction (LVEF<40%) (HR 1.66, 95% CI 1.06 to 2.59; p=0.027), Killip classification =2 at admission (HR 2.21, 95% CI 1.30 to 3.77; p=0.003), more severe coronary artery disease (three vessels) (HR 1.72, 95% CI 1.11 to 2.68; p=0.016) and volume of contrast >100 mL (OR 1.38, 95% CI 1.33 to 1.70; p<0.001) as independent predictors of CIN. Patients developing CIN had longer hospital stay (7 ± 6 days vs 5 ± 3 days; p<0.001), and higher 6-month mortality (12.9% vs. 4.7%; p<0.001). In multivariate analysis and after adjusting for different baseline characteristics, patients with CIN had higher risk of 6-month mortality compared to those without CIN [OR 2.12, 95% CI 1.40 to 3.24, p<0.001].

Conclusion: Despite the use of intravenous prophylactic hydration for CIN in all patients, CIN occurred in ¼ of the patients with ACS undergoing cardiac catheterization, associated with a higher in-hospital complication rate and mortality. Patient-related risk factors (advanced age, peripheral arterial disease, anemia, heart failure and hemodynamic instability) and contrast-related risk factors (volume of contrast >100mL) were independent predictors of CIN in our ACS population. Thus, the optimization of the modifiable risk factors (such as the type and dose of the contrast agent), the establishment of adequate intravenous volumetric expansion with isotonic crystalloid and the withdrawal of nephrotoxic drugs is fundamental given the impact on the prognosis.