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Allopurinol Prophylactic Therapy in the Prevention of Contrast Induced Nephropathy in High Risk Patients Undergoing Coronary Angiography: A Prospective Randomized Controlled Trial

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Abstract : Background: Contrast-induced nephropathy (CIN) remains to be a potentially serious complication of radiographic procedures. We performed this clinical trial to assess the preventive effect of allopurinol against CIN in high-risk patients undergoing coronary angiography. Methods: In this prospective randomized controlled trial, 140 patients with at least two risk factors for CIN undergoing coronary angiography were randomly assigned to either the allopurinol group or the control group. Patients in the allopurinol group received 300 mg allopurinol 24 hours before a procedure and intravenous hydration for 12 hours before and after coronary angiography, whereas patients in the control group received intravenous hydration. Serum creatinine (SCr), blood urea nitrogen (BUN) and uric acid were measured before contrast exposure and at 48 hours. CIN was defined as an increase of 25% in serum creatinine (SCr) or >0.5 mg/dl 48 hours after contrast administration. Results: CIN occurred in 11 out of 70 (7.9%) patients in the control group and in 8 out of 70 (5.7%) patients in the allopurinol group. There was no significant difference in the incidence of CIN between the two groups at 48 hours after administering the radiocontrast agent ($p = 0.459$). However, there were significant differences between the two groups in SCr, BUN, uric acid, and eGFR 48 hours after radiocontrast administration ($p < 0.05$). Conclusion: Our findings revealed that allopurinol had no substantial efficacy over hydration protocol in high-risk patients for the development of CIN.

Keywords : contrast-induced nephropathy, allopurinol, coronary angiography, contrast agent
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