PILOT STUDY OF BRAIN NATRIURETIC PEPTIDE (BNP) FOR THE PREVENTION OF RADIOCONTRAST INDUCED NEPHROPATHY (RCIN) AFTER CARDIAC CATHETERIZATION

Rakesh Lattupalli, Desikan Kamalakannan, Nancy Mesiha, Susan Steigerwalt, Robert Provenzano, Howard Rosman, Quresh Khairullah
Division of Nephrology, St John Hospital and Medical center, Detroit, MI

Background**:** RCIN is a common cause of hospital acquired acute renal failure (13%). RCIN after cardiac catheterization has been shown to confer increased risk of death and adverse outcomes. Hypothesis: Infusion of BNP, by increasing renal vasodilatation and glomerular filtration, will reduce the incidence of RCIN after cardiac catheterization in patients with Chronic Kidney Disease (CKD). Methods: Design: Single center, prospective, randomized, double blind, placebo-controlled pilot study of 50 patients between June 2003 and January 2005. Inclusion Criteria: Patients with CKD not on dialysis, undergoing non-emergency cardiac catheterization using iodixanol. Randomization: Patients were randomized to intravenous BNP or placebo infusion one hour before, during and for up to 6 hours post procedure. All patients received 0.45% saline at 1ml/kg/hr for one hour before and up to 6 hours after angiography. Primary Endpoint: Acute renal failure defined as serum creatinine increase of $\geq$ 0.5mg/dl at 48 hours post contrast administration. Results: The overall incidence of RCIN was 8% (4/50). There was no significant difference in baseline characteristics between the two groups including baseline serum creatinine, volume of contrast or fluids received and presence of diabetes mellitus. Incidence of RCIN was 3.8% (1/26) in the BNP group vs. 12.5% (3/24) in the placebo group ($p = 0.340$). None of the patients who developed RCIN required renal replacement therapy. Transient hypotension was noted in 12.5% (3/26, $p=0.133$) of patients in the BNP group, which resolved with fluids and temporary discontinuation of infusion. On logistic regression only baseline creatinine was an independent predictor of RCIN. Conclusion: BNP infusion shows a promising non-significant trend of reduction in the incidence of RCIN in patients with CKD undergoing elective cardiac catheterization. Based on this pilot data, further large-scale trials are needed to refute or confirm the usefulness of BNP infusion to prevent RCIN.