

Vitamin C in the Prevention of contrast-Induced Nephropathy among high-risk patients undergoing coronary angiogram: A Meta-Analysis

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Abstract

Background: Contrast-Induced nephropathy (CIN) is one of the leading causes of acute kidney injury. The most common procedures associated with CIN are coronary angiography and contrast enhanced computed tomography (CT) [1]. The most common definition in use is an increase in serum creatinine (SCr) of >25% of the baseline values occurring following the intravascular administration of contrast media without an alternative explanation [2]. Generation of reactive oxygen species is thought to play a role in the pathogenesis of CIN, hence researches have been conducted into the potential role of antioxidants in the prevention of contrast-induced nephropathy [13]. Vitamin C, a potent antioxidant in humans has the ability to oxidize free radicals, and has been studied in different trials to measure its ability to prevent CIN among patients undergoing coronary angiogram.

Objective: To determine if vitamin C prevents CIN among High-risk patients (Creatinine Clearance <60 ml/min/m², Diabetics, and on administration of high-volume contrast media).

Methodology: All studies, limited to randomized clinical trials were sought for this analysis through PubMed, the Cochrane Library, ClinicalTrials.gov. Database was searched using the terms “vitamin C”, “Prevention”, “acute kidney injury” and “contrast-induced nephropathy”. Adult patients (40-90 years old) with Creatinine Clearance of <60 ml/min/m² or baseline creatinine >1.2 mg/dl, Diabetes Mellitus Type II, and were administered with high-volume contrast media

(>100ml) undergoing coronary angiogram were included in the study. Exclusion Criteria were patients with normal baseline renal function, without risk factors for CIN, with EGFR < 30 ml/min/m², with regular intake of Vitamin C and were on dialysis. Statistical data were obtained using Review Manager (RevMan) Version 5.3 freeware program. P Value was obtained using the Cochran–Mantel–Haenszel test (CMH). Included patients were given Vitamin C at doses of 1 gram to 3 grams, taken orally or administered intravenously pre-and post coronary angiogram.

Results: Seven hundred and one (N=701) patients were included in this meta-analysis. CIN occurred in 3.5% of patients (N=25) in the ascorbic acid group and in 6% of patients (N= 42) in the placebo group (p value of 0.03),

Biography

Rainnier Y. Ong is working at World Citi Medical Center, Philippines.