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A Comparative Study on the Effectiveness and Safety of Intravenous or Oral N-Acetylcysteine Plus Hydration Versus Hydration Alone in Preventing Contrast-induced Nephropathy in Adult Patients with Renal Insufficiency Undergoing Radio-contrast Procedures in Southern Philippines Medical Center

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Objectives : Background. The standard treatment for preventing constrast-induced nephropathy (CIN) is hydration, but drugs may be used as adjunctive therapy. N-Acetylcysteine (NAC) has been widely used despite its conflicting findings for its nephro-protective capability in patients receiving radio-contrast media. This study assessed the effectiveness and safety of intravenous or oral NAC plus hydration versus hydration alone in preventing CIN in adult patients with renal insufficiency. CIN is the third most frequent cause of acute renal failure for in-patients after decreased renal perfusion due to hypotension and post-operative renal insufficiency. Use of low or iso-osmolar contrast agents, sodium bicarbonate, mannitol, ascorbic acid, and NAC a thiol-containing antioxidant, have been made over the past years to reduce the incidence of CIN.

Methods : Methodology. This was a single-center, prospective, open labeled controlled study. Outcome measures were the prevention of CIN and rates of adverse effects. CIN is defined as an absolute increase in serum creatinine concentration of ≥0.5 mg/dL (≥44 μmol/L) or a 25% increase from baseline value, assessed at 48 hours after a radio-contrast procedure without an alternative etiology.

Results : Results. Seventy-eight patients with renal insufficiency were randomized to three treatment arms. Twenty-six patients were allocated in the hydration group, 26 patients in the oral NAC plus hydration group, and 26 patients in intravenous NAC plus hydration group. Highest reduction was observed among IV NAC patients, followed by hydration only and oral NAC, the least. The absolute change in serum creatinine concentration was not statistically significant in all three study groups ($P<0.121$). There was no adverse effects noted in all groups.

Conclusions : Conclusion. The prophylactic administration of either intravenous or oral N-acetylcysteince plus hydration was as effective in preventing CIN

compared with hydration alone in patients with low to moderate risk renal insufficiency.

Keywords : Contrast-induced nephropathy; acute kidney injury; radio-contrast nephropathy