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The effects of N-acetyl cysteine on renal functions evaluated by neutrophil gelatinase-associated lipocalin blood levels in geriatric patients undergoing coronary artery bypass grafting

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Objective: Recent conflicting studies on the renal effects of N-acetyl cysteine (NAC) after cardiac surgery have been published. The aim of this study was to evaluate the renal effects of NAC using neutrophil gelatinase-associated lipocalin (NGAL) blood levels in elderly patients undergoing coronary artery bypass surgery.

Methods: This randomized, double-blinded, placebo-controlled study was conducted among geriatric patients (>65 years) scheduled for CABG. A total of 60 consecutive patients were randomly assigned into two groups. The first group received I.V. NAC (n=30) and the second group received placebo (n=30) at induction of anaesthesia and then for 20 hrs. NGAL values were determined and conventional renal function tests were performed.

Results: Plasma creatinine level at the P.O. 24th hr was significantly higher in the placebo group than the NAC group (1.41 ± 0.63 vs. 1.13 ± 0.35 , $p < 0.05$). The mean serum NGAL level in the third postoperative hour was higher in the placebo group than in the NAC group (104.94 ± 30.51 vs. 87.82 ± 25.18 , $p < 0.05$). Its level was similar at all other measurement times for the two groups. The number of patients (%) with increased plasma creatinine ≥ 1.5 mg/dL or >25% of the baseline value at any time of the study period was 27% in the NAC group and 37% in the placebo group, which was statistically significant ($p < 0.05$).

Conclusion: In the present study, we found that I.V. N-acetylcysteine infusion in elderly patients undergoing coronary artery by-pass surgery reduced the incidence of acute kidney injury as determined by blood NGAL and creatinine levels.

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