Effect of Oral N-Acetylcysteine Supplementation on the Immunity System in Patients with Acute Myocardinal Infarction

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ABSTRACT
inflammation, oxidative stress, and fibrosis play important roles after an acute myocardial infarction (AMI) event. The most studied inflammatory biomarker in cardiovascular disease is C-reactive protein (CRP). It has been demonstrated that myeloperoxidase (MPO) and Galectin-3 (Gal-3) have some essential roles on immune system when an AMI event occurs. We aimed to determine the effect of oral N-acetylcysteine (NAC) supplementation at the dose of 600 mg 3 times daily for 3 consecutive days on the immune system of AMI patients.
Methods: our randomized single-blinded experimental study using pre- and post-treatment evaluations was performed at Dr. Moewardi Hospital, Indonesia, from May to August 2018. Thirty-two patients with AMI and ST segment elevation (STEMI) who received fibrinolytic therapy were included. There were 17 patients received standard therapy plus 600 mg oral NAC supplementation every 8 h for 3 days and 15 patients received standard therapy, which served as the control group. High-sensitivity C-reactive protein (HsCRP), MPO, and Gal-3 levels of both groups were evaluated at admission and after 72 h receiving treatment.
Results: HsCRP, MPO, and Gal-3 levels between NAC and control groups at admission were not significantly different; while intergroup differences after 72 h of NAC supplementation were significant (p values of HsCRP, MPO, and Gal-3 levels were 0.0001, 0.001, and 0.017, respectively). Furthermore, in the NAC group, HsCRP, MPO, and Gal-3 levels at 72 h after treatment were significantly different from the corresponding levels at admission (p values: 0.0001, 0.0001, and 0.0001, respectively); the control group did not show these differences. There were also significant intergroup differences between the NAC and control groups regarding HsCRP, MPO, and Gal-3 levels (p values: 0.011, 0.022, and 0.014, respectively).Conclusion: oral supplementation of 600 mg NAC every 8 h for 72 h can reduce HsCRP, MPO, and Gal-3 levels in AMI patients receiving fibrinolytic therapy. Results of our study will provide more options for supplementation therapy to improve management of IMA patients.