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Effect of oral N-Acetylcysteine to high sensitivity C-reactive protein (hs-CRP) in chronic hemodialysis patients

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Background: Inflammation and oxidative stress are the risk factor for cardiovascular disease in patients with chronic kidney disease undergoing hemodialysis will have elevated levels of hs-CRP. hs-CRP is a marker of inflammation that has been proven in several studies use fully to predict cardiovascular events. The administration of oral N-Acetylcysteine (NAC) can be used as a strategy lowering the inflammatory process which end on the dialysis function and oxidative stress play a role in atherosclerosis for hemodialysis patients therefore reduces morbidity and mortality due to cardiovascular disease.

Objective: To determine the effect of oral N-Acetylcysteine in lowering the levels of hs-CRP in chronic hemodialysis patients.

Methods: Randomized Double Blind Controlled Trial experimental study conducted during the period August to November 2013 in the hemodialysis unit of Cipto Mangunkusumo Hospital. The subjects were patients with stage 5 chronic kidney disease undergoing hemodialysis. Eighty seven subjects were recruited, but only 65 subjects matched for inclusion criteria as samples. The samples were randomized into two groups : intervention group 33 subjects who received NAC 2x600 mg per day and control group of 32 subjects who received placebo, both groups consumed the medicine for two months (60 days). There were 5 subjects dropped out, so the search completed by the end of 60 subjects with 30 subjects in NAC group and 30 subjects in the placebo group. The hs-CRP levels were measured in 3 interval of time, before (baseline), the first month (post1), and second month (post2).

Result: Treatment with oral NAC for 60 days did not give any difference compare to PB. Statistically analysis with Mann Whitney test showed that there is no significant decrease of hs-CRP levels between two groups with the p value of Δ post1-baseline, Δ post2-baseline, and Δ post2-post1 NAC group compare to placebo group respectively ($p=0.796$, $p=0.379$, $p=0.712$). We also try to compare the decrease of hs-CRP levels statistically in each group for 3 interval of hs-CRP check with Signed Ranks Wilcoxon test. The result showed p value of hs-CRP levels comparison within each group for Baseline: Post1, Baseline: Post2, Post1:Post2 (NAC group vs placebo group) respectively.

Conclusion: The administration of oral NAC has not been shown lowering the levels of hs-CRP in chronic hemodialysis patients.

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