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Dialysis

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Oxidative stress and atherosclerosis with cyclophilin in dialysis patients

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Background: Atherosclerosis is a major cause of mortality and morbidity among dialysis patients. Systemic inflammation and oxidative stress induced endothelial dysfunction is related to atherosclerosis. Cyclophilin A (CyPA) is secreted by vascular smooth muscle cells in response to oxidative stress.

Methods: As a cross sectional study in single-center with sixty patients (twenty for each control, hemodialysis and peritoneal dialysis), Serum CyPA, interleukin-6 (IL-6) and tumor necrosis factor alpha (TNF- α) were analyzed by ELISA. Ankle-brachial index (ABI) and carotid intima-media thickness (carotid IMT) were done to measure atherosclerosis of peripheral and carotid arteries. Atherosclerosis was defined if $ABI \leq 0.9$ and carotid $IMT \geq 0.754\text{mm}$.

Results: In atherosclerosis group, CyPA level was higher than non-atherosclerosis group with carotid IMT (31.9 ± 2.1 vs 37.2 ± 3.6 ng/mL, $P = 0.19$) and with ABI (33.4 ± 1.9 vs 34.1 ± 6.3 ng/mL, $P = 0.9$), respectively. In non-atherosclerosis group with carotid IMT and ABI, CyPA level was higher in HD group than PD group (40.5 ± 5.05 vs 26.5 ± 2.87 ng/mL, $P < 0.05$). The levels of IL-6 and TNF- α did not show any significant meanings with atherosclerosis.

Conclusion: In our cohorts, CyPA was not related to atherosclerosis directly. CyPA is not suitable for monitoring the presence of atherosclerosis in dialysis patients. Although this study did not reveal relationships between CyPA and atherosclerosis, this data meant that hemodialysis group had more oxidative stress than peritoneal dialysis group which might be lead to atherosclerosis.

Keywords: atherosclerosis, cyclophilin, dialysis