투석환자에서 Fetuin-A 수치 및 비타민 D 상태에 미치는 오메가-3 지방산의 효과

동아대학교 의과대학 내과학교실

안원석, 박소영, 오유정, 손영기, 김성은, 김기현

Effect of Omega-3 Fatty Acid on Fetuin-A Level and Vitamin D Status in Dialysis Patients

Won Suk An, So Youn Park, You Jeong Oh, Young Ki Son, Seong Eun Kim, Ki Hyun Kim

Department of Internal Medicine, Dong-A University

Introduction: Vitamin D deficiency, low fetuin-A and fibroblast growth factor (FGF)-23 are related to vascular calcification, which is associated with cardiovascular disease (CVD). Dialysis patients suffer from vitamin D deficiency and have a high incidence of CVD. Omega-3 fatty acids (FAs) have cardioprotective properties but there is no reports about the effect of omega-3 FAs on vitamin D status, fetuin-A and FGF-23 level in dialysis patients. We hypothesized that omega-3 FA supplementation modify vitamin D status, fetuin-A and FGF-23 levels in dialysis patients.

Methods: In a randomized open label controlled design, a total of 47 patients treated with dialysis for at least 1 year, were randomized to treatment for 6 months wiith omega-3 FA (Omacor, 3 gram/day) or a control. Fetuin-A and FGF-23 were measured by enzyme-linked immunoassay, 25 hydroxyvitamin D3 and 1,25-dihydroxyvitamin D3 were measured by radioimmunoassay. Erythrocyte membrane FA contents were measured by gas chromatography at baseline and after 6 months.

Results: The mean age of the enrolled patients was 57.4±10.4 years and the mean dialysis duration was 46.5±28.1 months. Twenty seven hemodialysis patients and 16 peritoneal dialysis patients finished this trial. The 1,25-dihydroxyvitamin D3 (17.4±6.7 pg/mL vs. 28.3±10.9 pg/mL, p=0.001) and fetuin-A level (240.5±46.1 ug/mL vs. 265.0±57.9 ug/mL, p=0.045) were significantly increased in omega-3 FA supplemented group after 6 months compared to baseline. Calcium, phosphorous, intact parathyroid hormone, 25 hydroxyvitamin D3, FGF-23 and lipid profile were not significantly changed in omega-3 FA supplemented group after 6 months compared to baseline. The erythrocyte membrane contents of eicosapentaenoic acid (EPA) (p<0.001), docosahexaenoic acid and omega-3 index were significantly increased in omega-3 FA supplemented group after 6 months compared to baseline. The contents of total saturated FA, monounsaturated FA, oleic acid (16.8±1.9 % vs. 14.1±2.0%, p=0.001) and arachidonic acid to EPA ratio were significantly decreased in omega-3 FA supplemented group after 6 months compared to baseline.

Conclusion: In the aspect of vascular calcification and CVD, omega-3 FA supplementation may have clinical benefit caused by activating vitamin D3, increasing fetuin-A level and modifying erythrocyte membrane FA contents in dialysis patients.

Key Words: 오메가-3 지방산, Fetuin-A, 비타민 D
Omega-3 fatty acids, Fetuin-A, Vitamin D