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영양상태가 좋은 혈액투석 및 복막투석환자에서 Omega-3 지방산, arachidonic acid 및 leptin 수치

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Omega-3 fatty Acids, Arachidonic Acid and Leptin Levels in Good Nutritive Hemodialysis and Peritoneal Dialysis Patients

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Purpose : Omega-3 eicosapentaenoic (EPA) and docosahexaenoic (DHA) fatty acids have anti-inflammatory and cardioprotective role. High serum leptin levels are related with malnutrition which induce inflammation and atherosclerosis in dialysis patients. We investigated omega-3 fatty acids, arachidonic acid and leptin levels to know any difference according to dialysis type in good nutritive dialysis patients.

Methods : We selected 14 peritoneal dialysis (PD) and 15 hemodialysis (HD) patients who had relatively good appetite. Their previous albumin level was higher than 3.5 g/dL and their dialysis duration was longer than 12 months. We analysed adiponectin, PAI-1 and serum lipids and performed a fish consumption survey and omega-3 fatty acids supplement survey. Red blood cell (RBC) fatty acids was measured using gas chromatography. Serum leptin, PAI-1 and adiponectin were assessed by enzyme linked immunosorbent assay.

Results : Albumin level was 4.0±0.05 g/dL and hsCRP was 0.22±0.05 mg/dL in dialysis patients. There was no difference in RBC omega-3 index (11.81±2.92[SD]% vs 12.70±2.74%), EPA (2.61±1.39[SD]% vs 2.92±2.08%), DHA (9.20±1.70[SD]% vs 9.78±1.57%), leptin levels (24.36±6.17[SE] ng/mL vs 18.70±6.40 ng/mL), adiponectin and serum lipids between PD and HD patients. Compared with HD patients, PD patients had higher RBC arachidonic acid(14.39±2.14[SD]% vs 10.67±5.63%, p=0.034). Six HD patients took omega-3® consisted with EPA (18%) and DHA (12%) more than six months. Minimum dose of omega-3 fatty acids was 1.2 g/day and maximum dose was 2.7 g/day. These six patients had higher RBC EPA (4.27±2.76[SD]% vs 2.38±1.20%, p=0.031), lower leptin levels (3.53±1.53[SE] ng/mL vs 26.10±5.12 ng/mL, p=0.011) and lower PAI-1 (74.03±23.58[SD] ng/mL vs 94.08±15.47 ng/mL, p=0.031) in dialysis patients. These six patients also showed higher RBC EPA (p=0.018) and lower leptin levels (p=0.036) in HD patients. Female patients showed lower RBC EPA (p=0.013) and higher leptin levels (p=0.059) in PD patients.

Conclusions : Omega-3 fatty acids and leptin levels were not different according to dialysis type and mean omega-3 index was over 10% in dialysis patients with good nutritive condition. EPA may decrease leptin levels and we need further study including dialysis patients with malnutrition.