

신기능에 따른 적혈구 막 지방산 비율의 변화

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Change of Fatty Acid Composition of Erythrocyte Membrane according to Renal Function

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Background: As for anti-inflammatory properties of polyunsaturated fatty acid (PUFA), it has been suggested that this nutrient may protect the kidneys from damage in adults; however, very few studies have examined the putative association between PUFA and renal dysfunction. This study aims to investigate the correlations between PUFA proportion of fatty acid contents of erythrocyte membrane and the severity of renal dysfunction in patients with chronic kidney disease (CKD).

Methods: The study included 116 patients of whom fatty acid composition of erythrocyte membrane was measured by gas chromatography using whole blood. Other parameters including lipid profile were also evaluated in this observational cross-sectional study.

Results: The mean of estimated GFR was 42.8 ± 36.9 mL/min/1.73m². The amount of docosahexaenoic acid (DHA) and oleic acid contents among total fatty acids composition of red blood cell (RBC) was highly correlated with renal function: omega-3 fatty acid including DHA was decreased with decline of renal function ($r=0.302$, $p=0.001$), while oleic acid, a representative of omega-9 fatty acid, was increased in more advanced CKD groups ($r=-0.340$, $p<0.001$). In logistic regression analysis, the highest tertile subgroup of DHA level had significantly lower odds ratio for renal insufficiency (estimated GFR <60 mL/min/1.73m²) compared to the lowest tertile subgroup, after adjustment for age, gender, body mass index, anemia and serum albumin (OR 0.19, 95%CI 0.04-0.87, $p=0.03$).

Conclusion: These results suggest that the modification of erythrocyte membrane fatty acid content would have a role in slowing of renal disease progression in patients with CKD.

Key Words: 도코사헥사엔산, 오메가-3, 신부전

Docosahexaenoic Acid, Omega-3, Renal insufficiency