

신장이식에 따른 적혈구 세포막 지방산 조성의 변화: 전향적 연구

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The Modification of Erythrocyte Membrane Fatty Acid Contents according to Kidney Transplantation: Prospective Study

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Introduction and aims: Modifications of erythrocyte membrane fatty acid (FA) contents may effect on cellular function or transmembrane receptors. The high erythrocyte membrane oleic acid contents are related with acute coronary syndrome. It is well known that kidney transplanted recipients have lower cardiovascular event than dialysis patients. Previous one cross-sectional study showed that kidney transplanted recipients had lower erythrocyte membrane oleic acid contents than dialysis patients and normal population. Therefore, we prospectively evaluated whether erythrocyte membrane FA contents including oleic acid were modified after kidney transplantation (KTP).

Methods: We recruited 22 kidney transplanted recipients from September 2011 through May 2014. Blood samples were obtained just before KTP and at 6 months after KTP.

Results: The mean ages of the enrolled kidney transplanted recipients were 45.3 ± 10.9 years and male was 66.7%. ABO incompatible KTP were 14.3% and cadaver donors were 42.9%. The total cholesterol (196.9 ± 37.2 vs. 152.0 ± 36.2 , $p=0.001$), low density lipoprotein cholesterol (111.5 ± 35.4 vs. 73.2 ± 26.6 , $p=0.019$) and high density cholesterol were significantly increased at 6 months after KTP compared to baseline. The erythrocyte membrane contents of polyunsaturated FAs (36.8 ± 9.3 vs. 26.2 ± 11.0 , $p=0.001$), omega-3 FA (10.1 ± 3.9 vs. 5.5 ± 3.6 , $p<0.001$), omega-6 FA (26.6 ± 6.2 vs. 20.7 ± 7.7 , $p=0.008$), arachidonic acid (11.6 ± 4.1 vs. 7.7 ± 4.7 , $p=0.001$), eicosapentaenoic acid (EPA, 1.4 ± 0.7 vs. 0.7 ± 0.5 , $p<0.001$), docosahexaenoic acid (DHA, 2.0 ± 0.8 vs. 1.2 ± 1.0 , $p=0.001$), omega-3 index (7.9 ± 3.2 vs. 4.1 ± 2.7 , $p<0.001$) were significantly higher but erythrocyte membrane contents of total saturated FAs (44.9 ± 8.0 vs. 52.6 ± 9.4 , $p=0.003$), total monounsaturated FAs (17.2 ± 1.6 vs. 19.9 ± 2.2 , $p<0.001$), total trans FAs (0.9 ± 0.3 vs. 1.1 ± 0.2 , $p=0.011$), palmitoleic acid (0.5 ± 0.21 vs. 0.8 ± 0.3 , $p=0.001$), oleic acid (15.7 ± 1.5 vs. 18.0 ± 1.9 , $p<0.001$) omega-6/omega-3 ratio (3.1 ± 1.4 vs. 4.6 ± 1.7 , $p=0.14$) were significantly lower at 6 months after KTP.

Conclusions: FA contents of erythrocyte membranes including increased omega-3 FAs, decreased oleic acid and omega-6/omega-3 were significantly modified after KTP. These changes of erythrocyte membrane FA contents may effect on lower cardiovascular event rate in kidney transplanted recipients compared to dialysis patients and further studies are necessary to confirm these effects.

Key Words: 올레익산, 오메가3 지방산, 신장이식

Oleic acid, Omega-3 fatty acid, Kidney transplantation