외국 연수회원 발표

5/6 콩팥제거술후 오메가-3 지방산 투여에 따른 콩팥기능 및 구조, 산화 및 염증반응에 미치는 효과

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Effect of Omega-3 Fatty Acid Supplementation on Renal Function and Structure, Oxidative and Inflammatory Events in the Remnant Kidney

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Significant reduction of renal mass triggers a series of hemodynamic (glomerular hypertension and hyperfiltration) and non-hemodynamic (oxidative stress, inflammation and fibrosis) events which lead to proteinuria, glomerulosclerosis and tubulo-interstitial injury culminating in end-stage renal failure. Lipid mediators play an important role in regulation of renalhemodynamic and non-hemodynamic processes and as such their modifications may influence progression of renal disease. Omega-3 fatty acid (O-3FA) supplementation has been shown to lower cell membrane contents of arachidonic acid whose metabolites participate in many inflammatory, oxidative and thrombotic phenomena. Present study was undertaken to determine the effect of chronic (12 weeks) O-3FA supplementation in 5/6 nephrectomized (Nx) rats. The animals were randomly assigned to the six CRF group, six O-3FA group and six normal control group. The CRF group underwent 5/6 nephrectomy by surgical resection of the upper and lower thirds of left kidney, followed by right nephrectomy. Six rats were supplied with O-3FA at a daily dose of 0.3 g/kg/day for 12 weeks with microsyringe. The untreated 5/6 Nx rats exhibited proteinuria, hypertension, diminished GFR and marked upregulations of COX-2, NOX-4, $gp91^{phox}$, $p22^{phox}$, $p47^{phox}$, PAI-1, TGF-β, α-smooth muscle actin, fibronectin, p65 NFkB nuclear translocation, MCP-1 as well as intense mononuclear leukocyte infiltration, tubulointerstitial fibrosis and glomerulosclerosis. O-3FA supplementation for 12 weeks resulted in significant attenuation of all of the above abnormalities except forproteinuria, hypertension, GFR and glomerulosclerosis index which were unaffected. Thus long-term O-3FA supplementation appears to reduce oxidative stress and inflammation in the remnant kidney but fails to improve hypertension, proteinuria, renal function or glomerulosclerosis.