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Effect of chronic renal failure on emotion and depression

Hyo-Wook Gil[1], Yeon Hee Yu[2], , Islam md Imtiazul[3], Duk-Soo Kim[2]
[1]Department of Internal Medicine-Nephrology, Soonchunhyang University Cheonan Hospital, Korea, Republic of
[2]Department of Anatomy, Soonchunhyang University College of Medicine, Korea, Republic of
[3]Department of Microbiology, Soonchunhyang University College of Medicine, Korea, Republic of

Objectives:

Neurological disorders are often observed during the natural history of CKD. Among the neurological disorders, psychological distress, depression and behavior changes might be big problems in CKD. Depression in chronic renal failure not only reduces quality of life but also affects the adverse clinical outcome. Although emotional and psychiatric change has observed after CKD is progressions, the mechanism and target brain lesions should have revealed. The purpose of this study is to investigate the changes of behavior, brain electrophysiology and brain histology, which could influence the emotion and depression, according to decline of renal function in animal model.

Methods:

CKD was induced by a 5/6 nephrectomy in Male Sprague Dawley rats (8weeks old). All animals were tested for behavioral traits (Open field test, Light-dark box, Elevated plus maze, Forced swim test) and local field poteintials, 4 weeks and 10 weeks after the surgery.

Results:

CKD was proved as elevation of BUN and Creatinine. Open filed tests showed low activity in CKD mice. Local field potential profiles in CA1 region of hippocampus between the control and the CRF showed large amplitude spikes of irregularly sharp wave and multispikes in CRF model. Power spectral analysis at the CRF rat revealed more power in lower frequency than the control group. Using the light-dark box and elevated plus maze, anxiety and depression of CRF rats are significant changes that enhanced than control. Glial fibrillary acidic protein (GFAP) immunoreactivities and quantitative analyses in the control and the CRF hippocampus. GFAP immunoreactivity in the hippocampus are shows marked expression of GFAP positive cells and gliosis in DG (arrows) as compared to control levels.

Conclusions:

CKD could influence the hippocampus, which could influence the emotion and depression.