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만성신장병 진행에 미치는 장내세균총의 역할

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Effect of Gut Microbiota on Kidney Fibrosis: A Pilot Study using Fecal Transplantation

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Background: Emerging evidence showed the important role of kidney-gut crosstalk in diverse pathological processes. Alterations in intestinal barrier or microbiota has been demonstrated in chronic kidney disease (CKD) and thought to be associated with increased cardiovascular risks or progression of CKD. The purpose of this study was to investigate the effect of gut microbiota in the animal model of kidney fibrosis with using fecal transplantation.

Methods: Unilateral ischemia/reperfusion injury (IRI) for 45 min was performed in C57/BL6 mice for fibrosis model. Supernatants of centrifuged feces from 5/6 nephrectomized mice (4 wks) or age matched control mice were administered 3 times per wk for 3 wks after gut decontamination and degree of fibrosis was compared (CKD feces vs control feces).

Results: Compared to mice with fecal transplantation from control mice, mice who were transplanted with CKD feces showed aggravated fibrosis at 2 wks after unilateral ischemia. Ex vivo analysis of immune cells from mesenteric lymph node of showed decreased number of CD11c+ dendritic cells and also suppressed cytokine release upon LPS stimulation in mice with CKD feces transplanted. Percentage of Tregs were decreased in those mice.

Conclusion: This study showed the presence of kidney-gut crosstalk in homeostasis and alteration in intestinal microbiota might play an important role in the progression of CKD possibly via immune modulatory effect.

Key Words: 장내세균총, 만성신장병, 급성신손상
Gut microbiota, Chronic kidney disease, Acute kidney injury