

일측 요관 폐쇄에서 Estrogen에 의한 신섬유화의 감소

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Estrogen Attenuates Renal Fibrosis in Obstructive Uropathy

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Background : There are gender differences in the incidence and severity of cardiovascular and renal disease. Generally, men are prone to chronic kidney disease and to progress to end stage renal disease than are women. The purpose of this study is to prove the effect of gender and sex hormone on renal fibrosis in mice with unilateral ureteral obstruction (UUO) and elucidate specific mechanism.

Methods : We compared with the expression of α -smooth muscle actin (α -SMA) in female and male mice with complete UUO (day 7). After then, we estimated the change of renal fibrosis in female mice with ovariectomy and replacement of estrogen, respectively. Finally, to elucidate specific mechanism of these changes, we estimated and compared with the expressions of various fibrosis-related factors such as angiotensin II receptors, nitric oxide synthases.

Results : Level of α -SMA in female kidney with UUO was significantly lower than that in male kidney. Expressions of angiotensin II type 1 (AT1) and angiotensin II type 2 (AT2) receptor in female kidney with UUO were more prominent than that in sham-operated kidney without UUO. Ovariectomy and replacement of 17β -estradiol did not change the expression of AT1 receptor in female kidney with UUO, whereas the expression of AT2 receptor was more significantly elevated in intact female (IF) and ovariectomized female with estrogen (OF+E) than in ovariectomized female (OF). Expressions of inducible nitric oxide synthase (iNOS) in IF and OF+E were more significantly elevated than OF similar to the expression of AT2 receptor.

Conclusion : Female gender is associated with resistance to renal fibrosis in obstructive uropathy and this gender difference is originated from the existence of estrogen which has anti-fibrotic effect via upregulation of AT2 receptor and iNOS.

Key Words : 에스트로겐, 요관 폐쇄, 신섬유화

Estrogen, Ureteral obstruction, Renal fibrosis