

**Abstract Type : Oral**

**Abstract Submission No. : OR-1226**

## **Sex-related differences in the intratubular renin-angiotensin system (RAS) in 2-kidney 1-clip hypertensive rats**

**Yang Gyun Kim**<sup>1</sup>, Sang Ho Lee<sup>1</sup>, Yu Ho Lee<sup>4</sup>, Su Woong Jung<sup>1</sup>, Dong Jin Kim<sup>1</sup>, Kyung Hwan Jeong<sup>2</sup>, Ju Young Moon<sup>1</sup>, Il Suk Sohn<sup>3</sup>, So-Young Lee<sup>4</sup>

<sup>1</sup>Department of Internal Medicine-Nephrology, Kyung Hee University Hospital at Gangdong, Korea, Republic of

<sup>2</sup>Department of Internal Medicine-Nephrology, Kyung Hee University School of Medicine, Korea, Republic of

<sup>3</sup>Department of Internal Medicine-Cardiology, Kyung Hee University School of Medicine, Korea, Republic of

<sup>4</sup>Department of Internal Medicine-Nephrology, Bundang CHA General Hospital, Korea, Republic of

**Objectives:** The intratubular renin-angiotensin system(RAS) is thought to play an essential role in hypertensive renal disease, but information regarding sex-related differences in this system is limited. This study investigated the sexual differences in the intratubular RAS in 2-kidney 1-clip(2K1C) rats.

**Methods:** A 2.5-mm clip was placed on the left renal artery of Sprague Dawley rats, and the rats were euthanized 3 or 5 weeks following the operation.

**Results:** Systolic blood pressure(SBP) increased in 2K1C rats of both sexes but was significantly higher in males than in females, and an antihypertensive effect was not observed in 2K1C ovariectomized(OVX) female rats. Intratubular angiotensin-converting enzyme(ACE) and Ang II were repressed, and intratubular ACE2, Ang 1-7, and MasR were increased in both kidneys of 2K1C female rats at five weeks after surgery compared with those of male 2K1C rats. Intratubular mRNA levels of ACE and AT<sub>1</sub>R were augmented in OVX female rats regardless of clipping surgery at three weeks after operation in comparison with those in male and female rats. The AT<sub>2</sub>R was upregulated in female rats with or without OVX; thus, the AT<sub>1</sub>/AT<sub>2</sub> ratio was higher in female rats than in male rats.

**Conclusions:** Female rats were protected from hypertensive renal and cardiac injury after renal artery clipping. An increase in intratubular nonclassic RAS(ACE2/angiotensin 1-7/MasR) and a decrease in the AT<sub>1</sub>/AT<sub>2</sub> ratio could limit the adverse effects of classic RAS during renovascular hypertension in female rats, and estrogen is suggested to have a primary role in regulating intratubular RAS components.