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The Effects of the Chage of Angiotensin (1-7) by High Salt Intake on Lower Urinary Tract

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Summary

Background. High salt-intake is related to be nocturia. However, the mechanisms have been unknown. In this study, we investigated the association between renin-angiotensin system (RAS) and bladder function using Dahl salt sensitive rats and the effects of the treatment of angiotensin (1-7).

Methods. Six-week-old male Dahl salt sensitive rats were divided into three groups; normal salt (NS), high salt (HS) and high salt+angiotensin (1-7) (HS+1-7). Rats in HS and HS+1-7 groups were given 8% NaCl in CE-2 and those in NS were given normal diet. Rats in HS+1-7 were also treated continuously by angiotensin (1-7). After 6 days, bladder weight, blood pressure, bladder function, the levels of angiotensin II and (1-7) and related mRNA were evaluated.

Results. Bladder weight increased in HS and HS+1-7 groups compared with that in NS group. Blood pressure also increased in HS and HS+1-7 groups compared with that in NS group. The contractile response to carbachol 10^{-6} mol/L in HS group was significantly enhanced compared with that in NS group. The response in HS+1-7 group was slightly decreased compared with that in HS group. Serum angiotensin II levels in HS were higher than those in NS group and those in HS+1-7 were not changed and remained to be higher. On the other hand, the levels in bladder tissue were lower in HS and HS+1-7 groups compared with those in NS group. There are no changes in angiotensin 1-7 levels among all groups.

Conclusions. High salt intake enhanced contractile response to carbachol and RAS in rats. The further studies would be needed to prove the association between RAS and LUTS.