970

Kim K H[1], Yoon S J[1], Cho S T[2], Lee T[3]

1. *Department of Urology, Gachon University Gil Hospital,* ***2.*** *Department of Urology, Hallym University Kangnam Sacred Heart Hospital,* ***3.*** *Department of Urology, Inha University Medical Center*

EFFECTS OF LABETALOL ON AWAKE URODYNAMICS IN HYPERTENSION ASSOCIATED RAT: ABOUT ALPHA AND/OR BETA-ADRENOCEPTOR-MEDIATED BLADDER FUNCTION

Hypothesis / aims of study

Precisely how urinary frequency develops is unclear. We have performed experiments with labetalol, vasodilatory nonselective β-blocker with α_1-blocking activity and low levels of intrinsic sympathomimetic activity, to compare the possible alterations of the functional dominance in α and/or β-adrenoceptor (AR)-mediated neural mechanism in the bladder between spontaneously hypertensive rats (SHRs) and Wistar rats using an awake urodynamic study.

Study design, materials and methods

Parameters of awake urodynamics were investigated before and after labetalol (5mg/kg) treatment in Wistar rats (n=12) and SHRs (n=12). A balloon-fitted catheter was positioned in the abdominal cavity to record the intraabdominal pressure (AP). The pressure-related parameters are as follows: basal pressure (BP; the lowest bladder pressure during filling), flow pressure (FP; bladder pressure at the time of the start of flow from the urethra), threshold pressure (TP; bladder pressure immediately before micturition), maximum pressure (MP; maximum bladder pressure during the micturition cycle). The volume-related parameters are as follows: micturition volume (MV; volume of expelled urine), residual volume (RV; remaining urine after voiding), and bladder capacity (BC; volume of expelled urine plus residual volume at the most recent previous micturition). The detrusor overactivity (DO)-related parameters are as follows: values for total number of DO, frequency of DO and amplitude of peak of DO.

Results

There was no difference in the AP level according to pressure parameters, BP, FP, TP and MP among all groups. In the Wistar rats, labetalol increased all detrusor pressure parameters including BP, TP and MP except FP, while labetalol decreased FP. But in the SHRs, administration of labetalol significantly decreased all detrusor pressure parameters including BP, TP and MP except FP, while having no effect in FP. SHRs void smaller volumes, more frequently than Wistar rats and labetalol did not change volume parameters including BC, MV and MI except RV in SHRs and Wistar rats, while labetalol significantly increased RV in the SHRs, so volume change in RV after labetalol was more definitive than those in other volume parameters. Reduced hyperactive voiding existed, but there were no statistically significant differences in the total number of DO, frequency of DO after labetalol treatment, but amplitude of peak of DO was significantly decreased by treatment with labetalol.

Interpretation of results

This observation suggest that in certain situations, such as SHRs, providing an additional excitatory input to the bladder through the upregulated sympathetic mechanisms, the peripheral α_1-adrenergic efferent activity may be more significant than beta efferent outflow, aside from increased level of neurotrophic factors in SHRs.

Concluding message

Clinically, α1-AR antagonist for the treatment of overactive bladder is unlikely to be affected by whether or not β-AR was blocked.

Specify source of funding or grant	**NONE**
Is this a clinical trial?	**No**
What were the subjects in the study?	**ANIMAL**
Were guidelines for care and use of laboratory animals followed or ethical committee approval obtained?	**Yes**
Name of ethics committee	**Inha University Institutional Animal Care and Use Committee**