

A NOVEL ANIMAL MODEL OF INCONTINENCE: BLADDER RETROFLEXION RESULTS IN STRESS-INDUCED URINARY INCONTINENCE DURING SNEEZING IN RATS.

Hypothesis / aims of study

An animal model of incontinence that does not involve damaging the urethral structures is necessary to study the active mechanisms of urethral continence under stress conditions, such as sneezing. In this study, we demonstrated that a rat with bladder retroflexion (BR) would exhibit stress-induced urinary incontinence (SUI) during sneezing.

Study design, materials and methods

Sprague-Dawley rats were divided into two groups, BR model rats and sham-operated rats. In BR rats, the bladder was stitched posteriorly to the psoas muscle. In two groups, Leak point pressures (LPP) induced by the Crede maneuver, a vertical tilt table method and a sneeze reflex were measured via a suprapubic tube, respectively. Moreover, urethral pressure responses during sneezing (UPR-S) were measured using a microtip-transducer catheter placed at the mid-urethra.

Results

In the BR rats, both the sneeze-induced LPP and UPR-S were decreased significantly compared with those in the sham operated rats. However, LPPs induced by the Crede maneuver and the vertical tilt table method were not decreased in the BR rats, compared with the sham rats.

Interpretation of results

The results demonstrated that only active urethral closure induced by sneezing was reduced significantly in BR rats, while passive continence mechanisms as assessed by the Crede maneuver or the vertical tilt table method were not affected. It is suggested that the contribution of the pelvic muscles to the active urethral closure responses during sneezing was impaired by the bladder retroflexion in this rat model, without affecting passive urethral closure responses.

Concluding message

Bladder retroflexion may cause SUI by suppressing the continence mechanism during sneezing without damaging urethral structures. This easily established model can likely be used to investigate SUI in rats.

<i>Specify source of funding or grant</i>	none
<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	ANIMAL
<i>Were guidelines for care and use of laboratory animals followed or ethical committee approval obtained?</i>	Yes
<i>Name of ethics committee</i>	ethics committee of tohoku university