Study design is shown in Figure 1.

It seems likely that the estrogen in RT body weight was significantly increased (27 ± 0.06 vs. 20 ± 0.08 g, p = 0.0001) and the uterus weight was significantly decreased (0.16 ± 0.0011 vs. 0.076 ± 0.0045 g, p = 0.000001) in OVX vs. control mice. In baseline CMG, there were no significant differences in CMG parameters between sham and OVX (Figure 2). OVX mice showed a significant decrease in ICI, voided volume, and bladder capacity induced by capsaicin pretreatment. In both groups, intravesical acetic acid (AA) administration with or without intravesical administration of amiloride was performed, and changes in CMG parameters were evaluated. The transcript levels of junction molecules (CDH1, Cx43), acid-sensitive receptors such as ASIC1, which might be a mechanism of storage bladder dysfunction in postmenopausal women, were recorded in sham and OVX mice. In both groups, intravesical acetic acid (AA) administration with or without intravesical administration of amiloride was performed, and changes in CMG parameters were evaluated. The transcript levels of some molecules in bladder mucosa were evaluated by RT-PCR. Furthermore, intravesical AA irritation was performed in OVX mice with C-fiber deficient condition induced by capsaicin pretreatment.

Methods

Study design is shown in Figure 1.

Female C57BL/6N mice (8-week-old), OVX was performed via a dorsolumbar approach without touching the bladder. Six weeks after the operation, awake cystometrygrams (CMGs) were recorded in sham and OVX mice in both groups, intravesical acetic acid (AA) administration with or without intravesical administration of amiloride was performed, and changes in CMG parameters were evaluated. The transcript levels of some molecules in bladder mucosa were evaluated by RT-PCR. Furthermore, intravesical AA irritation was performed in OVX mice with C-fiber deficient condition induced by capsaicin pretreatment.

Results

In CMG, there were no significant differences in CMG parameters between sham and OVX at baseline. However, OVX mice showed a significant decrease in ICI, voided volume, and bladder capacity induced by capsaicin pretreatment. Furthermore, OVX mice with C-fiber deficient condition induced by capsaicin pretreatment showed a significant decrease in ICI, voided volume, and bladder capacity induced by capsaicin pretreatment. In contrast, it seems likely that the estrogen-deficient condition makes the bladder more susceptible to intravesical stimuli to induce C-fiber-dependent bladder overactivity via activation of acid-sensing receptors such as ASIC1, which might be a mechanism of storage bladder dysfunction in postmenopausal women.

CONCLUSIONS

It seems likely that the estrogen-deficient condition makes the bladder more susceptible to intravesical stimuli to induce C-fiber-dependent bladder overactivity via activation of acid-sensing receptors such as ASIC1, which might be a mechanism of storage bladder dysfunction in postmenopausal women.

REFERENCES


ABSTRACT

Objectives: In this study, we analyzed bladder function, molecular changes in bladder mucosa, and the effect of intravesical chemical irritation in OVX mice to elucidate the pathophysiological mechanisms and explore the therapeutic targets of postmenopausal bladder dysfunction.

Materails and Methods: In female C57BL/6N mice (8-week-old), OVX was performed via a dorsolumbar approach without touching the bladder. Six weeks after the operation, awake cystometrygrams (CMGs) were recorded in sham and OVX mice in both groups, intravesical acetic acid (AA) administration with or without intravesical administration of amiloride was performed, and changes in CMG parameters were evaluated. The transcript levels of some molecules in bladder mucosa were evaluated by RT-PCR. Furthermore, intravesical AA irritation was performed in OVX mice with C-fiber deficient condition induced by capsaicin pretreatment.

RESULTS

Table 1: CMG parameters of OVX mice with Intravesical 0.1% Acetic acid (AA) administration.

Table 2: CMG parameters of OVX mice with Intravesical 0.1% AA administration with/without 0.1% AA

Table 3: CMG parameters of OVX mice with/without capsaicin pretreatment.

Figure 5: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 6: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 7: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 8: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 9: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 10: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 11: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 12: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 13: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 14: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 15: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 16: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 17: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 18: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 19: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 20: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 21: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.

Figure 22: Representative CMG of Intravesical 0.1% AA administration in OVX mice with/without capsaicin pretreatment.