

CHANGES IN URINARY BLADDER REACTIVITY IN MULTIPAROUS AND OVARIECTOMIZED FEMALE RATS SUBMITTED TO RESISTANCE EXERCISE

Hypothesis / aims of study: Urinary bladder dysfunction in females has been related to different factors as pregnancy, normal childbirth, loosen of pelvic floor muscles, hormonal changes and menopause. We investigated if the resistance exercise would change the urinary bladder reactivity to endogenous mediators of the autonomic nervous system in multiparous and ovariectomized female rats.

Study design, materials and methods: We used female Wistar rats (~240 g at the beginning of the experiments, N=6/group) divided in 3 groups: control, ovariectomized (OVx) and multiparous. Rats of the OVx group underwent the bilateral ovary withdrawal through an abdominal midline incision under ketamine and xylazine anesthesia and were submitted to exercise after 30 days. The resistance exercise consisted of climbing a 1-meter-high ladder inclined at 85° five times with 75% body weight load, three times a week for one week. The sedentary control, multiparous and OVx rats did not carried out any exercise and were maintained in the same room during the experiments. In the day after the last exercise bout, rats were anesthetized with 2% isoflurane and submitted to cannulation of the femoral artery with polyethylene tubing for arterial pressure (AP) and heart rate (HR) recordings and also to cannulation of the urinary bladder for intravesical pressure (IP) measurement. After baseline AP, HR and IP recordings, acetylcholine (Ach, 2 µg/mL, 0.1 mL) and noradrenaline (NOR, 2 µg/mL, 0.1 mL) were administrated *in situ* on the urinary bladder and the physiological parameters were recorded for at least 10 min. Data are expressed as mean±SE and submitted to One-way ANOVA followed by Tukey post hoc test (p<0.05).

Results: Sedentary OVx rats showed an enhanced increase in IP to Ach (379.43±18%) compared to control rats (161.96±6%). Nevertheless, in OVx submitted to exercise the increase in IP to Ach (191.67±7%) was similar to control rats. Sedentary OVx rats also presented a greater decrease in IP to NOR (-74.37±2%) in comparison to control rats (-37.69±3%). However, in OVx rats submitted to exercise the reduction in IP to NOR (-40.15±0.5%) was similar to control rats. The increase in IP evoked by Ach in sedentary multiparous rats (526.08±54%) was enhanced whereas in multiparous rats submitted to exercise the response was similar (237.59±12%) compared to control rats. In sedentary and exercised multiparous rats, the IP responses to NOR were increased (52.43±1% and -67.43±4%, respectively) compared to control rats.

Interpretation of results: Sedentary OVx and multiparous rats show an enhanced response to Ach and NOR compared to normal control rats. The resistance exercise for one week recovered the urinary bladder reactivity in OVx and multiparous rats, except the response to NOR in multiparous rats.

Concluding message: The moderate resistance exercise for one week can be an interesting therapy for improving the urinary bladder reactivity to endogenous mediators of the autonomic nervous system in multiparous and after menopause.

Disclosures

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