The effect of L-arginine on bladder dysfunction following ovariectomy in a rabbit model

Yung-Shun Juan1,3,4, Shu-Mien Chuang1,2, Cheng-Yu Long5,6, Chun-Hsiung Huang3,4, Robert M. Levin7,8 and Keh-Min Liu2

1Graduate Institute of Medicine, Department of Anatomy, Department of Urology, and Excellence for Environmental Medicine, College of Medicine, Kaohsiung Medical University; 2Department of Urology, Kaohsiung Medical University Hospital; 3Kaohsiung Department of Obstetrics and Gynecology, Kaohsiung Municipal Hsi-Kang Hospital, Kaohsiung; 4Taipei, Albany College of Pharmacy and Albany Medical College, Albany, New York, USA

Introduction and Aim

The present study was designed to investigate the effect of nitric oxide (NO) precursor, L-arginine, on bladder tissue from ovariectomy-induced cytoskeletal remodeling.

Materials and Methods

28 female rabbits were randomly divided into five groups.

- Group 1 was served as the control group
- Group 2 was served as the control group after ovariectomy
- Group 3, 4, and 5 were high L-arginine diet and were sacrificed 1, 3, and 7 days after ovariectomy
- Group 6 was served as the control group after ovariectomy
- Group 7 was served as the control group

Introduction to the study protocol

- L-arginine was administered daily for 7 days
- The response of the bladder tissues was measured 1, 3, 7 and 14 days after ovariectomy

Hypothesis

L-arginine may increase the contractile response of bladder tissues following ovariectomy.

Results

The effect of L-arginine on bladder dysfunction following ovariectomy is shown in Figure 1. The results indicate that L-arginine significantly increases the contractile response of bladder tissues after ovariectomy.

Figure 1. The effect of ovariectomy and L-arginine on the contractile response to electrical field stimulations. (A) Representative Western blots of smooth muscle homogenate probed with an antibody specific to calponin (CaP). Lane 1, the control (normal female rabbits); lanes 2 and 3: 1 and 2 weeks after ovariectomy, respectively; lanes 4, 5, 6, and 7, L-arginine treatment and 1, 3, 7 and 14 days after ovariectomy, respectively. (B) Average expression of CaP in different groups as measured by optical density. Results are normalized as the control = 100%. See figure 1 legend for referring ovariectomy days to various experimental groups. Each bar represents the mean +/- SEM for N=4.

Discussion

L-arginine increases the expression of calponin (CaP) and CPI-17 in different groups as measured by optical density. The results indicate that L-arginine significantly increases the expression of CaP and CPI-17 after ovariectomy.

Conclusion

L-arginine significantly decreases the response of the bladder tissues to electrical field stimulations. Feeding rabbits with L-arginine significantly increases the contractile response to electrical field stimulations after ovariectomy.

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References