

## EFFECTS OF INTRAVESICAL B-AGONISTS ON CARBACHOLINE- AND POTASSIUM CHLORIDE-INDUCED CONTRACTIONS OF THE WHOLE PIG URINARY BLADDER IN ORGAN BATH

### Hypothesis / aims of study

Alternatively to anticholinergic therapy of overactive bladder syndrome, a selective  $\beta_3$ -agonist was introduced recently in the USA. The intravesical cushioning effect of  $\beta$ -agonists has been little characterized yet. With the model of the isolated porcine urinary bladder in organ bath, the intravesical cushioning effect of selective  $\beta_1$ -agonist dobutamine and non-selective  $\beta$ -agonist isoprenaline has been examined with various stimulants.

### Study design, materials and methods

A pressure transmission catheter was introduced in porcine urinary bladders via urethra, porcine urinary bladders were filled with synthetic urine, equilibrated in organ baths filled with Krebs buffer (37°C) and aerated with carbogen. By extravascular addition of either 8  $\mu$ M carbacholine or 150mM KCl, contractions of porcine urinary bladders were induced. Intravesical cushioning effect of dobutamine and isoprenaline was examined by intravesical filling of porcine urinary bladders.

### Results

Intravesical filling with 0,0001M and 0,001M dobutamine didn't show significant intravesical cushioning effect on carbacholine-induced contractions. 0,01M intravesical dobutamine led to significant by 44,1%(N=15,  $p < 0,0001$ ) and 0,01M isoprenaline by 26,2%(N=10,  $p < 0,0001$ ). This highly significant intravesical cushioning effect could even be increased to 59,1%(N=15,  $p < 0,0001$ ) by 0,03M dobutamine and to 56,3% (N=20,  $p < 0,0001$ ) by 0,1M isoprenaline. 0,01M dobutamine showed intravesical cushioning effect of 21,8% (N=10), 0,01M isoprenaline significant intravesical cushioning effect of 19,3% (N=20,  $p < 0,05$ ) on KCl-induced contractions. 0,03M dobutamine attenuated contractions highly significant by 58,7% (N=15,  $p < 0,0001$ ) and 0,1M isoprenaline as well highly significant by 34,3% (N=15,  $p < 0,0001$ ).

### Interpretation of results

Both intravesical substances showed in high doses a highly significant intravesical cushioning effect on contractions of porcine urinary bladders but dobutamine seems to be even more potent.

### Concluding message

The kind of substance - cholinergic or non-cholinergic-inducing contractions does not seem to have influence on intravesical cushioning effect profile. To our knowledge we describe the intravesical cushioning effect of  $\beta$ -agonists in whole porcine urinary bladders in organ bath for the first time.

### Disclosures

**Funding:** Grant No. 01EZ0913; Federal Ministry of Education and Research (BMBF); Germany **Clinical Trial:** No **Subjects:** ANIMAL **Species:** Pig **Ethics not Req'd:** Pig bladders used from local abattoir; we used an ex vivo organ bath model