

294

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Title: FUNCTIONAL ROLES OF ANTIMUSCARINIC DRUGS ON MICTURITION AT THE SUPRASPINAL LEVEL IN NORMAL CONSCIOUS RATS

Aim Of Study:

Muscarinic receptors are widely distributed in the central nervous system, including several areas believed to be involved in the control of micturition reflex pathways. However, their roles for micturition are not well known.

We studied in normal, conscious rats, the effects on the cystometrogram of intracerebroventricular (i.c.v.) administration of atropine, oxybutynin, tolterodine and darifenacin.

Methods:

Female Sprague-Dawley rats, weighing approximately 230 g, were used.

A polyethylene catheter was inserted into the bladder through the dome for cystometric investigations(1).

For administration of drugs, a catheter was implanted into the right cerebral ventricle(2).

Three days after implantation of the bladder catheter, continuous cystometry was performed.

Results:

i.c.v. administration of atropine (0.2, 0.6, and 2.0 nmol.rat⁻¹) decreased micturition pressure and increased bladder capacity in a dose-dependent manner.

The effects was significant at 0.6 (p<0.05), and 2.0 (p<0.001) nmol.rat⁻¹. Oxybutynin (6 and 20 nmol.rat⁻¹) decreased micturition pressure; the effect was significant (p<0.01) at 20 nmol.rat⁻¹.

Tolterodine (6 and 20 nmol.rat⁻¹) suppressed micturition pressure, significantly (p<0.05) at 20 nmol.rat⁻¹.

Tolterodine, 20 nmol.rat⁻¹, also increased bladder capacity (p<0.05) and micturition volume (p<0.05).

Darifenacin, 20 nmol.rat⁻¹, caused no change in the cystometric parameters. The drugs produced no abnormal behavior.

Conclusions:

The results suggest that there may be differences in the supraspinal effects on the micturition reflex induced by bladder filling between antimuscarinics.

The functional significance of this should be further explored in different models of bladder overactivity.

References:

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