

EXPERIMENTAL RESEARCH OF ALTERATION OF M3 RECEPTOR IN URETERAL SMOOTH MUSCLE CELLS ON RAT OF PARTIAL UNILATERAL URETERAL OBSTRUCTION

Hypothesis / aims of study

To investigate the changing regulation of M3 receptor in mRNA and protein in smooth muscle cells in rats after partial unilateral ureteral obstruction (PUUO).

Study design, materials and methods

80 male Wistar rats were divided into 4 groups randomly: the 8-week PUUO group (n=20), 8-week control group (n=20), 16-week PUUO group (n=20) and 16-week control group (n=20). The upper half section of left ureters (n=40) in the two PUUO groups were embedded into the psoas muscles, while the rats in the two control groups (n=40) were only received laparotomy. The ureters were cut at different experimental time (the 8th week and the 16th week separately) after the models were established. Then, the mRNA and the protein expression of M3 receptor were detected by the RT-PCR and Western-blotting.

Results

According to the results of RT-PCR, the mRNA expression level of M3 receptor in 8-week PUUO group was higher than that of 8-week control group (55.16 ± 3.94) vs (36.48 ± 3.87), the 16-week PUUO group was lower than 16-week control group (19.37 ± 3.70) vs (37.39 ± 3.65), 8-week PUUO group was higher than that of the 16-week PUUO group, the differences were all statistically significant (all $P < 0.05$). According to the results of Western blotting experiments, the M3 receptor protein expression level in the 8-week PUUO group was higher than that of 8-week control group (27.13 ± 1.77) vs (21.36 ± 2.69), the 16-week PUUO group was lower than 16-week control group (19.41 ± 1.37) vs (23.43 ± 1.58), the differences were all statistically significant (all $P < 0.05$), the difference between the 8-week control group and 16-week control group was no statistical significance ($P > 0.05$).

Interpretation of results

The series of experiments demonstrate an increase of M3 receptor in smooth muscle cells in PUUO rats at 8 weeks while a decrease of that at 16 weeks, which provides a foreshadowing of the clinical research for the next step.

Concluding message

The changing regulation of M3 receptor in mRNA and protein in smooth muscle cells in rats after partial unilateral ureteral obstruction (PUUO) follows the principle of compensation.

Disclosures

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