

A SPINAL CORD INJURY INDUCED NEUROGENIC BLADDER MODEL AND ITS URODYNAMIC EVALUATION IN YOUNG RAT.

Hypothesis / aims of stud

Neurogenic bladder (NB) is the treatment of urological diseases in the most difficult and complex clinical conditions, whether it is from the pathogenesis or clinical treatment, there are still many problems to be solved. Therefore, its depth study is necessary. But, in view of the Medical Ethics and other reasons, many studies can not be directly carried out on the patient, to establish animal model for related research is of great significance. According to the reports, Allen's heavy objects falling against injury animal model can well simulate the characteristics of the human spinal cord impact injury. this study uses the simple method of spinal cord injury model, contemplated establish animal models of neurogenic bladder and urodynamic evaluation, To explore a safe and strong stability, fast, simple, and good repeatability of high nerve injury model, For clinical research and neurogenic bladder detrusor without shrinkage of pathophysiology, provide certain reference.

Study design, materials and methods

Twenty-two young female Wister rat [weighed (200±20) g, 4-6 weeks old] were randomly divided into NB group (n=14) and normal control group (n=8). NB group made by using modified method of Allen's (Impact damage method 50gcm) at the twelve thoracic spine level. Video-urodynamic assessment was performed at 5-6 days post operation.

Results

NB group showed typical postoperative manifestations of hind limb paralysis. The control group showed no significant abnormality. Detrusor showed are flexes, maximum bladder capacity(MBC) and leak detrusor pressure(LDP) and bladder compliance (BC) increased significantly in NB group, in NB and control group the MBC was 3.93±2.03 ml vs. 0.081±0.247ml, BC was 0.093±0.54 ml vs. 0.022 ±0.01 ml, LDP was 45.38±12.52 ml vs. 26±3.85 ml respectively, (P < 0.001).

Neurogenic bladder group compared with normal group urine dynamics parameters

Urodynamic parameters	NB group (n=14)	Sham group(n=6)	P值
MBC (ml)	3.93±2.03	0.081±0.247	<0.001
LDP (ml/ cmH ₂ O)	0.093±0.54	0.022±0.01	<0.001
BC (cmH ₂ O)	45.38±12.52	26±3.85	<0.001

Interpretation of results

In this study we evaluate urinary dynamics within one week after spinal cord injury. At this time, the bladder wall has not yet had time to fibrosis, bladder wall has good elasticity. Therefore, early spinal cord injury, detrusor paralysis can cause bladder compliance good phenomenon. That means neurogenic bladder, urodynamics performance can be differ in thousands of ways. When evaluating NB should fully consider and pay attention to individual differences. Results leak point pressure increased with Clinical paralysis of the bladder, urinary retention is consistent, but the increase does not stop leakage. Urine leakage phenomenon occurs when the animal activities or abdominal pressure suddenly increased. This study established animal model of NB leak urine is a kind of filling urinary incontinence.

Concluding message

The modified method of Allen's is useful to establish NB.

Disclosures

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