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URODYNAMIC EFFECTS OF GM-CSF ADMINISTRATION IN RATS WITH SPINAL CORD INJURY-INDUCED NEUROGENIC BLADDER

Hypothesis / aims of study
Neurogenic Dysfunction of the bladder in spinal cord injury (SCI) patients is a serious problem in all patients leading to significant morbidity, and regarded as an indicator of neurologic conditions in spinal cord after injury.
In this study, we investigated the time-related effect of Granulocyte Macrophage colony-stimulating factor (GM-CSF) on urodynamic parameters including pressure/volume and detrusor overactivity (DO) in rats with SCI.

Study design, materials and methods
Adult male Sprague–Dawley rats underwent T9 clip compression, with (n=17) or without (n=16) administration of GM-CSF (20 μg) via intraperitoneal injection. Continuous cystometry with saline was performed without anesthesia or restraint, 1, 2 and 4 weeks following SCI. A polyethylene catheter was implanted into the dome of the bladder to record the intravesical pressure, and a balloon-fitted catheter was inserted into the abdominal cavity to record the intraabdominal pressure (IAP). Cystometric pressure- and volume-related parameters and detrusor overactivity (DO)-related ones during the filling phase were investigated.

Results
All SCI rats exhibited neurogenic DO during the filling phase. One week after the injury the frequency and increased pressure of DO was significantly higher in GM-CSF administrated group than those without GM-CSF. However, 2 and 4 weeks after the injury, the difference disappeared. As for the compliance, the similar patterns of differences were shown. And TP and MP was decreased in GM-CSF group compared to the group without GM-CSF.

Interpretation of results
Our results showed that the neurogenic DO, proved by IAP method in GM-CSF injected rats, decreased in earlier phase, and showed some functional changes such as TP and MP in later phases compared to those without GM-CSF.

Concluding message
The GM-CSF, used as an additive method to some cell therapy in rats with SCI, have some significant effects on the urodynamic parameters by itself. Thus, we need to consider the urodynamic characteristics of this material when applied in combination with other materials for the treatment of SCI.
Key words : Spinal cord injury, GM-CSF, Neurogenic bladder, Urodynamics, Overactive detrusor.

Disclosures
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