

The spinal cord injured (SCI) rat is the most commonly used and highly informative model of a central lesion with respect to lower urinary tract function. It is extensively used for the evaluation of drugs targeting neurogenic detrusor overactivity (NDO) but also overactive bladder whatever its etiology.

It is particularly useful to investigate the effects of compounds with mechanisms of action known to act on C-fiber afferents.

Pathophysiological features

- Mimics the voiding patterns of patients with **NDO** due to spinal cord injury.
- Displays NDO characterized by involuntary detrusor contractions (**non-voiding contractions, NVC**) during the filling phase with increased maximal micturition pressure and increased micturition duration (figures 1 A&B).
- Reduced voiding efficiency and large residual urine volume associated with **detrusor-sphincter dyssynergia**.
- Bladder hypertrophy (figure 2).
- Increase in bladder afferent nerve activity, in particular through C-fibers.
- BBB score impairment, altered locomotor activity.

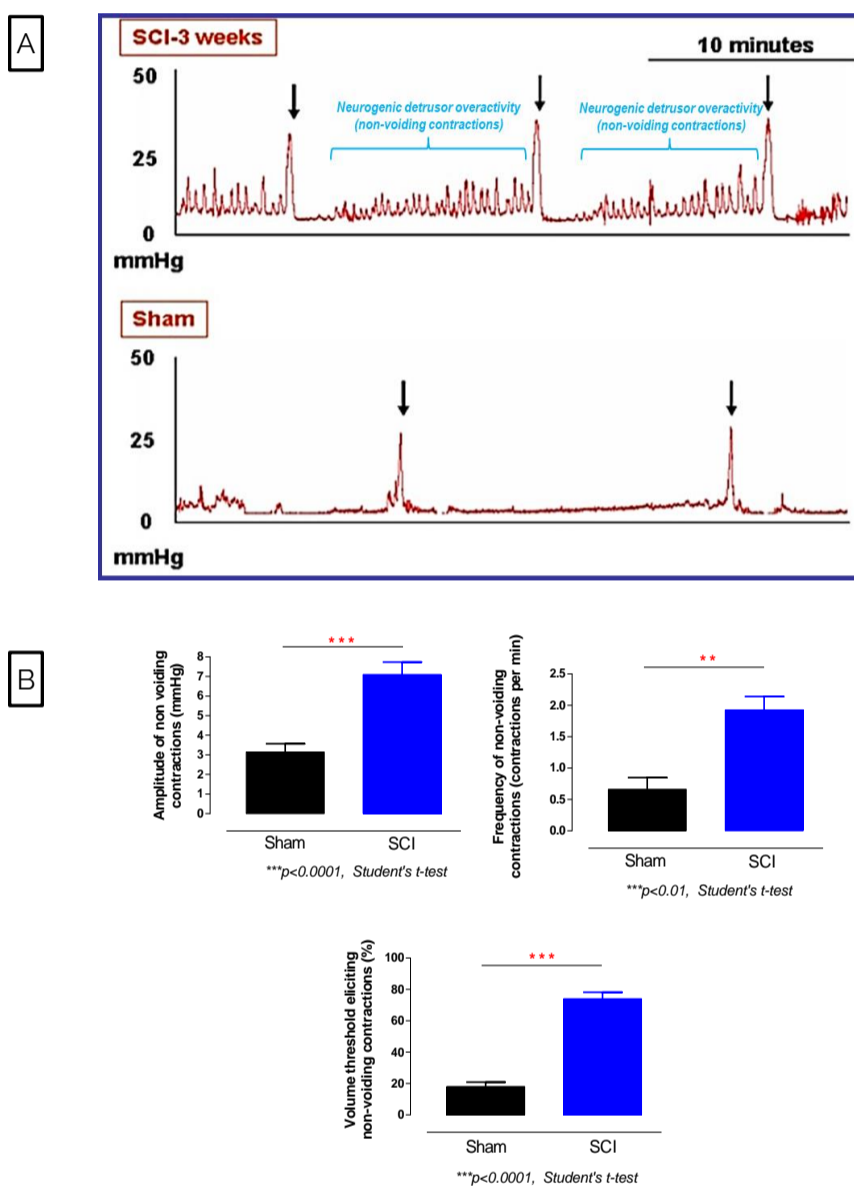


Figure 1: A) Representative cystometrograms in conscious 3 weeks SCI and sham rats (Pelvipharm, internal data). Arrows indicate the voiding contractions. NDO occurs in the SCI rat but not in sham rats. B) Representative urodynamic results on non-voiding contractions in conscious 3 weeks SCI and sham rats (Pelvipharm, internal data).

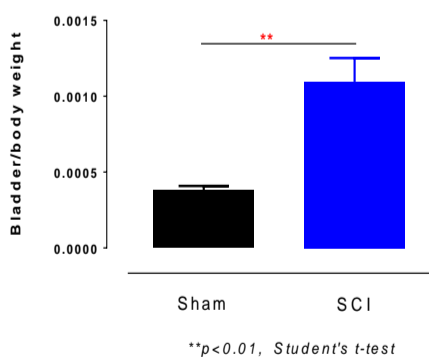


Figure 2: Bladder histological modifications similar to those observed in neurogenic patients with an increase in bladder hypertrophy after 21 days of SCI (Pelvipharm, internal data)

Related Pelvipharm bibliography:

- Lefèvre, C. *et al.* **Neurotrauma Rep** (2020):22;1(1):125-136.
 Huynh Le Mau, A. *et al.* **Toxins** (Basel) (2015):17;7(12):5462-71.
 Behr-Roussel, D. *et al.* **Eur Urol** (2012):61(5):1054-61.
 Behr-Roussel, D. *et al.* **Eur Urol** (2011) : Feb;59(2):272-9.
 Broqueres-You, D. *et al.* **Basic & Clinical Pharmacology & Toxicology** 107 (s1),192 (WorldPharma 2010)
 Behr-Roussel, D. *et al.* **J Urol** (2010):183(4),s1:e391 (AUA, 2010)
 Broqueres-You, D. *et al.* **J Urol** (2010):183(4),s1:e76-e77 (AUA, 2010)
 Behr-Roussel, D. *et al.* **Eur Urol Suppl** (2010):9(2):73 (EAU, 2010)
 Broqueres-You, D. *et al.* **Eur Urol Suppl** (2010):9(2):112 (EAU, 2010)
 Broqueres-You, D. *et al.* **Neurourol Urodyn** (2009) 28(7):695 (ICS, 2009)
 Broqueres-You, D. *et al.* **J Urol Abstract** (2008) 179(4):348-349 (AUA, 2008)