

**P011** Spinal ERK phosphorylation regulates bladder overactivity caused by spinal cord transection

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Spinal cord transection (SCT) induces alterations in spinal cord and urinary bladder contents of neurotrophins, leading to bladder overactivity. The importance of neurotrophins-regulated signalling pathways in this type of bladder overactivity is poorly understood. Here we investigated the involvement of one of such cascades, the ERK pathway, in SCT-induced bladder overactivity.

Seven weeks after SCT, animals were anaesthetised and saline infused through the bladder dome while bladder pressure was monitored. At the end, L6 spinal segment was removed and positive phosphoERK cells counted in 10 randomly chosen transverse sections. Total and phosphoERK levels and the effect of phosphoERK inhibition on bladder activity were also assessed. Bladder contractions/minute were significantly increased in SCT rats ( $1.0 \pm 0.3$ ) compared with controls ( $0.5 \pm 0.1$ ,  $p < 0.01$ ). The number of phosphoERK-positive cells was higher in SCT animals ( $80.5 \pm 7.6$ ) than in controls ( $9.8 \pm 2.9$ ,  $p < 0.01$ ). SCT increased phosphoERK but not total ERK protein. Intrathecal injection of 1 and 5  $\mu\text{g}$  PD98059 significantly reduced the amplitude of bladder contractions. Saline, in contrast, had no effect.

Results show that the ERK pathway is an important mechanism for SCT-induced bladder overactivity. Thus, it could become a therapeutic target. PGDB/FCT; FCT project POCTI/SAU-NEU755983/2004, Portugal.