

SOMATO-ADRENAL REFLEX AND UPPER CERVICAL SPINAL CORD COMPRESSION – A PILOT STUDY

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Purpose: The aim of this study was to test if applying transient (range 10-60 min) compression to the upper cervical spinal cord modulates somatic evoked reflex activity in the adrenal nerve. **Methods:** Experiments were performed on spontaneously breathing adult Wistar rats (n=5; 380-430g) initially anaesthetized with urethane (1.3g/kg i.p.) and supplemented (i.v.) to maintain absence of withdrawal and palpebral reflexes. Venous and arterial canulas provided fluids and a record of arterial blood pressure. Averaged adrenal nerve activity was recorded in response to electrical stimulation (1Hz, 5 X 0.5ms square wave pulses) of the ipsilateral sciatic nerve at $\geq 15X$ threshold for muscle twitch while static compression was applied using a probe (2.3 X 2.8 mm) placed on the dorsal surface of the exposed, dura intact, upper cervical spinal cord. **Results:** High intensity ($\geq 15T$) stimuli evoked a reflex response (onset latency range 50-100ms; duration ~ 120 ms) in each rat's stimulus-triggered averaged (n=500) adrenal nerve recordings. Applied pressure ranging (1.13-3.92g) from that sufficient to compress the dura so it just contacted the dorsal surface of the cord to that necessary to occlude the vessels on the dorsal surface of the cord, induced a reduction (range 12-35%) in the amplitude of the somatic evoked adrenal nerve response. When tested up to 60 min after removing the probe, the somatic evoked responses were present but remained reduced in amplitude. **Conclusion:** In the anaesthetized rat, static transient (< 60 min) compression of the upper cervical spinal cord can reduce somatic afferent induced activity in the adrenal nerve and it remains reduced for more than an hour after compression has been removed.