Non-invasive assessment of the severity of the autonomic lesion in spinal cord injury patients
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Objective.– To study the relation between severity of the somatic lesion and severity of the autonomic lesion.

Patients and method.– Thirty nine spinal cord injury (SCI) patients (21 tetraplegics and 18 paraplegics) presenting with a traumatic lesion above T10 were assessed (33 men and 6 women, mean age of 38 years and mean duration of evolution of 4.1 years). Twenty-nine had a motor and sensory complete lesion (American Incapacity Scale A), 7 a complete motor but incomplete sensory lesion (AIS B), 3 a motor incomplete lesion (AIS D).

All underwent a battery of autonomic tests with pressor stimuli above and below the lesion, including sympathetic skin responses (SSR), Valsalva Manoeuvre, abdominal electrical stimulation, and cold foot.

Results.– Tetraplegics (14 AIS A & 7 AIS B).

22 SCI patients showed absent palmar and plantar SSR, absent blood pressure (BP) overshoot at the end of the Valsalva, and a significant rise in BP with pressor stimuli below the lesion.

Paraplegics ≥ T6 (12 AIS A & 3 AIS D).

All 12 SCI patients with complete AIS A lesions presented with abolished plantar SSR and a significant rise in BP with pressor stimuli below the lesion. Palmar SSR and BP overshoot were obtained in a majority of patients.

Patients with incomplete AIS D lesions showed normal autonomic responses (presence of palmar and plantar SSR and of BP overshoot).

Paraplegics T7–T30 (3 AIS A).

They all showed normal autonomic responses (presence of palmar and plantar SSR and of BP overshoot).

Discussion.– All patients with a complete motor lesion (AIS A & AIS B) above T6 showed a total loss of supraspinal control on the thoraco-lumbar sympathetic cord. This isolated spinal cord reacted reflexively in all but one patient.

Patients with incomplete motor lesions (AIS D) and patients with lesions below T6 showed normal autonomic responses.

To assess autonomic dysfunction, a battery of tests is needed and should combine pressor stimuli above and below the lesion, and assess both cholinergic and sudomotor pathways.

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Investigations of the Autonomic Nervous System: practical aspects
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In cases where symptoms are suggestive of autonomic disturbance (unexplained overactive bladder, voiding phase dysfunction . . . ) specific testing for dysautonomia should be performed. Most explore the cardiovascular system: orthostatic hypotension, cold pressor test, hand grip test, stand test, 30/15 ratio, Valsalva ratio, deep breath test. The Schirmer test assesses dry eyes; the Saxon test and sugar cube test assess dry mouth. These tests are not invasive and are easy to perform without specific equipment.