

# A 65-year-old man with increasing difficulty walking

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A retired man presents with features of spinal cord dysfunction, including a disturbed gait. What diagnoses should be considered and how should he be treated?

## Case presentation

### History and examination

A retired 65-year-old man presented to his general practitioner describing difficulty in walking. The problem had been increasing slowly, such that he now needed a walking frame and was not confident to leave home. In recent weeks he had noticed clumsiness when doing up the buttons on his shirt and difficulty in holding a knife and fork. He described more neck stiffness than pain. On questioning, he admitted to urinary urgency over the last few months.

The patient's gait was wide-based and unsteady, and he was unable to keep his balance when standing with his feet together. He had generalised mild motor weakness and nondermatomal alteration of his sense of touch to the upper and lower limbs. His tendon reflexes were generally pathologically brisk, although his jaw jerk was not. While holding his

arms outstretched and his eyes closed, the little finger of each hand drifted towards the ulnar side (a sign of upper motor neuron disturbance in the upper limbs). Co-ordination of his fine finger movements was poor, and opening and closing his fists was slow. There was no apparent increase in tone of the lower limbs, but there were more than six beats of clonus on ankle dorsiflexion. The plantar response was up-going in each foot.

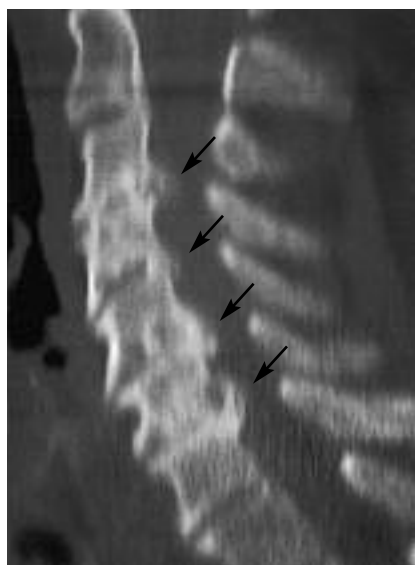


Figure 1. A sagittal reconstruction from the CT scan of the patient's cervical spine shows multilevel degenerative disease with disc space narrowing and osteophyte formation within the spinal canal (arrows), but preservation of lordosis and no instability. These features were visible on plain radiographs (not shown).

## Diagnosis and treatment

This patient's presentation indicated upper motor neuron involvement, but stroke would have produced unilateral signs and true spasticity. Spinal cord dysfunction at the level of the neck was indicated by both upper and lower limb findings. Investigations in such cases are thus directed to the cervical spine and spinal cord, seeking causes of neural compression or intrinsic cord disease. Plain radiographs, including flexion and

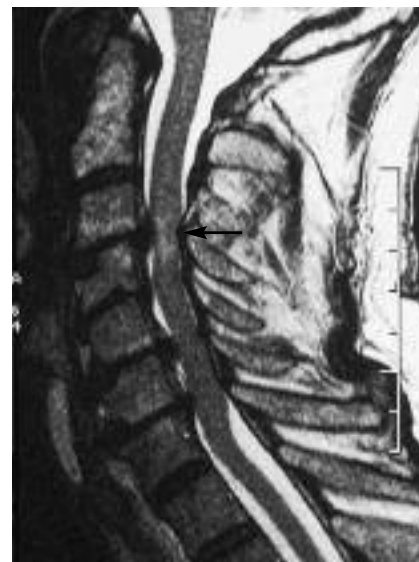


Figure 2. MRI image in the sagittal plane revealing four consecutive levels of spinal cord compression (C3/4 to C6/7), with myelomalacia at C3/4 (arrow).

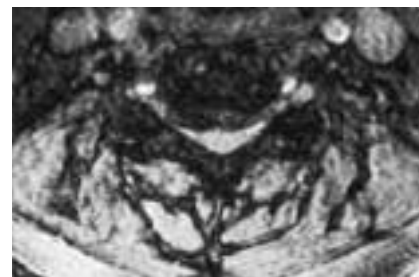


Figure 3. MRI image in the axial plane from the C3/4 level showing very severe central canal compromise caused by osseoligamentous encroachment with advanced spinal cord compression.

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extension views, may show degenerative disease, deformity or instability. Computed tomography will reveal any canal stenosis or vertebral destruction. Magnetic resonance imaging is important for showing the state of the spinal cord – whether it is affected by intrinsic or compressive lesions and what level is involved. Intrinsic cord lesions are rare but must be excluded.

Preoperative investigations from the case described above are shown in Figures 1 to 3.

The patient was diagnosed with cervical spondylotic myelopathy. Spinal cord decompression was achieved by laminectomies from C3 to C6 inclusive. Six weeks after surgery, the patient's walking ability had improved markedly so that he used only a cane and was confident to leave home.

### Discussion

Cervical spondylosis is the most common cause of myelopathy in middle-aged patients. This situation contrasts with that of younger patients, in whom common causes include acute disc protrusion and trauma.

Spondylotic myelopathy has an insidious and usually painless onset. Cord dysfunction is caused by a combination of compressive narrowing of the central canal (disc bulging and osteophytes), segmental instability and vascular impairment (usually compression of the anterior spinal artery).

The symptoms of myelopathy are at first subtle and easily dismissed as infirmness. The pattern of motor and sensory involvement varies, but the core symptom is gait disturbance. Associated symptoms commonly include urinary incontinence or urgency, and numbness and clumsiness of the hands. Neurological signs reflect upper motor neuron and long-tract involvement. However, foraminal stenosis frequently accompanies central canal stenosis, causing radiculopathy with findings of dermatomal sensory

changes and lower motor neuron compromise in the upper limbs.

Plain radiographs will show spondylosis, and flexion–extension views may reveal segmental instability. CT scans will demonstrate canal narrowing, but MRI is the first choice for demonstrating spinal cord compression and excluding other causes of myelopathic symptoms. The major differential diagnoses are:

- rheumatoid arthritis with cervical spine instability and cord compression
- cervical disc protrusion
- post-traumatic deformity or instability of the cervical spine
- cervical syringomyelia
- demyelinating disorders
- epidural abscess
- tumours of the spinal cord, dura and vertebral column.

In addition, ossification of the posterior longitudinal ligament should be considered. This is a degenerative disorder that causes cervical myelopathy and is more common in the Asian population.

Symptoms of cervical spondylotic myelopathy progress slowly and correspond to increasing spinal cord compromise. On occasion there may be sudden, stepwise deterioration and a soft cervical collar may improve symptoms, implicating instability as a cause.

Treatment by surgical decompression should be considered early in the clinical course because spondylotic myelopathy is generally progressive and neurological recovery is poor when compression of the spinal cord is advanced. The surgical procedure chosen will depend on the location and extent of cord compression. For multilevel disease in a lordotic and stable cervical spine, laminectomy or expansive laminoplasty will give good results. For any spine with loss of lordosis or instability, anterior cervical corpectomies and strut grafting are required to achieve decompression with restoration of stability. Compression affecting one or two levels only is probably also best treated by anterior surgery. **MT**