Thoracic spondylosis presenting with spastic paraparesis

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Summary
Spondylotic change of the spine is common in the cervical and lumbar regions and may present with compression of the spinal cord and nerve roots. Myelopathy due to degenerative disease in the thoracic spine is exceptional. Only a few cases have been reported in the literature and these reports have described disease in the lower four thoracic segments. We report a case of paraparesis caused by degenerative disease in the upper thoracic spine which has not previously been described.

Keywords: spondylosis, myelopathy, thoracic spine

A 64-year-old Afro-Caribbean man presented acutely with bilateral weakness of his lower limbs and a complete inability to walk. He gave a six-month history of decreasing strength in his legs. In the last three months he had been house bound and occasionally noticed shock-like pains in both legs. He had intermittently been incontinent of urine and had lost the sense of defecation. There was no previous history of back pain. He had suffered a stroke two years previously which had caused a mild right hemiparesis and had made an excellent recovery. Hypertension was adequately controlled with beta-blockers and diuretics.

On examination cranial nerves were intact and upper limb examination was normal. Lower limb examination revealed mild wasting of the quadriceps with increased tone bilaterally. Power in the left leg was reduced to grade four and in the right leg to grade three. The deep tendon reflexes were increased bilaterally and the plantar responses were extensor. All sensory modalities were impaired and a sensory level demonstrable at T3. Anal tone was preserved but the patient was found to be in painless urinary retention.

Computed tomography (CT) and myelography of the dorsal spine revealed considerable degenerative disease with osteophytic lipping. It also demonstrated osteoarthritic changes within the posterior joints at T1/T2 particularly on the right which appeared to be causing spinal stenosis (see figure). Plain X-rays of the cervical and lumbar spine demonstrated widespread spondyloitic disease.

The patient underwent a decompressive cervico-dorsal laminectomy. Very hard thickened laminae were evident with a completely ossified ligamentum flavum between T1 and T4 with large bony spikes of ossified ligament impinging the dura and cord at T1/T2 and T2/T3. It was confirmed that there was no significant compression above T1 with a normal ligamentum flavum at C7/T1.

Ten weeks after the operative procedure the patient had made good recovery of both motor and sensory function. He was discharged walking with a frame, with loss of the previous sensory level and with normal sphincter function.

Discussion
Thoracic spondylotic myelopathy is infrequently mentioned in the literature. Marzluft et al describe four cases in which symptoms were ascribed to compression of the spinal cord by osteophytes arising from the articular processes. The lower four thoracic levels were involved, with one patient having disease at T8/T9. Smith and Godersky2 reviewed seven patients and found that compression occurred posterolaterally primarily from apophyseal joint hypertrophy in all seven patients. A predilection for the T10 and T12 level was evident. Tseng et al note lower thoracic involvement in their description of four similar cases.
Thoracic causes of spastic paraparesis that need excluding

- degenerative: prolapsed intervertebral disc
- trauma: vertebral body fracture, fracture dislocation of facet joints
- neoplastic: metastatic spread to vertebral body or epidural space, benign (neurofibroma, meningioma), primary malignant (bone and cartilage, neurogenic tumours)
- infective: *S aureus, S pyogenes, E coli, M tuberculosis*

Summary/learning points

- myelopathy or radiculopathy resulting from spondylosis is commonly seen in the cervical or lumbar regions but is rarely encountered in the thoracic spine
- paraparesis caused by spondylosis in the upper thoracic spine is extremely rare
- the diagnosis should be considered in any patient who has a thoracic myelopathy and radiological evidence of spondylosis

The case discussed is unusual in that myelopathy was caused by spondylosis in the upper thoracic spine. It is unclear why such degenerative change should occur in this region. Shore studied the distribution of osteoarthritis in skeletal material and noted small peaks of incidence in T1–T5 and T8–T12. Changes in the upper peak were explained by wear and tear due to pressure of dorsiflexion at dorsal intervertebral joints accompanying the movements of respiration. The osteoarthritic changes in the lower peak were explained by the relative proximity to the weight-bearing lumbar spine. However, no clinical correlation is available in this study of pathological material.

Another feature worthy of mention is the finding of ossification of the ligamentum flavum. Hypertrophy of the ligamentum flavum has been documented in the literature as a cause of myelopathy but ossification of the ligament is rare. Ossification of the ligamentum flavum associated with compressive myelopathy has been reported but these cases involved the lowest thoracic segments. Shore also found ossification of the ligamentum flavum in four cases of thoracic spondylosis. It is likely that spondylosis, including ossification of the ligamentum flavum, in the patient we have described was part of generalised degenerative disease of the spine. However, it is extremely unusual for these changes to have occurred in the upper thoracic vertebrae.

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