

## Case Report

# A case of thoracic disc herniation characterized by marked posture-related dynamic changes in neurological symptoms

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## ABSTRACT

Thoracic disc herniation is less common than lumbar and cervical disc herniations. It is usually accompanied by severe myelopathy, which often leads to surgery. Because the thoracic spine is less mobile, thoracic disc herniation is considered to be minimally affected by dynamic spine factors in cases with myelopathy. We experienced a case of thoracic disc herniation (T4/5 and T6/7) characterized by posture-related dynamic changes in neurological symptoms; that is, numbness extending from the trunk to the entire lower limbs was deteriorated in the standing and sitting positions, was relieved in the supine position, and disappeared in the prone position. In addition, the patient reported dysuria with a delay when attempting to urinate in the standing position. Computed tomographic myelography revealed diffuse idiopathic skeletal hyperostosis extending from T3 to T11, and the kyphosis angles at T1 to T11 levels were 68 degrees in the half-sitting position and 58 degrees in the prone position, showing posture-related changes. The patient underwent the posterior fusion in the prone position, by which symptoms disappeared, without undergoing disc herniotomy or laminectomy, and favorable outcomes were achieved. Thoracic disc herniation with marked posture-related neurological symptoms is extremely rare. Here we report a case presentation and literature review of pathophysiology observed in our patient.

## 1. Background

Thoracic disc herniation is less common than lumbar and cervical disc herniations [1]. It is usually accompanied by severe myelopathy, which often leads to surgery [2].

In addition, the thoracic spine, which forms the thorax with the ribs and sternum, is less mobile than the cervical and lumbar spines [3]. Thus, thoracic disc herniation is considered to be minimally affected by dynamic spine factors in cases with myelopathy in the thoracic spine.

We herein report our experience with an extremely rare case of thoracic disc herniation characterized by marked posture-related changes in neurological symptoms.

## 2. Case report

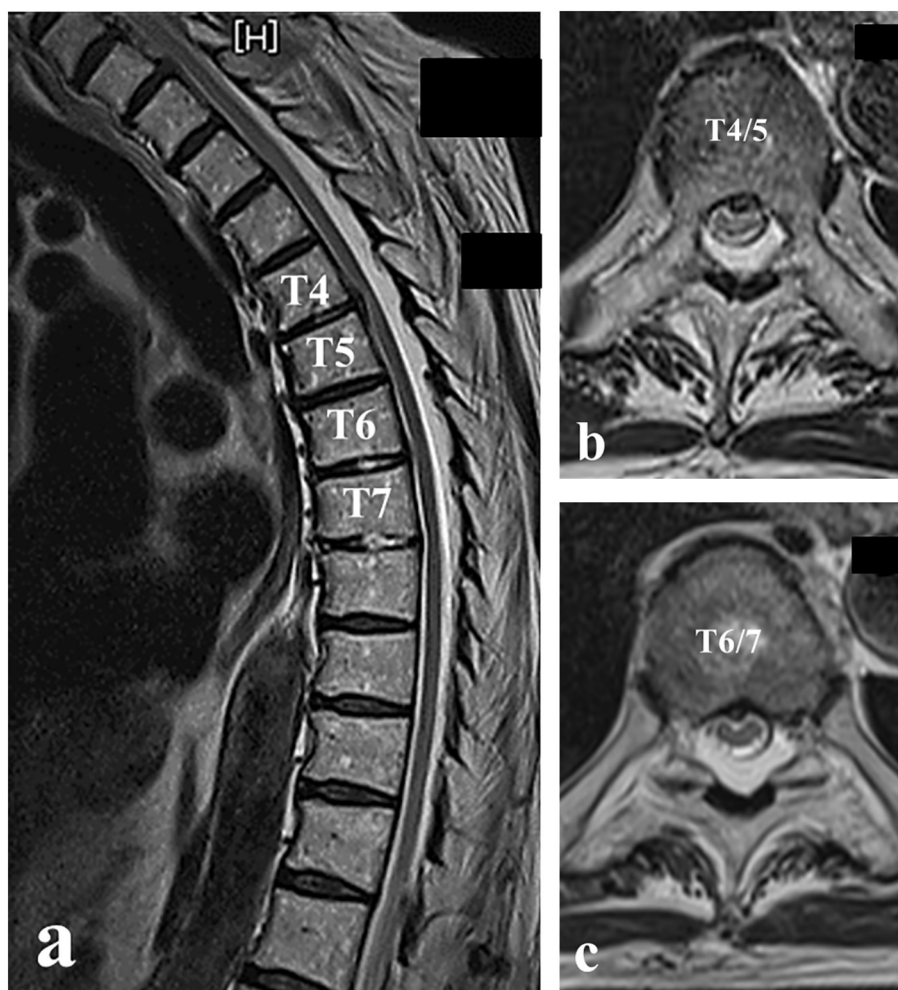
A 72-year-old man presented with a feeling of unsteady gait and numbness in the trunk for 3 months. His past history included cervical laminoplasty for spondylotic myelopathy at the age of 61 and lumbar laminectomy for canal stenosis at the age of 62. Subsequently, he began wobbling, and his gait disturbance gradually worsened. Then, he was

referred to our institution from a local clinic.

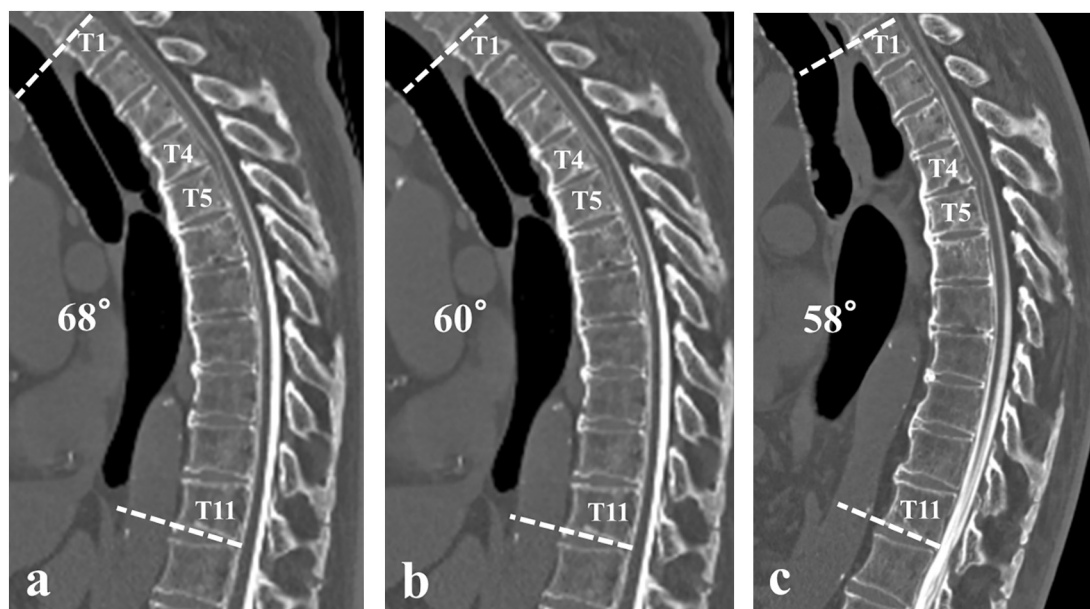
At the initial visit, he shuffled his feet and wobbled. Deep tendon reflex was enhanced in both lower limbs. Although manual muscle testing revealed no decrease, he felt weakness in lower limbs and was not able to go up the stairs. Posture-related symptom changes were characteristically observed; that is, numbness extending from the trunk to the entire lower limbs was deteriorated in the standing and sitting positions, was relieved in the supine position, and disappeared in the prone position. In addition, the patient reported dysuria with a delay when attempting to urinate in the standing position. Based on these neurologic findings, thoracic myelopathy was suspected. According to the Japanese Orthopaedic Association (JOA) score (maximum 11 points for thoracic myelopathy), his score was 5 points.

Magnetic resonance imaging (MRI) revealed disc herniation at T4/5 that compressed the spinal cord (Fig. 1). Moreover, small disc herniation was observed at T6/7. After the patient consented, computed tomographic myelography (CTM) was performed in three postures (i.e., the half-sitting, supine, and prone positions). It revealed diffuse idiopathic skeletal hyperostosis (DISH) extending from T3 to T11, and the anterior portions of vertebral bodies had been fused. Posture changes

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**Fig. 1.** T2-weighted MRI of the thoracic spine. (a); Mid-sagittal scan, (b); Axial scan at the T4/5 level, (c); Axial scan at the T6/7 level. MRI revealed that disc herniation at T4/5 that compressed the spinal cord and small disc herniation was also observed at T6/7.



**Fig. 2.** CTM of the thoracic spine. (a); Half-sitting position, (b); Supine position, (c); Prone position. CTM revealed DISH extending from T3 to T11. Posture changes did not affect the findings of disc herniation at T4/5 and T6/7. However, when the KA were measured at T1 to T11 levels, they were 68 degrees in the half-sitting position, 60 degrees in the supine position, and 58 degrees in the prone position, showing posture-related changes.

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