Unusual presentations of thoracic disc herniation treated by thoracic epidural block

Case reports

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Abstract

Rationale: Herniation of the thoracic intervertebral disc (HTD) is a rare disease that accounts for <1% of all disc herniations. Physicians may make diagnostic errors due to the variable clinical features and limited experience of HTD. In this report, we present 2 unusual cases of HTD.

Patient concerns: A 72-year-old woman (case 1) visited our pain clinic because of chronic abdominal discomfort with visible bulging on the left side. Atrophy of the abdominal wall muscle and quadratus lumborum was observed. The therapeutic effect of interfascial plane block to exclude the possibility of truncal neuropathy following muscular atrophy was temporary. The other patient, a 75-year-old man (case 2) complained of aggravation of previously diagnosed postherpetic neuralgia. An extension of the previously symptomatic area of the forward upper dermatome was observed. Radiofrequency treatment on the symptomatic dorsal root ganglion failed to relieve symptoms.

Diagnoses: Two patients underwent magnetic resonance imaging of the spine for further evaluation. The patients were diagnosed with multilevel HTD and foraminal herniated disc, compatible with their symptoms and without myelopathy.

Interventions: Two patients were conservatively treated with a fluoroscopy-guided transforaminal epidural block.

Outcomes: The 2 patients experienced significant pain reduction up to 50% on a numeric rating scale after repeated treatment.

Lessons: Multilevel HTD of the mid- to lower-thoracic spine may present as abdominal bulging with atrophy of the abdominal wall muscles. We also report another case of concomitant symptomatic thoracic radiculopathy from HTD and postherpetic neuralgia at the adjacent level. Thoracic transforaminal epidural block may be considered a conservative therapeutic approach for HTD.

Abbreviations: CT = computed tomography, DGR = dorsal root ganglion, HTD = herniation of thoracic intervertebral disc, MRI = magnetic resonance imaging, PHN = postherpetic neuralgia, RF = radiofrequency.

Keywords: abdominal pain, myelopathy, radiculopathy, thoracic disc herniation

1. Introduction

Herniation of the thoracic intervertebral disc (HTD) is a rare disease that accounts for <1% of all disc herniations,[1] and it occurs most frequently at the T7–T12 level.[2–4] It is usually asymptomatic but may present with upper back pain or pain radiating in a dermatomal distribution, referred to as thoracic radiculopathy.[5] The sensory and motor symptoms may be equally common in cases of myelopathy accompanied by spinal cord compression.[6] In a recent study, Ahi and Goktan[7] suggested that the neuropathic nature of chronic back pain radiating to the chest and abdomen may be highly predictive of HTD.

Radiating truncal pain and/or concomitant back pain are somewhat nonspecific presentations in several neuropathic or musculoskeletal diseases at the thoracic level, such as intercostal neuralgia, herpes zoster, diabetic truncal neuropathy, compression fractures of the thoracic spine, and entrapment syndrome of the abdominal cutaneous nerve.[8] Therefore, the differential diagnosis of thoracic radiculopathy from these more prevalent diseases is complicated for physicians in clinical practice. Moreover, the exact diagnosis can often be delayed because HTD often manifests with unexpected presentations, such as abdominal or pelvic pain, which may be misdiagnosed as a gastrointestinal or even gynecological condition.[4]
In this report, we present 2 unusual cases of HTD. The first patient was diagnosed with multiple thoracic disc herniations at the mid-to-lower thoracic level, which manifested as abdominal discomfort and anterolateral bulging. The second patient, who had been treated for postherpetic neuralgia at the T12 level for several months, presented with aggravation and extension of a previously symptomatic area. The patient was diagnosed with HTD at the upper adjacent level. Both patients were successfully treated with transforaminal epidural block.

2. Case report

Written informed consent was obtained from the patients for publication of this case report.

2.1. Case 1
A 72-year-old woman visited our pain clinic because of abdominal discomfort for approximately 1 year. The patient complained of aching and sore anterolateral abdominal pain with a moderate intensity of 6 on the 11-point numeric rating scale. She described her pain as unpleasant abdominal discomfort with visible bulging aggravated by meals. She also complained of shooting flank pain during positional changes or coughing. Several months before presenting at our tertiary care hospital, the patient had been examined for the possibility of various pathologies, such as gastrointestinal and genitourinary organ problems, but the laboratory and radiologic findings were non-diagnostic. The patient reported that analgesics, including a nonsteroidal anti-inflammatory drug, tramadol/acetaminophen combination, and pregabalin, did not relieve her symptoms. On physical examination, visible abdominal bulging, most prominent on the left side, was identified (Fig. 1). The patient had no remarkable sensory, neurological deficits, except for direct tenderness on the lateral abdominal wall and adjacent paraspinal muscle area.

The patient was assigned to the Department of General Surgery because her major symptoms included abdominal discomfort and bulging after meals. Computed tomography (CT) surgery because her major symptoms included abdominal dis-...
One month later, hypesthesia of the T12 dermatome was confirmed using a cold swab. Sustained throbbing and aching pain at the T9/10/11 dermatomal distribution was noted. A T-spine MRI was performed to identify possible reasons. A foraminal herniated disc at the left T9/10 level with a mild degree of disc protrusion at T8/9/10 was identified, which was compatible with his current symptoms (Fig. 5A, B). A transforaminal epidural block at T9/10/11 was performed once per week. After the second block, the patient reported a symptomatic relief of from 9 to 5 on the NRS. At the 3-month follow-up, the patient’s pain had markedly improved with analgesic medications alone.

3. Discussion
HTD is a rare disease that accounts for <1% of all disc herniations.[1] The clinical features of HTD are highly variable,[5] and the localization of the involved thoracic level can be more

Figure 2. Computed tomography findings of the abdomen and pelvic cavity showing a reduced thickness of the left abdominal wall muscle and quadratus lumborum. (A) Coronal image. (B) Axial image. (C) Reduced cross-sectional area of the left quadratus lumborum.

Figure 3. Sagittal whole-spine magnetic resonance T2-weighted imaging showing multilevel HTD at T8/9/10/11. (A) Midsagittal plane. (B) Sagittal plane suggesting foraminal herniated disc at left T9/10/11. HTD = herniation of the thoracic intervertebral disc.
confusing than that of the cervical or lumbar spine. The differential diagnosis of HTD is extensive and may include several spinal and nonspinal causes. Therefore, physicians often experience diagnostic errors because of their clinical complexity and scarcity. HTD may be misunderstood as a lumbar spinal pathology because it may cause leg symptoms suggestive of lumbar radiculopathy. More severe forms of HTD with accompanying cord compression may also display vague leg pain, paraplegia, hyperactive deep tendon reflexes, and positive ankle clonus or Babinski response. Early diagnosis and prompt surgical treatment are crucial for preserving and restoring function.

In this case report, the authors present 2 patients with unusual HTD in different clinical situations. In case 1, the patient had unusual mimicking symptoms, with the chief complaint of abdominal discomfort and bulging aggravated after meals rather than pain. Therefore, the patient was primarily evaluated for the possibility of operable causes, such as abdominal hernia, by using abdominal CT. Regrettfully, the authors
did not focus on abdominal wall muscle atrophy, which was a consequence of denervation changes derived from more proximal pathology. The authors initially thought that the abdominal enlargement and abdominal wall muscle atrophy may have stretched the abdominal cutaneous nerve, leading to nerve irritation, due to the “push” mechanism in developing nerve entrapment syndrome.\(^\text{[11,12]}\)\(^\text{[13,14]}\) Moreover, positive direct tenderness and local twitch responses in the quadratus lumborum and adjacent abdominal wall muscles further led to an incorrect diagnosis.

In case 2, symptomatic thoracic radiculopathy due to HTD was misinterpreted as PHN. It is well known that herpes zoster generally involves a single DRG unilaterally, although multiple ganglia involvement has been reported in herpes zoster developing in the cranial nerve, such as in Ramsay Hunt syndrome.\(^\text{[13,14]}\) Therefore, physicians should always check the level of herpes zoster involving in a single dermatome, especially for guiding interventional pain management. However, currently used dermatomal maps are variable and inaccurate.\(^\text{[13]}\) The reason for this variability is due to the skin area being innervated by 2 or more spinal roots, and the presence of an intersegmental anastomosis between the spinal nerve roots.\(^\text{[16]}\) This phenomenon confounded the diagnosis in case 2. This case highlights the importance of careful history-taking and physical examination. This may include determining the nature of the pain and characteristic relieving or aggravating factors, such as the Valsalva maneuver, to discriminate radiculopathy from other pathologies.

In addition to diagnostic difficulty, HTD has therapeutically challenging issues owing to the relatively higher complication rates of surgical treatment.\(^\text{[17]}\) In this case report, both patients were successfully treated with epidural block. Several guidelines for lumbar and cervical disc herniations suggest a favorable level of evidence for transforaminal epidural steroid injections in radiculopathies.\(^\text{[16,19]}\) For HTD, there are no consensus guidelines, and the literature on the topic is sparse.\(^\text{[20,21]}\) Further investigations and evidence-based consensus guidelines are necessary. Our 2 patients experienced considerable symptomatic relief of a 50% reduction in NRS following thoracic transforaminal epidural blocks with steroid or hypertonic saline. We identified the appropriate contrast flow reaching the nerve root and the anterior epidural space using fluoroscopy. For the epidural block to be effective, the drugs must reach the anterior epidural space because the disc–nerve interface is located there. Target-specific epidural blocks were therapeutically effective, and HTD and accompanying radiculopathy were considered the main causes of patient complaints.

4. Conclusion

Multilevel HTD of the mid- to lower-thoracic spine may present as abdominal bulging with atrophy of the abdominal wall muscles. Comitant PHN and HTD at adjacent thoracic levels may also occur. Thoracic transforaminal epidural block should be considered as a conservative therapeutic approach for HTD.

Author contributions

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