Herniated thoracic disc at T1–2 level associated with Horner's syndrome

Case report

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A case of symptomatic herniation at the first thoracic disc level is reported. The patient presented with hand weakness, Horner's syndrome, and pain radiating along the medial aspect of the upper extremity. Myelography demonstrated a smooth lateral defect at T1–2. Three sequestrated epidural disc fragments were removed with postoperative relief of pain. A slightly miotic pupil remains.

KEY WORDS  •  herniated intervertebral disc  •  thoracic disc  •  Horner's syndrome

SYMPTOMATIC disc herniation has been described throughout the thoracic spine occurring most often at the lower four disc spaces. The purpose of this case report is to demonstrate that herniation at the first thoracic disc level does occur and presents as a specific syndrome of first thoracic nerve root compression. This lateral protrusion responds to routine laminectomy.

Case Report

This 40-year-old attorney was admitted to the Rhode Island Hospital on November 16, 1975, with hand weakness and anterior chest, parascapular, neck, and medial upper extremity pain. Readmission on November 26, 1975, demonstrated a Horner's syndrome on the side of the painful extremity.

History. Five weeks previously he sought medical and orthopedic consultation due to right chest and scapular pain. Electrocardiogram and chest x-ray film were negative, and a hard cervical collar was advised. Three weeks later, the pain had spread to the neck and right arm. Neurological consultation revealed an abnormal posture with restriction of neck hyperextension and right lateral rotation. Reflex and sensory examination were normal. Electromyography demonstrated depletion of motor units in the long extensors of the fingers, first dorsal interosseus and abductor digiti quinti consistent with C-8 and T-1 mechanical root irritation. Cervical traction was instituted.

First Admission. Admission was prompted by severe upper extremity pain and paresthesias. Examination demonstrated weakness in the first dorsal and other interossei of the right hand and hyposthesia along the ulnar aspect of the forearm extending to the ring and small fingers. Reflexes were normal, neck traction did not relieve the pain, and spinal column compression did not produce radicular pain. Routine laboratory studies, electrocardiogram, bone scan, chest
and total spine films were within normal limits. Cerebrospinal fluid protein was 15 mg/100 ml with one lymphocyte present.

Cervical Pantopaque myelography was normal. A persistent, smooth defect obliterating the right-sided root at T1-2 was demonstrated on oblique and anteroposterior views (Fig. 1). The cord was not displaced and the foramen was not enlarged. Lateral views were normal.

Second Admission. Five days after discharge, the patient was readmitted due to increasing right upper extremity pain, a Horner's syndrome with miosis and ptosis, but no enophthalmos was present on the side of the painful extremity. Weakness was found in the first dorsal interosseus and abductor digiti minimi. Hypesthesia was present in the T-1 and T-2 dermatomes. Reflexes were found to be normal.

Operation. Six days after admission, the patient underwent a thoracic laminectomy via a posterior midline incision. The operation was performed with the patient in the sitting position. A unilateral, partial laminectomy of T-1 and T-2 revealed a stretched and elevated nerve root beneath the center of the right T-1 lamina. A firm mass presented anterior to the spinal dura. Three sequestrated disc fragments were removed anteromedial to the root origin (Fig. 2). The disc space could not be entered, nor was a tear found in the posterior longitudinal ligament. The wound was closed in layers.

Postoperative Course. On the first postoperative day the miotic pupil was larger and both the lid ptosis and upper extremity pain were gone. Intrinsic hand muscle strength improved on the tenth postoperative day and the patient was then discharged.
Discussion

Cases of clinically significant thoracic herniated disc occur with a frequency of two to three per thousand cases of herniated disc. They have been described at every thoracic level, however the majority occur at the lower four disc levels. Love and Schorn described only one herniation at T1-2 in 61 cases of thoracic disc herniation. Murphey, et al., reported four cases in about 648 patients with "lateral ruptured cervical disc."

The presentation is often similar to, but does differ from, the cervical root compression syndrome. The T-1 root compression syndrome consists of pain in the neck, medial border of the scapula, anterior chest, and medial aspect of the upper arm and forearm. Findings are hypesthesia along the ulnar aspect of the forearm, weakness in the intrinsic hand muscles only, and a Horner's syndrome.

The Horner's syndrome most likely results from the compression of the anterior root of T-1 containing the myelinated axons of the sympathetic cells of origin in the intermediolateral cell column of the C-8 and T-1 spinal cord segments. The white ramus communicans that these axons form has preganglionic fibers, which are interrupted before they course upward through the sympathetic chain to the superior cervical ganglion. The anastomotic cell body has a nonmedullated axon that runs with the carotid plexus to the cavernous sinus, where it enters the right orbit through the superior orbital fissure to the levator of the upper lid, dilator pupillae muscle, and involuntary muscle of Müller, which maintains the normal position of the eye. Thus, compression of the anterior root of T-1 by a herniated disc can result in a complete Horner's syndrome.

Surgery was performed with the patient in the sitting position, using a standard posterior approach. The prone position can be used to decrease the possibility of air embolus. The transthoracic approach as described by Ransohoff, et al., and Perot and Munro is not indicated at this level. An anterior thoracic approach, similar to that used for the cervical spine, could possibly be complicated by pneumothorax, and the lack of instability in this case would obviate the need for fusion.

References


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