Testicular ptosis as a sign of L2 radiculopathy

J.D. Bartleson, MD

Timothy Maus, MD

W. Richard Marsh, MD

Practical Implications

In men with low back and unilateral proximal lower limb pain, if a markedly lower testicle is observed on the same side as the pain, consider an upper lumbar radiculopathy most likely affecting the L2 spinal nerve.

A 71-year-old man was referred to the Mayo Comprehensive Spine Center for possible surgery on a left L2–3 disk extrusion. Superimposed on a past history of episodic low back pain, 6 months prior, the patient developed major low back and left flank pain after moving some rocks. Over the course of a few days, the pain became so severe that he visited his local emergency department and received temporary benefit from an injection of morphine and a brief course of oral prednisone. He continued to have severe pain in his lower back and left flank and developed pain in his left anterior iliac crest and proximal left medial, anterior, and lateral thigh, with numbness, sensitivity, and brief neuralgic pains over his left anterolateral thigh. His lower limb reflexes were reportedly normal. Within a month of symptom onset, he underwent lumbar spine MRI and subsequent CT myelography, both of which showed a left L2–3 disk extrusion with superior migration and L2 nerve root impingement (see figure 1). An EMG was reported to show a left upper lumbar radiculopathy. He had a left L2–3 transforaminal epidural steroid injection that helped him briefly. He did not notice any weakness or bowel or bladder difficulty. He had noted that ever since his pain began, his left testis was hanging considerably lower than the right. He estimated that the left testicle had hung 6 cm lower than the right at its nadir. His pain and testicular ptosis had improved over time, albeit incompletely, when we saw him. He was otherwise in good health except for a history of right rotator cuff disease, and he was taking only ibuprofen for pain.

Neurologic examination was normal, including normal left lower limb strength and intact symmetric knee reflexes. Cremasteric reflexes were absent bilaterally. His left testicle hung about 4 cm lower than the right (see figure 2). The patient reported that his left testicular ptosis had been at least 50% lower when his pain was at its peak.

He was seen in neurosurgical consultation. We all agreed that because his symptoms were improving and he had no motor deficit, we should continue conservative treatment. Over the next 6 months, his pain continued to improve, with very mild residual low back pain and left anterolateral thigh dysesthesias. His left testicle still hung about 4 cm lower than the right.

DISCUSSION

The cremaster muscle is supplied by the genital branch of the genitofemoral nerve and the L1, and especially L2, spinal nerves.^{1–3} The cremaster muscle lacks voluntary control and pulls the testis upward toward the superficial inguinal ring. The muscle is thought to play a key role in testicular thermoregulation.^{1,2} The left testicle commonly hangs lower than the right, but only by about 1 cm or less.² Our patient's asymmetry was far in excess of 1 cm and he had

Department of Neurology (JDB), Department of Radiology (TM), and Department of Neurologic Surgery (WRM), Mayo Clinic, Rochester, MN.

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Correspondence to: bartleson.john@mayo.edu

Figure 1 Imaging

(A) Sagittal T2 (left) and T1 (right) MRIs demonstrate an L2 disk extrusion with cranial migration of disk material behind the body of L2 (arrows). The high signal at the margin of the disk extrusion on the T1 image may be an associated hemorrhage. (B) Coronal (left) and sagittal (right) CT reconstructions from CT myelography again demonstrate the cranial migration of the extruded material into the axilla of the L2 dural sleeve (arrows). (C) Contiguous axial T2-weighted MRI from the L2 pedicle to the L2 disk. The disk extrusion (single arrows) effaces the L2 dural sleeve but has little effect on the traversing L3 nerve. Note that the disk extrusion has an extraforaminal component (double arrows). (D) Contiguous axial CT myelography images from the L2 pedicle to the L2 disk also demonstrate the extrusion (arrows). Note that the right L2 dural sleeve fills with intrathecal contrast while the left L2 dural sleeve is effaced and does not fill. (E) Radiographic image from the CT myelogram also shows the filling defect in the axilla of the left L2 dural sleeve (arrow). The imaging studies support the presence of a left L2 radiculopathy.

observed that this was a new and notable finding. The cremasteric reflex (stroking of the medial thigh provokes reflex contraction of the cremaster muscle and elevation of the testicle) is mediated by the L1 and L2 spinal nerves. Although his cremasteric reflexes were absent on both sides, this finding is not uncommon in older men.³ The patient's pain was consistent with an L2 distribution on the left, and his imaging studies clearly documented severe L2 nerve root compression. Except for the cremaster muscle weakness, he did not have any focal neurologic signs pointing to a lumbar radiculopathy. As a result, his pain could have prompted extensive investigation of the abdomen, pelvis, and left lower limb looking for the cause of his symptoms. The patient's observation of drooping of his left testicle alerted us to the connection between cremaster muscle weakness and the discogenic L2 nerve root impingement. The

Figure 2 Patient's testes

The top of the patient's left testicle is at the level of the bottom of his right testicle, a distance of approximately 4 cm. The patient reported that at the height of his L2 radiculopathy the left testicle hung about 6 cm lower than the right.

patient's gradual, spontaneous improvement also supports an extruded disk as the mechanism of his symptoms and physical findings.

L2 radiculopathy can cause back, groin, and anterior thigh pain with anterolateral thigh sensory loss and/or paresthesias.⁴ Deep tendon reflexes are typically normal and hip flexion weakness is absent or mild. The cremasteric reflex is a superficial reflex that can be absent in upper and lower motor neuron lesions, including genitofemoral nerve injury. It can be due to local processes affecting the groin or testes, occur as a result of aging, or be missing for no apparent reason. As a result, loss of the cremasteric reflex is frequently unreliable as a localizing finding. Loss of cremaster muscle strength with testicular ptosis is rarely mentioned in the literature. To our knowledge, the new onset of cremaster muscle weakness secondary to L2 radiculopathy has not been previously described.

Upper lumbar radiculopathies are rare and more difficult to diagnose than the much more common L4, L5, and S1 radiculopathies. Upper lumbar radiculopathies do not cause sciatica and often lack characteristic motor, reflex, and/or sensory deficits. Upper lumbar radiculopathies are less likely to be caused by disk compression than their caudal counterparts. For example, Spangfort reviewed 15,235 lumbar disk operations in 49 publications and noted that 0.1% occurred at L1–2, 0.4% at L2–3, 2.8% at L3–4, 49.8% at L4–5, and 46.9% at L5–S1.⁵ Spangfort also reported on 2,157 positive lumbar disk operations performed in 2 hospitals in Sweden from 1951 to 1966 and found that 0.05% occurred at L1–2, 0.2% at L2–3, 1.8% at L3–4, 47.4% at L4–5, and 50.5% at L5–S1.⁵ Disk operations were more common in men than women at all ages, and upper lumbar disk herniations were somewhat more likely with age. Because upper lumbar disk disease is rare, symptoms of an upper lumbar radiculopathy

can suggest another cause such as tumor, infection, diabetes, or an alternative spondylotic mechanism. Spine imaging aids in diagnosis.

In cases of low back and unilateral proximal lower limb pain in men, one should consider inspecting the patient's genitalia to look for marked asymmetry of testicular height. If his much lower testicle is on the same side as the pain, one should consider an upper lumbar radiculopathy most likely affecting the L2 spinal nerve. The patient can also be asked whether he has observed this finding in temporal association with the onset of the pain syndrome. Men who wear boxer shorts (as does our patient) may be more likely to notice a drooping testicle than men who wear jockey shorts. Unfortunately, there is no similar physical finding for women with L2 radiculopathy.

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