A 55-year-old man presents with sudden-onset right leg pain and quadriceps weakness. His pain is intractable and only relieved with extreme hyperflexion of right thigh. Axial (A) and sagittal (B, C) magnetic resonance images are shown. What would you do?

Vincent M. Arlet, MD, and Andrew H. Milby, MD:
The provided history, examination findings, and imaging studies are all consistent with the diagnosis of acute radiculopathy due to lumbar disk protrusion. Pain localized to the anterior thigh in combination with quadriceps weakness suggests involvement of the ipsilateral L3 or L4 nerve roots. Relief of pain with hyperflexion is a reverse-tension sign, suggesting nerve root irritation when the L3 or L4 nerve roots are placed under tension with the right hip in the neutral or extended position. In addition to the selected magnetic resonance imaging (MRI) cuts, a complete initial workup should include standing flexion–extension radiographs of the lumbar spine to assess for associated instability, as well as additional MRI sequences, including axial and sagittal T1- and T2-weighted images.

Lumbar nerve roots may be affected by disk protrusions or spondylosis at multiple sites: central, causing canal stenosis and likely bilateral symptoms; paracentral, most common and affecting the traversing nerve root (ie, L2-L3 paracentral compression affecting the L3 nerve root); or foraminal or far lateral, affecting the exiting nerve root. The MRI in this case shows what appears to be disk material from the L3-L4 disk space that is obscuring the right L3 neural foramen and causing compression of the L3 nerve root. However, these images are not sufficient to exclude possible compression of the right L4 nerve root because it traverses the subarticular recess. One can observe
a large facet interspace at this level along with ligamentum flavum hypertrophy. Other cuts and T2-weighted images would be necessary to identify the exact source of compression. Although less common, foraminal herniations are more likely to be overlooked due to their lateral location and are often exquisitely painful due to direct compression of the dorsal root ganglion.

For acute lumbar radiculopathy, initial treatment consists of analgesics, rest, and activity modification. First-line analgesic agents include nonsteroidal anti-inflammatory drugs, with some surgeons advocating the use of a short course of oral steroids. Approximately 85% of patients will have symptom relief within 6 weeks.

No specific activity or physical therapy protocols have been found to alter the course of recovery, and early return to activity is encouraged as tolerated. If a patient has failed this first course of conservative treatment, a nerve root block or epidural steroid injection is the second line of treatment. If these modalities are unsuccessful, surgical decompression may result in quicker pain relief before pursuing surgery.

Because of the foraminal location of the compression, the current patient should be counseled preoperatively that surgical decompression may require a facetectomy and, therefore, a fusion of the operative motion segment. From a technical perspective, I would start with an interlaminar decompression (box out), leaving the option to perform an intertransverse decompression if an adequate decompression cannot be achieved. If these strategies are not successful, a complete resection of the facet with a fusion could be performed.

F. Todd Wetzel, MD: In the current patient, due to an intraforaminal disk prolapse at right L3-L4, the exiting nerve root at that segment is the one directly affected; in this case, it is the right L3 root. One would predict anterior thigh pain with weakness of the iliopsoas and the quadriceps. Sensory dyesthesia may be present on the anterior thigh without associated reflex change. Straight leg raising would be negative. The femoral nerve stretch (hip extension and knee flexion) should be positive. This patient reported that his symptoms were relieved with flexion of the right hip. This reverse femoral stretch is compatible with the pathology. I would predict that right side gliding, creating a relative foraminal stenosis, would result in radiating thigh pain.

A subtle right intraforaminal disk prolapse at L3-L4 is seen on the axial image and on the sagittal image in the inferior aspect of the foramen, in which the prolapse displaces the L3 nerve root slightly ros-trally and posteriorly. With acute onset of pain and no motor dysfunction, the initial treatment is nonoperative.

If the patient’s symptoms are not severe enough to merit an injection of extra foraminal selective nerve root block, an oral steroid taper would be appropriate, as would physical therapy. If the patient displays a directional preference, nonoperative care should be successful.

L3-L4 is the most common location for a far lateral prolapse. In the face of intractable pain, failure of 6 to 12 weeks of conservative care, or increasing weakness, surgical treatment is reasonable. From a standard posterior approach, facetectomy would be necessary in this case. Because 50% of the facets can be taken unilaterally without the need for adjunctive fusion, this is a viable option. Extra foraminal approaches may also be considered. These are most commonly done by the paraspinal muscle splitting approach. Identification and protection of the nerve root is paramount in this approach because much of the dissection is done blindly in an intramuscular plane.

The role of percutaneous intradiskal procedures has not been well defined in this particular entity, although theoretically it would be viable in cases of contained prolapse. However, in general, the outcomes of automated discectomy are inferior to those of an open procedure.

In the current case, I would likely favor a posterior approach from L2-L3 with L3 hemilaminotomy or hemilaminectomy to isolate and protect the L3 root while performing a thorough decompression and obviating the need for adjunctive fusion.

REFERENCES


The authors have no relevant financial relationships to disclose. The authors thank Andrew H. Milby, MD, for his assistance. Correspondence should be addressed to: John D. Kelly IV, MD, Sports Medicine, University of Pennsylvania, 235 S 33rd St, Philadelphia, PA 19104 (johndkellyiv@aol.com). doi: 10.3928/01477447-20121217-08