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Case Report Open Access

Intradural Lumbar Disc Herniation Associated with Degenerative Spine Disease

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Abstract

The first case of lumbar intradural disc herniation was reported as early as 1942; since then more than 150 cases have been reported, mostly in the lumbar spine. Gadolinium-enhanced magnetic resonance image (MRI) is considered the "gold standard" for diagnosing this entity, although it is rarely performed routinely in lumbar disc disease and diagnosis is often made intra-operatively and in retrospect in regard to the imaging.

A 63-year-old Italian man presented to the emergency department complaining of lower back pain, difficulty in walking, and in urination, with bilateral leg pain. On examination, he showed uneven gait, pain in the right thigh and leg with intact sphincter function. A magnetic resonance image of the lumbar spine showed a large mediolateral herniated disc at L3-L4, also the patient had a stenosis at the thoracic level at T11-T12 and T12-L1. The plan was to do an MRI with Gado however the patient went into retention and so was operated before the MRI with Gado.

Results: Intraoperatively the pathology was first identified as a big cyst like structure, that as thought to be a synovial cyst, and then once it was opened it turned out to be an intradural extension of a herniated disc. Decompression was also done at the thoracic level and finally instrumentation was done from T10 to S1.

Conclusion: Intradural lumbar disc herniations are a rare entity, most of the time the diagnosis is not made pre operatively, however once it is diagnosed intra-operatively, careful removal of the herniated material should be done to avoid damaging the rootlets, sometimes u have double pathologies that need to be addressed like in this patient where he had both lumbar and thoracic stenoses.

Keywords: Disc; Intradural; Lumbar stenosis; Thoracic stenosis; Decompression; Dual pathology

Case Report

The first case of lumbar intradural disc herniation was reported in 1942 [1] since then, more than 150 cases have been reported, mostly affecting the lumbar spine.

It has been postulated that chronic spinal degenerative disease coupled with adhesions between the Posterior Longitudinal Ligament (PLL) and the Dura are the pathomechanisms responsible [2].

We report a case of a 63 year old Italian man, who presented to us with difficulty walking and urinating, with a sequestered disc at the level of L3-L4 which was found to be intradural disc herniation intra-operatively, he also had a stenosis secondary to a disc herniation at T11-T12 and T12-L1 that needed to be addressed.

A 63 year old man, previously known to have hypertension, the patients history dates back to a couple of years before his presentation when he had leg pain that was successfully treated with a discectomy at the L5-S1 level.

He was doing well till a couple of months before presenting to us when he was having progressively increasing back pain and right thigh numbness and pain and a couple of days prior to presentation he started having difficulty with urination.

On examination he had numbness along the L3 right distribution, and he had right L3 radiculopathy, with normal sphincter tone.

The MRI of the lumbar spine, [Figures 1 and 2] showed multiple degenerative changes with foraminal stenosis at the L4 L5 left side, and a sequestered disc at the L3-L4 level and at the thoracic level he had stenosis secondary to a disc herniation and ligamentous hypertrophy at both levels T11-T12 and T12-L1.

The plan was to get an MRI with Gado to better analyse the pathology at L3-L4 level however the patient developed full retention and was rushed to the operating room.

There are several options that can be done in approaching this patient, the thoracic pathology can be addressed through a minimally invasive manner and then the lumbar pathology can also be addressed separately in the same setting either with a minimal invasive fashion or open. Or a second way to approach this can be a selective decompression and fusion of the thoracic level and then decompression alone at the lumbar level, either MIS or open, with or without instrumentation and fusion.

Another way to go is a full open approach with wide decompression and instrumentation from T10 to s1 which is what we did.

So intra-operatively, after the regular posterior approach with the subperiosteal dissection, instrumentation was done with pedicular screws from T10 down to S1.

Then the left L4 L5 foraminotomy was done first to decompress the left L4 nerve root, and afterwards at the Level of L3-L4 disc, a bulge was seen opposite to facets that were thought to be a synovial cyst then once it was opened it turned out to be disc material that herniated into the dura.

Careful inspection for more intra-dural fragments was done and the the dura was closed with 5-0 prolene suture. After that the compression he has at the thoracic levels was addressed with T10 T11 T12 bilateral laminectomies.

Post op the patient did very well, the pain disappeared in his left leg, and he was able to ambulate better, and urination was normal with normal sphincter control [Figure 3-6].

Figure1: Sagittal T2 image showing the sequestered fragment at the L3-L4 level with multiple level degenerative disc disease. Also the stenosis at the T11-T12 and t12-L1 levels can be seen.

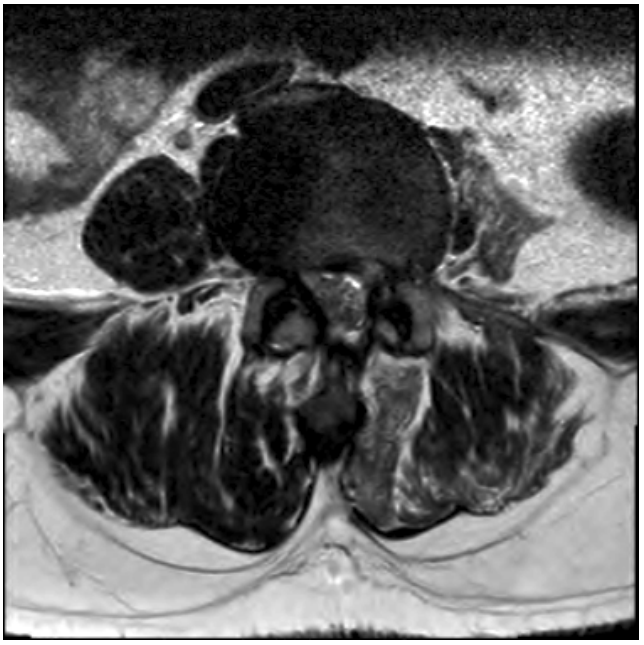

Figure 2: Axial T2 image of the sequestered fragment at the L3-L4 level.

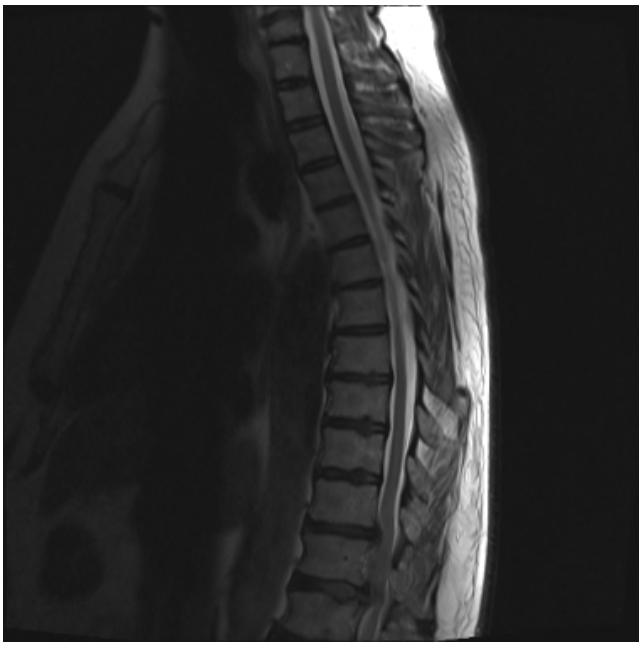

Figure 3: MRI T2 Sagittal view showing the compression at the lower thoracic levels.

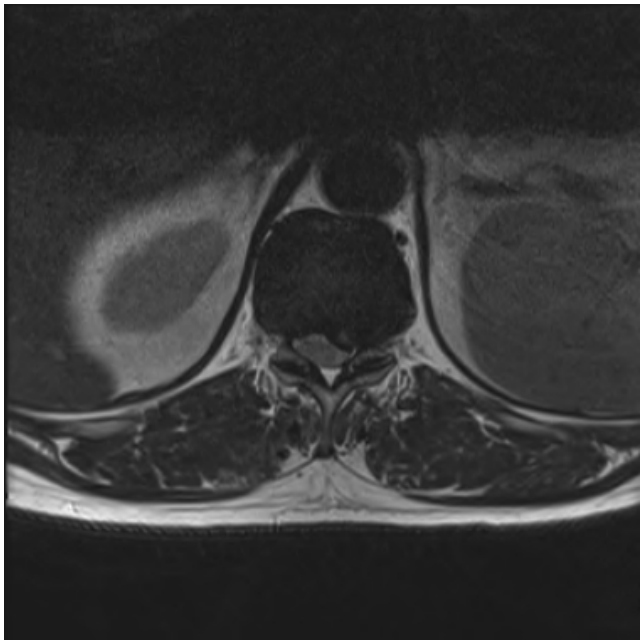

Figure 4: Axial T2 view of the thoracic compression.

Figure 5: Post op standing X-ray (AP).

Figure 6: Post op standing X-ray (Lateral view).

Discussion

Lumbar intradural disc herniation was first described by Dandy in 1942 and comprises about 0.3% of lumbar disc protrusions. It is uncommon but has been well described in a limited number of case reports.

The preoperative diagnosis of IDH is still difficult, and requires contrast enhanced MRI of the spine. The importance of IDH lies in fact that most patients such patients are diagnosed as intervertebral disc disease and therefore the work up of these patients lacks contrast enhanced MRI. This leads to a situation where the finding of intradural disc comes as a surprise for the unprepared surgeon. Proper awareness of prevalence, symptoms, pathogenesis and appropriate investigations helps the surgeon reach a diagnosis pre operatively and hence be prepared.

The demographics of the disease vary from those of traditional extradural herniations: one recent review found an incidence of 0.2% in 40- to 50-year olds and 2.2% in 50- to 60-year.

Olds In addition, the anatomical distribution differs: 55% of intradural lumbar discs are found at L4–L5, 16% at L3–L4, and 10% at L5–S1 [2].

Gadolinium-enhanced MRI has been deemed the "gold standard" for diagnosis, though the diagnosis is often made intraoperatively [3,4].

Rim enhancement of the lesion coupled with discontinuity of the PLL is expected findings in gadolinium-enhanced MRI [3]. Rarely, ruptured disc fragment may migrate intrathecally or may perforate the

radicular sheath, leading to intraradicular disc. The intraradicular type seems to be more frequently associated with previous surgery. Migration of the disc nucleus pulposus in the intradural site requires perforation of the annulus fibrosis, the posterior longitudinal ligament and the Dura mater. The explanation of the Dural perforation by the disc herniation is not clear though several reasons are known that may contribute like congenital narrowing of the spinal canal with less epidural space, adhesions between the annulus fibrosis, posterior longitudinal ligament, diameter, congenital and iatrogenic fineness of the duramater.

Blikra demonstrated presence of firm anatomic adhesions between the anterior wall of the dural sac and the posterior longitudinal ligament, particularly at the L4-L5 level. Thus in case of dural perforation, the herniated disc would perforate the annulus fibrosis, the PLL and the dura mater as if they were one structure. The existence of such an anatomic situation at has not been proven at other sites of lumbar disc levels. This can explain the anterior intradural herniation at L4-L5 but not the lateral or other levels.

The treatment of IDH basically involves surgical removal of ruptured disc material. At surgery, the dura and root must be carefully explored. IDH needs to be recognized and treated appropriately at the time of the initial operation to prevent the development of the back failure Cauda equine syndrome and sphincter disease have an incidence of 30% of all reported cases.

Double pathology should be suspected when not all the symptoms reported by the patient can be explained by what is seen on an MRI and further work up should be done to rule out stenosis at other levels. And once diagnosed both pathologies can be addressed at the same time.

Conclusion

Intradural disc herniation is a rare variant of a very common disease that merits mention because of the need of awareness of its existence. The diagnosis is commonly an intraoperative surprise because contrast MRI is not routinely advised in evaluation of radicular pain. Intraradicular disc protrusion might result in failure of lumbar disc surgery [5-12]. Therefore the intervertebral foramina and roots must be carefully explored in every case of lumbar disc herniation. Every neurosurgeon involved in spinal surgery must be aware of this rare pathology which, when overseen during the intervention, could have disastrous consequences for the patient.

References

1. Dandy WE (1942) Serious complications of ruptured intervertebral disks. JAMA 119:474 – 477.
2. D'Andrea G, Trillò G, Roperto R, Celli P, Orlando ER, et al. (2004) Intradural lumbar disc herniations: the role of MRI in preoperative diagnosis and review of the literature. Neurosurg Rev 27: 75-80.
3. Wasserstrom R, Mamourian AC, Black JF, Lehman RA (1993) Intradural lumbar disk fragment with ring enhancement on MR. AJNR Am J Neuroradiol 14: 401-404.
4. Snow RD, Williams JP, Weber ED, Richardson PH (1995) Enhancing transdural lumbar disk herniation. Clin Imaging 19: 12-16.
5. Aydin MV, Ozel S, Sen O, Erdogan B, Yildirim T (2004) Intradural disc mimicking: a spinal tumor lesion. Spinal Cord 42: 52-54.
6. Blikra G (1969) Intradural herniated lumbar disc. J Neurosurg 31: 676-679.
7. D'Andrea G, Trillò G, Roperto R, Celli P, Orlando ER, et al. (2004) Intradural lumbar disc herniations: the role of MRI in preoperative diagnosis and review of the literature. Neurosurg Rev 27: 75-80.
8. Epstein NE, Syrquin MS, Epstein JA, Decker RE (1990) Intradural disc herniations in the cervical, thoracic, and lumbar spine: report of three cases and review of the literature. J Spinal Disord 3: 396-403.
9. Hodge CJ, Binet EF, Kieffer SA (1978) Intradural herniation of lumbar intervertebral discs. Spine (Phila Pa 1976) 3: 346-350.
10. Jenkins LE, Bowman M, Cotler HB, Gildenberg PL (1989) Intradural herniation of a lumbar intervertebral disc. J Spinal Disord 2: 196-200.
11. Mut M, Berker M, PalaoÄŸlu S (2001) Intraradicular disc herniations in the lumbar spine and a new classification of intradural disc herniations. Spinal Cord 39: 545-548.
12. Koç RK, Akdemir H, Oktem IS, Menkü A (2001) Intradural lumbar disc herniation: report of two cases. Neurosurg Rev 24: 44-47.