

Lumbar Disc Hernia Migrating To The Epidural Posterior Space: A Rare Entity

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Abstract

INTRODUCTION

Lumbar disc hernia and migration is a well-known phenomenon [1,17]. It can lead to the appearance of clinical signs and sometimes worsening of neurological state. Usually, the direction of movements is facilitated by the anterior epidural space, through the Longitudinal Posterior Ligament [1,12,30].

It rarely reaches the posterior epidural space (sublaminar area) and therefore can be responsible for misdiagnosis, even where modern imaging modes are available.

We've recorded four cases of posterior epidural disc migration (PEDM) collected in the Department of Neurosurgery of Fann Teaching Hospital Dakar, Senegal. Our aim is to describe clinical and radiological aspects of this specific localization on the one hand and on the other hand, suggest some useful procedures which can help to reduce risk errors when MRI is not disposable.

CASE 1

A 52 year- old man, mechanic is admitted for left radicular L5 pain. He had no past medical story. One week before, he noticed a weakness of his lower limbs and the appearance of urine incontinence. Clinical examination revealed a complete paraplegia (0/5 at motor testing), straight leg raising limitation (45°), perineum anesthesia, and an absence of knee jerk and plantar reflexes.

CT scan showed non specific lumbar canal stenosis (Fig 1)

Figure 1

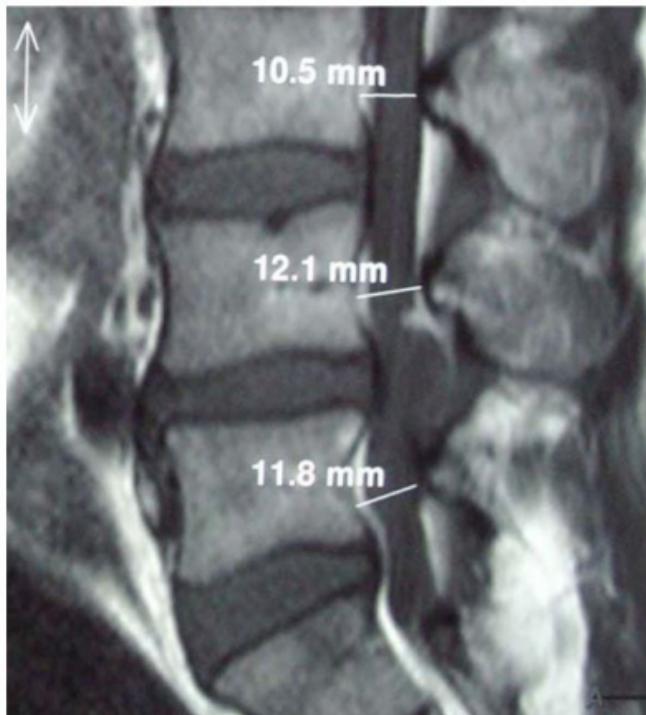
Lumbar canal stenosis with epidural fat tissue disappearance (case 1)



And MRI was performed and a T1 and T2 hypo intense posterior epidural mass lesion found (Fig 2)

Figure 2

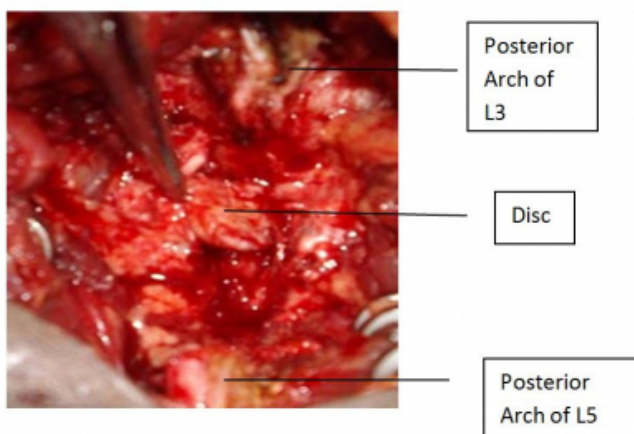
T1 MRI : Epidural posterior mass lesion (case1)



The patient immediately underwent surgery. After an L4 laminectomy, the bulk disc hernia was removed. An extension to the L5 armpit was also found and removed.

Figure 3

Operative view of disc removal (case 1)



A partial recovery of motor function was noticed (3/5 motor grading). Three months later, motor and sensory functions were back to normal but urinary troubles remained.

CASE 2

A 47 year old man was admitted for low back pain and bilateral radicular bilateral algia. These disorders started two

months ago. A loss of urinate ability and constipation were also noted.

Upon clinical examination, the patient presented paraparesis (3/5 on the left and 4/5 on the right limb), S1 bilateral anesthesia and stiff lumbar spine as well as an absence of knee and achilles reflexes.

An MRI was made and showed posterior epidural mass lesion in the L4-L5 posterior space, of a 28.3mm and 11.6mm size. There was also an important mass effect on the dura mater.

A posterior approach surgery was performed. After laminectomy, the disc hernia was gently separated from dura mater and removed.

Four months later, the only remaining trouble was urinary incontinence. Histopathological examination revealed signs of disc degeneration associated with connective tissue.

CASE 3

A 48 year old man, MD, complained of bilateral L5 sciatica with urinate disability. A long past medical history of low back pain was noted.

He was found to present flaccid paraparesis (4/5), L5 and S1 loss of sensitive functions, straight raise limitation and a stiffness of the lumbar spine (35°).

The patient underwent an MRI which revealed L5 hypointense mass lesion enhanced by contrast (Fig 5 and 6).

Figure 4

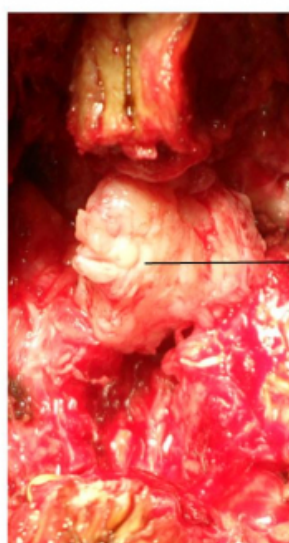
Mass epidural posterior lesion enhanced by contrast (case 3)



A posterior approach surgery was done. After an L4 laminectomy, the disc was removed from the posterior epidural space. Six months after, all neurological disorders disappeared. A microscopic examination showed aspects of disc degeneration.

Figure 5

Operative view (case 3)



Disc
removal

CASE 4

A 42 year old fireman was complaining about bilateral sciatica after working on a weight load lift. The disorders had been noticed for two months. One month before admission, he presented with constipation and urinary disability. Clinical examination demonstrated bilateral paraparesia (4/5), S1 hypoesthesia and perineal anesthesia.

MRI was performed on him, which revealed an L4-L5 extruded disc with migration to the posterior epidural space.

The disc was removed through L4 laminectomy. The post-operative period was uneventful. One year after surgery, there still was an S1 right motor deficit (4/5) and ipsilateral partial loss of his sensitive function.

DISCUSSION

From 2008 to 2011 380 lumbar disc hernias were followed in our Department. Four posterior epidural disc migrations were found (0, 16%). This rarity is frequently noted [5,8,17]

The underneath table summarizes reported cases of PEDM

Table 1

Reported cases of PEDM

Author, Year	N° of cases	Clinical Presentation	Imaging	Lumbar level
Lombardi, 1973	2	Radicular pain	Myelo	L4-L5 L5-S1
Lichter, 1989	1	Lumbago	Myelo CT	L4-L5
Lutz et al, 1990	1	Radicular pain	Myelo CT	L4, L5
Hirabayashi et al, 1990	1	CES	Myelo CT, MRI	L4-L5
Sekerci et al, 1992	1	CES	Myelo	L4-L5
Sakas et al, 1995	1	Radicular pain	CT	L4-L5
Bonaroti and Welch, 1998	1	CES	MRI	L4-L5
Hodges et al, 1999	1	Lumbago	MRI	L4-L5
Neugroschi et al, 1999	2	Lumbago	Myelo CT, MRI	L4-L5
Robe et al, 1999	2	Radicular pain	Myelo CT	L4-L5
Saruhashi et al, 1999	1	Radicular pain	?	L4-L5
Lisai et al, 2000	1	CES	MRI	L4-L5
Dosoglu et al, 2001	1	CES	MRI	L4-L5
Eysel et al 2001	3	CES, Radicular pain, Lumbago	MRI	L4-L5
Sen et al, 2001	1	CES	CT	L4-L5
Kazeyli et al, 2003	3	Lumbago, CES	MRI	L4-L5
Scnel et al, 2003	1	Lumbago	CT	L4-L5
Kim et al, 2004	1	CES	MRI	L4-L5
Walsh et al, 2004	1	CES	CT	L4-L5
Tatli et al, 2005	2	CES	MRI	L4-L5
Chen et al, 2006	1	Radicular pain	MRI	L4-L5
El Asri et al, 2008	2	Radicular pain	CT	L4-L5
Derineck et al, 2009	1	CES	MRI	L4-L5
Carvi y Nieves et	5	Radicular pain (4)	MRI	L4-L5 (1)
Hochlerhage, 2009		CES (1)		L4-L5 (1)
				L4-L5 (2)
				L4-L5 (1)
Teufack et al, 2010	1	CES	MRI	L4-L5
Kim et al, 2010	1	CES	MRI	L4-L5
Ali Akhadar et al, 2011	6	CES (4) Radicular pain 2	MRI (2) CT (4)	L4-L5 (1) L4-L5 (3) L4-L5 (1) L4-L5 (1)
Our cases	4	CES	MRI	L4-L5

Several mechanisms are supposed to explain the appearance of posterior epidural disc migration.

Solid anatomic barriers provide resistance to the posterior migration: septum posticum, posterior longitudinal ligament (PLL), the nerve root, epidural membrane and epidural fat tissue. These structures provide strong resistance and limit movement of posterior fragment [1,2]. When they get fragile for any reason it can predispose to PEDM [12].

Disc position toward the root is also thought to be one of the causal factors. An excessive distance breaks the space closure. This possibility is made easier when the angle between dural sac and nerve root is wide open [1]

It is well known that some predisposing etiological factors exist: hard labor, inadequate vertebral physiotherapy [16,23,27]. This relation does not always exist because one of our patient never had a heavy weight lifting activity.

Male predominance is usual and exists in all our cases. Mean age is 54 years versus 44 year in our service [1,23]. This is probably due to the predominant youth population in our country.

Lumbar spine is the most affected area [4,23,32]. Cervical and thoracic spine localization are very rare [1,15,29]

Due to the size of the hernia and lumbar canal stenosis, cauda equina syndrome (CES) is the predominate clinical syndrome. It can be complete on incomplete. The diagnosis is frequently made late and therefore, the therapeutic result may be bad.

Presumptive diagnostic is very difficult in case of lack of MRI. CT scan and myelography can be helpful but they give no specific images. Unfortunately they are the only available radiologic investigations in most African sub Saharan countries.

MRI is the gold standard for diagnostic purposes even if it has limits for an absolute diagnosis.

In the typical MRI, herniated disc is hypo intense in T1 weighted and [1,10] hypo or hyper intense in T2 weighted [25,35]. Contrast injection is strongly recommended. It permits surrounding enhancement provided by inflammatory peri fragment disc reactions () Other possible differentials can then be excluded (tumor, hematoma, infections) [5,18,21]. In our practice an important question to ask is : how to deal with PEDM in case of lack of MRI? The differential diagnosis with other nerve root compressions is not easy (lumbar canal stenosis, anterior epidural disc hernia). It can be interesting to look for the

epidural fat tissue disappearance or the presence of a disc density mass in the sublamina area.

Surgical treatment is mandatory. Minimal invasive approaches like interlaminar or endoscopy can be dangerous and a source of complication (dural damage, incomplete disc removal). We prefer laminectomy which allows complete exploration, safe resection of adhesions and intervertebral disc space exploration.

Surgical procedure must be performed in the quickest possible time when cauda equina syndrome is present. In case of late treatment the lesions can be definitive (two of our patients present permanent urinary disorders)

CONCLUSION

Epidural posterior lumbar disc migration is rarely seen. No presumptive diagnosis is possible without MRI. In our practice, MRI is not always possible to realize. On CT or myeloCT, disc density in the sublamina area must be looked for carefully. When cauda equina syndrome is present, laminectomy is the safest approach.

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