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A Rare Case of Sequestered Intervertebral Disc Mimicking a Tumour

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ABSTRACT

Although intervertebral disc herniation is commonly seen in clinical practice, spinal canal migration of disc fragments is rarely found and can cause a diagnosis dilemma. Intervertebral disc herniation is defined as displacement of disc material beyond its anatomical space. The lumbar spine is the most commonly affected; mostly L4/L5 and L5/S1 region. Disc sequestration refers to the migration of herniated disc fragments into the epidural space, or in rare cases intradural space. Hereby we present a case of sequestered intradural disc at the level of L3/L4 level mimicking a spinal tumour.

A 46-year-old man presented with complaints of dull-aching bilateral lower limb pain for the past five years. Then, for the past three months, he experienced numbness over bilateral feet. For the past one month, there is weakness of bilateral lower limbs and he was unable to stand and walk. There is no erectile dysfunction, urinary and faecal incontinence. There was no history of trauma. Examination revealed sensory and motor deficits over bilateral lower limbs from level L3 onwards. There is no spine tenderness. Bilateral straight leg test were negative.

MRI spine reported as L3/L4 intradural spinal lesion that demonstrates T1W iso-intensity, predominantly low signal intensity on T2W with minimal area of hyperintensity within. Lesion measured 1.3 x 1.4 x 2.5cm. Laminectomy was done and intra-operatively it was noted sequestered disc material protruding into dura from L2/L3 up to L4/L5. Post-operative period was uneventful and patient regained full muscle power by post-operative day-3.

MRI is the gold standard diagnostic tool for spinal pathologies, nevertheless migrated disc fragments can be mistaken for spinal tumour. Hence, it important to keep intervertebral disc prolapse as a differential. In view of the excellent prognosis in these cases, it is not advisable to delay surgery with additional invasive investigation.

Keywords: *Sequestered intervertebral disc, Spinal tumour mimic.*

1. Introduction

Prolapsed intervertebral disc is a frequently encountered clinical diagnosis. Usually presented with history of heavy lifting or trauma. However, sequestered prolapsed intervertebral disc is an unusual entity.

Disc sequestration is defined as the migration of the herniated disc fragment, completely separating it from the parent disc [1]. Commonly, it migrates into the epidural space. Intradural disc herniation only comprise 0.26-0.30% of all herniated discs [2]. Among the intradural disc herniation, 92% are found in the lumbar region, followed by 5% in the thoracic region and 3% in the cervical region.

The first case report on intradural herniation was done by Dandy [3]. This entity causes a diagnostic dilemma as the sequestered disc often mimics a spinal tumour in radio-imaging, as seen in this case.

2. Clinical History

A 46-year-old gentleman, presented with dull-aching left lower limb pain for the past five years. The pain progressively worsened and also affected the right lower limb. Past three months, he started developing numbness over his left foot and then proceeded with numbness over his right foot.

He subsequently began to lose power over bilateral lower limbs resulting him being unable to ambulate for the past one month from his presentation to the healthcare facility. Denied any bladder and bowel incontinence or erectile dysfunction. Negative history for trauma to the back, heavy lifting, loss of appetite or weight. Denied family history of malignancy. He earns a living as a lorry driver.

3. Examination Findings

Neurological examination:

- ✓ Sensory and motor deficits over bilateral lower limbs from level L3 onwards.
- ✓ Power of 0/5 bilaterally from L3 onwards.
- ✓ Bilateral knee and ankle reflexes unable to be elicited with equivocal bilateral plantar reflexes.
- ✓ Normotonia.
- ✓ Intact anal tone with presence of bulbocavernosus reflex.

Spine examination:

- ✓ No step deformity, tenderness and paravertebral spasm.
- ✓ Bilateral straight leg raising test negative.

4. Imaging

MRI reported as L3/L4 intradural spinal lesion causing severe spinal stenosis. The lesion demonstrates T1W iso-intensity, predominantly low signal intensity on T2W with minimal area of hyperintensity within. Lesion measuring 1.3 x 1.4 x 2.5cm. Differentials include myxopapillary ependymoma, astrocytoma or metastasis.

Lumbar spondylosis with multilevel nerve root impingement and spinal canal stenosis were also seen. There is also L3/L4, L4/L5 and L5/S1 annular tear seen.

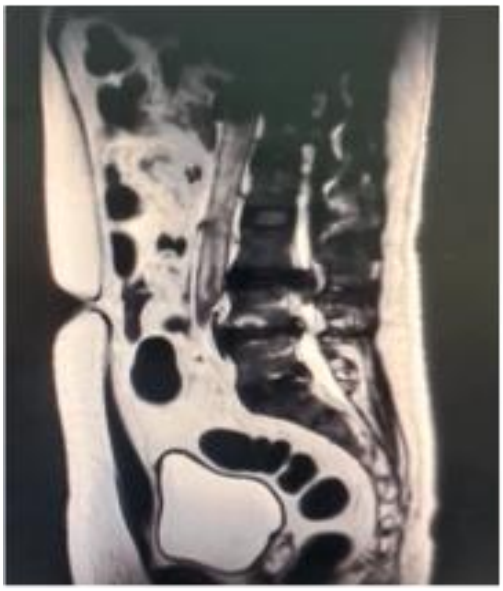

Fig.1(a). T2-weighted sagittal view of MRI lumbo-sacral

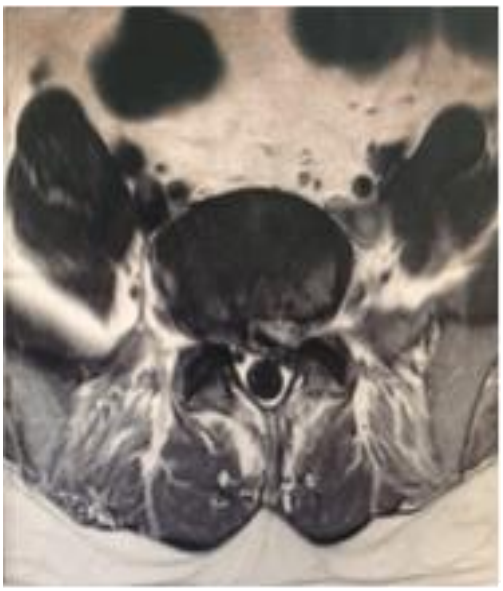

Fig.1(b). T2-weighted axial view of MRI lumbo-sacral

5. Surgical Intervention

Laminotomy was done with intra-operative findings of disc material protruding into the dura from L2/L3 up to L4/L5. The nerve roots were displayed laterally by the sequestrated discs. The discs were then removed.

5.1. Outcome

Post-operative period was uneventful. Patient had regained full power over bilateral lower limbs and was able to ambulate on day 3 of post-operation.

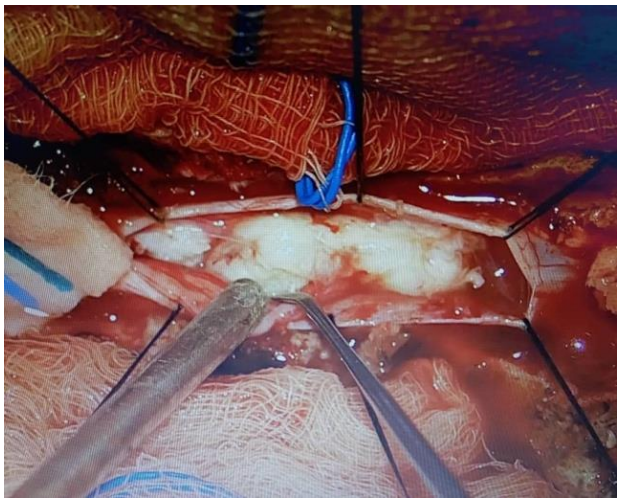

Fig.1(c). Intra-operative picture showing soft and whitish sequestered disc material

5.2. Histopathological Examination

Intra-operative specimen was sent for histopathological examination for confirmation. There were chondrocytes seen, thus confirming specimen as intervertebral disc.

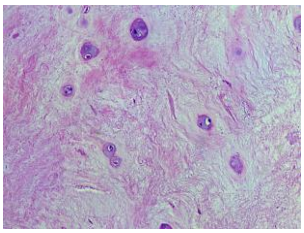

Fig.2(a). H&E staining of chondrocytes

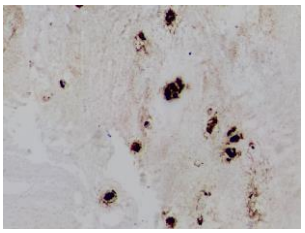

Fig.2(b). D2-40 immunohistochemical staining positive for chondrocytes

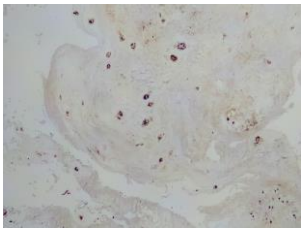

Fig.2(c). S-100 immunohistochemical staining for chondrocytes

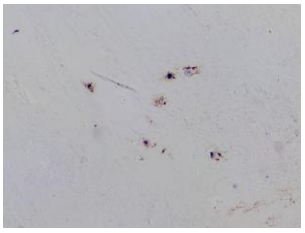

Fig.2(d). CD99 immunohistochemical staining positive for chondrocytes

6. Discussions

Spinal tumour was initially suspected in-view-of long-standing history and gradual worsening of symptoms, with a negative history of trauma. Radiological imaging further strengthened our suspicion. However, upon proceeding with a laminotomy a sequestered intravertebral disc was found.

Retrospectively, based on his occupational background, being a lorry driver was a strong risk factor to develop herniation of lumbar disc [4]. Continuous and long-hour journeys had exposed him to prolonged whole body vibration which could have contributed to the disc herniation.

Possible mechanism behind intradural migration of disc is due to the firm adherence of ventral dura to posterior longitudinal ligament [5],[6]. The nucleus pulposus passes through annulus fibrosus, posterior longitudinal ligament and dura mater as if it's one structure. This firm attachment is usually seen at lower thoracic and lumbar vertebrae, especially at L4-L5 level. Thus, the common occurrence of sequestration of herniated intervertebral disc is seen over lumbar region followed by thoracic region.

From literature review, it was shown that evidence of peripherally enhanced lesion in a contrast enhanced MRI may indicate presence of intervertebral disc, however in our case, peripheral enhancement was not seen [7]. Hence, absence of this criteria should not rule out presence of intervertebral disc. Nevertheless, MRI still remain as the best modality of radiological imaging.

Histopathological confirmation is important to exclude cartilage tumours; such as chondrosarcoma because they arise in the similar anatomical position; from posterior elements or vertebral [1]. In our case, the histopathological examination revealed normal chondrocytes with no features of malignancy such as loss of tissue architecture, neovascularization or presence of necrosis.

The surgical outcome of our case is good with the patient able to regain full power of his lower limbs. Literature review also showed similar outcomes [2],[7],[8]. Thus, we suggest for prompt surgical intervention despite diagnostic dilemma, to ensure good prognosis. Additional invasive investigation to ascertain diagnosis prior to surgery does not seem justified.

7. Conclusion

- It is important to consider intervertebral disc prolapse as a differential diagnosis in cases of suspected intradural spinal lesions, especially where annular tear is seen.
- With good prognosis and recovery in such cases, it is advisable to not delay surgery with additional invasive investigation.

8. Future Suggestion

We suggest for a systematic review of similar case reports for further understanding of this pathology.

Declarations

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Competing Interests Statement

The authors declare no competing financial, professional, or personal interests.

Consent for publication

The authors declare that they consented to the publication of this research work.

Declaration of Patient Consent

The authors certify that they have obtained all appropriate consent. In the form the patient(s) has/have given his/her consent for his/her images and other clinical information to be reported in the journal. The patients understand that their name and initials will not be published, and due efforts will be made to conceal their identity, however anonymity cannot be guaranteed.

References

[1] Hoch B., Hermann G. (2010). Migrated herniated disc mimicking a neoplasm. Skeletal Radiol., 39(12): 1245–9. doi: 10.1007/s00256-010-1004-3.

[2] Negovetić L, Cerina V, Sajko T, Glavić Z. (2001). Intradural disc herniation at the T1-T2 level. Croat Med J., 42(2): 193–5. PMID: 11259744.

[3] Dandy We. (1942). Serious Complications of Ruptured Intervertebral disks. JAMA, 119(6): 474–477. doi: 10.1001/jama.1942.02830230008002.

[4] Heliövaara M. (1987). Occupation and risk of herniated lumbar intervertebral disc or sciatica leading to hospitalization. J Chronic Dis., 40(3): 259–64. doi: 10.1016/0021-9681(87)90162-7.

[5] Yildizhan A, Paşaoğlu A, Okten T, Ekinci N, Aycan K, Aral O. (1991). Intradural disc herniations pathogenesis, clinical picture, diagnosis and treatment. Acta Neurochir (Wien), 110(3-4): 160-5. doi: 10.1007/BF01400685.

[6] Blikra G (1969). Intradural herniated lumbar disc. J Neurosurg., 31: 676–679. doi: 10.3171/jns.1969.31.6.0676.

[7] Sheng-Tang Li, Tao Zhang, Xue-Wen Shi, Hua Liu, Cheng-Wei Yang, Ping Zhen, Song-Kai Li (2022). Lumbar disc sequestration mimicking a tumor: Report of four cases and a literature review. World J Clin Cases, 10(9): 2883-2894. doi: 10.12998/wjcc.v10.i9.2883.

[8] Peng B., Pang X. (2013). Tumour-like lumbar disc herniation, BMJ Case Rep., doi:10.1136/bcr-2013-009358.