

Case Report

An intraspinal extradural lipoma with spinal epidural lipomatosis: A case report and a review of literature

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Received: 17 August 18 Accepted: 07 September 18 Published: 23 October 18

Abstract

Background: Intraspinal extradural lipomas are very rare and should be differentiated from spinal epidural lipomatosis (SEL) and/or angioliomas.**Case Description:** A 76-year-old male presented with left lower extremity radiculopathy. The magnetic resonance imaging (MRI) revealed hyperplasia of epidural fat at the L2–3 and L3–4 levels accompanied by a lipomatous L4–5 mass. Following resection of this mass and hyperplastic epidural fat, the histological examination was consistent with an intraspinal extradural lipoma and SEL.**Conclusion:** This case indicates that asymmetrical compression of the dural sac may be attributed to an intraspinal extradural lipoma vs. just SEL and/or an angiolioma.**Key Words:** Histological examination, intraspinal extradural lipoma, spinal epidural lipomatosis, spinal tumor

Access this article online

Website:www.surgicalneurologyint.com**DOI:**

10.4103/sni.sni_280_18

Quick Response Code:

INTRODUCTION

An intraspinal extradural spinal lipoma without spinal dysraphism is very rare. It accounts for only 0.4%–0.8% of all intraspinal tumors.^[2,4,9] Differentiation of an intraspinal extradural lipoma from spinal epidural lipomatosis (SEL – overgrown normal adipose tissue in the epidural space^[1]) and angioliomas (e.g. 0.14% of all spinal tumor containing vascular tissue^[7]) is imperative.^[4,9]

Herein, we present the clinical, radiographic, surgical, and pathological assessment of a patient with an intraspinal extradural lipoma and SEL.

CASE REPORT

History and examination

A 76-year-old male was presented with left lower extremity radiculopathy that had progressed over the last

2 years. Sixteen years before admission, an intracerebral hemorrhage left him hemiplegic on the left side, necessitating the use of a wheelchair.

The magnetic resonance imaging (MRI) of the lumbar spine revealed spinal stenosis at the L2–3, 3–4, and 4–5 levels. Additionally, the T2-weighted images showed degenerative disc disease and hyperplastic

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How to cite this article: Tateiwa D, Yamasaki R, Ariga K, Hayashida K, Wada E. An intraspinal extradural lipoma with spinal epidural lipomatosis: A case report and a review of literature. *Surg Neurol Int* 2018;9:212.

<http://surgicalneurologyint.com/An-intraspinal-extradural-lipoma-with-spinal-epidural-lipomatosis:-A-case-report-and-a-review-of-literature/>

epidural fat contributing to L2–3 and L3–4 stenosis [Figure 1a and b]. The sagittal MR studies also revealed anterior displacement of the dural sac due to posterior epidural fat [Figure 1c]. The axial T2-weighted image showed that a hyperintense mass occupied the left side of the spinal canal, and compressed the dural sac at the L4–5 level [Figure 2].

Operation and postoperative course

Seven months later due to persistent complaints, the patient underwent surgery consisting of fenestrations at the L2–3, 3–4, and 4–5 levels. At L4–5, a yellow, encapsulated, lobulated lipomatous mass with epidural fat filled the epidural space [Figure 3a and b]. The lesion was readily dissected away from the dura allowing for an

en bloc resection [Figure 3c]. At the L2–3 and 3–4 levels, additional hyperplastic epidural fat was removed in a piecemeal fashion [Figure 4a and b].

Histologic analysis

The histological examination of the encapsulated mass showed lobulated mature adipose tissue enclosed by fibrous tissue, compatible with a lipoma, while the histology of the L2–3 and L3–4 epidural fat was consistent with just mature adipose tissue; none of the slides demonstrated cellular atypia [Figure 5a and b]. One month postoperatively, the patient reported a significant relief of the pain in his left leg, while paresthesia improved but did not fully resolve.

DISCUSSION

There are a few cases of intraspinal extradural lipoma without spinal dysraphism. Here, we reviewed 10 studies in the literature and summarized the diagnosis and surgical management of this 76-year-old male^[3-6,8,9] [Table 1].

Intraspinal extradural lipomas typically occur in the lumbar spine (10 of 11 patients in the literature). Meisner *et al.* reported a thoracic lipoma at the T4–9 level resulting in paraplegia.^[6] Loriaux *et al.* reported three patients with radiculopathy attributed



Figure 1: Axial T2-weighted image showing the hyperplastic epidural fat compressing the dural sac at the L2–3 (a) and L3–4 (b) levels (arrow). (c) A sagittal image showing anterior displacement of the dural sac because of compression of the hyperplastic epidural fat (arrow)

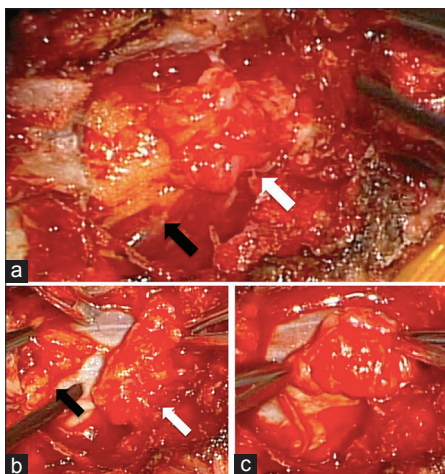


Figure 3: (a) Fenestration at the L4–5 level was performed; a yellow, lobulated lipomatous mass (white arrow), and epidural fat (black arrow) were observed in the epidural space. (b) The mass (white arrow) was easily separated from epidural fat (black arrow). (c) Because the mass was enclosed by a fibrous capsule, we could resect it en bloc



Figure 2: Axial T2-weighted image showing a hyperintense mass occupying the left side of the spinal canal and compressing the dural sac at the L4–5 level (arrow)

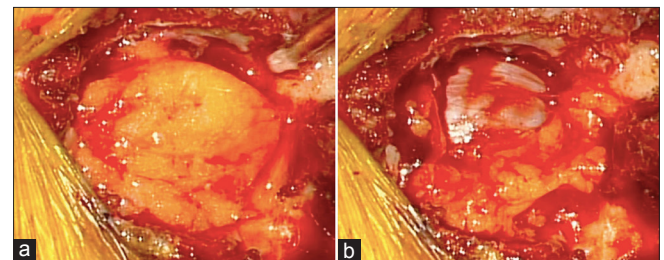


Figure 4: (a) The hyperplastic epidural fat in the epidural space at the L3–4 level. (b) Resection of the hyperplastic epidural fat by piecemeal technique due to the absence of a fibrous capsule

Table 1: Summary of cases treated for symptomatic intraspinal extradural lipoma

Author (s), Year	Age, sex	Tumor site	Treatment	Outcome
Loriaux <i>et al.</i> (2015)	38, M	L5-S1 lt foramen	Elective left laminectomy, medial facetectomy, foraminotomy, and resection of the lipoma	Improvement
	40, M	L3-4 lt foramen	L3-4 left laminectomy, medial facetectomy, foraminotomy, and resection of the lipoma	Improvement
	44, M	L4-5 lt foramen	L4-5 left laminectomy, facetectomy, and foraminotomy for resection of the lipoma	Improvement
Kim <i>et al.</i> (2012)	55, M	Spinal canal at L5	Left hemilaminectomy and resection of the lipoma	Improvement
Zevgaridis <i>et al.</i> 2008	62, F	Left L5 recessus	L4-5 extended left fenestration and resection of the lipoma	Complete recovery
Schizas <i>et al.</i> (2003)	55, M	Spinal canal at L5	L5 laminectomy and resection of the lipoma	Improvement
Meisheri <i>et al.</i> (1996)	20, M	Spinal canal at T4-9	Laminectomy from T5-8 and resection of the lipoma	No neurological improvement
Marks <i>et al.</i> (1985)	43, M	Spinal canal at L5	Resection of the lipoma (presence or absence of laminectomy was not unknown)	Complete recovery
	62, M	Spinal canal at L5-S1	Resection of the lipoma (presence or absence of laminectomy was not unknown)	Complete recovery
	56, M	Spinal canal at L3-4	Laminectomy from L3-4 and resection of the mass	Details unknown
Present case	76, M	Spinal canal at L4-5	Fenestration and resection of the mass	Improvement

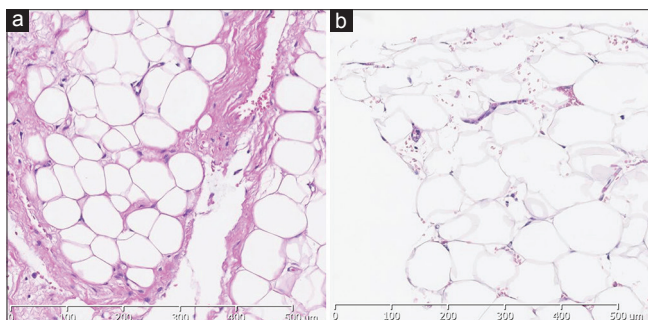


Figure 5: (a) Microscopic findings of the lipoma showing mature adipose tissue enclosed by fibrous tissue [hematoxylin and eosin staining (H and E), ×100]. (b) Microscopic findings of epidural fat showing mature adipose tissue without surrounding fibrous tissue (H and E, ×100)

to extradural/intraforaminal lipomas; these lesions were all small ($1.1 \times 0.8 \times 0.2$ cm, $1.1 \times 1.1 \times 0.3$ cm, and $2.5 \times 1.6 \times 0.3$ cm).^[4] The “empty foramen sign” on MRI reflected displacement of the nerve root cranially or caudally due to intraforaminal lipoma.^[4]

In the literature, the postoperative course for most patients was uneventful: three completely recovered (27%), six showed improvement (55%), one showed no improvement (9%), while one patient’s status was unknown (9%).^[3-6,8,9]

As these intraspinal extradural lipomas are rare, they may be easily overlooked,^[4,9] particularly when epidural fat is hyperplastic. This case highlights the importance of considering an intraspinal extradural lipoma when looking at an epidural compressive and often asymmetric fatty encapsulated lesion on MRI.

CONCLUSION

A 76-year-old male presented with a rare intraspinal extradural lipoma accompanied by SEL. These lesions are

typically enclosed in a fibrous capsule, and present with asymmetric fatty compression of the lumbar dural sac on MRI.

Declaration of patient consent

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

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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