



# A Rare Cause of Lumbosciatalgia: Foraminal Lumbar Cavernous Hemangioma

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## Abstract

Cavernous hemangiomas are a benign lesion that can affect any parth of the neurax. However, pure lumbar extradural localization is not common. Their ethiopatogenesis is uncertain and still debated but actually, they are considered as congenital vascular malformations. The clinical presentation is not specific, they can simulate any expansive process of the epidural space which makes the condition difficult to the preoperative diagnosis. Although unusual and in front of its eventual complications, foraminal cavernous hemangioma deserves to be considered in the differential diagnosis with spinal epidural soft tissue masses particularly those dumbbell shaped. Magnetic Resonance Imaging (MRI) is the chosen technique in the positive diagnosis and can help to evaluate the relationship of the lesion with surrounding anatomic structures to avoid intra-operative incidents. Total removal of the lesion, as early as possible, is the optimum treatment preserving the prognosis. We report a case of a patient suffering from lombosciatalgia secondary to a lumbar spinal extradural cavernous hemangioma. The purpose of this study is to highlight through this observation the role of magnetic resonance imaging in the diagnosis of this unusual cavernoma's localization.

## Subject Areas

Radiology & Medical Imaging

## Keywords

Extradural Cavernoma, Cavernous Hemangioma, Lombosciatalgia, MRI

## 1. Introduction

Cavernous hemangioma is a benign vascular lesion that affect any parth of the

neurax, most of the time in supratentorial region. The epidural location is rare, it can arise from the posterior wall of the vertebra and extend into the extradural space. However, the purely extradural seat is unusual, and can be seen at the dorsal spine, but the lumbar localization is extremely rare.

The clinical presentation is not specific, and the diagnosis is based on MRI features but confirmed by histology.

Radiological presentation may be confusing in a purely epidural cavernous hemangioma with other spinal epidural soft tissue lesions which present a real challenge to the radiologist.

We report a case of a patient suffering from lombosciatalgia secondary to a lumbar spinal extradural cavernous hemangioma.

The purpose of this study is to illustrate through this observation the role of magnetic resonance imaging in the diagnosis of this unusual cavernoma's localization.

## 2. Observation

We report a case of a 53-year-old man, without a particular pathological history, complaining currently of hyperalgetic left lumbosciatica rebels of medical treatment evolving for 2 months with S1 left hyperesthesia and bilateral paresthesia of lower limbs without motor deficit or sphincter disorders on clinical examination.

A lumbar MRI was performed, showing a left foraminal lesion process on the L5-S1 level, purely extradural without structural or signal anomalies of adjacent vertebrae. It was roughly oval, well-defined, measuring  $9 \times 17 \times 20$  mm, in high signal intensity T1 weighted FSE, heterogeneous on T2 weighted FSE containing hypersignal spots, with salt-and-pepper appearance without significant enhancement after Gadolinium injection and limited by a peripheral ring in low signal intensity T2 weighted FSE. This lesion was dumbbell shaped and was responsible for scalping with widening of the left foramen. It extends inwards in intraductal, compressing cauda equina nerve roots and outwards in the paravertebral spaces (**Figure 1**).

The foraminal seat and the dumbbell aspect of the lesion were suspected a neuroma. However, the MRI signal on the different sequences recalled the appearance of the cerebral cavernoma and it was strongly suggesting an extradural cavernoma.

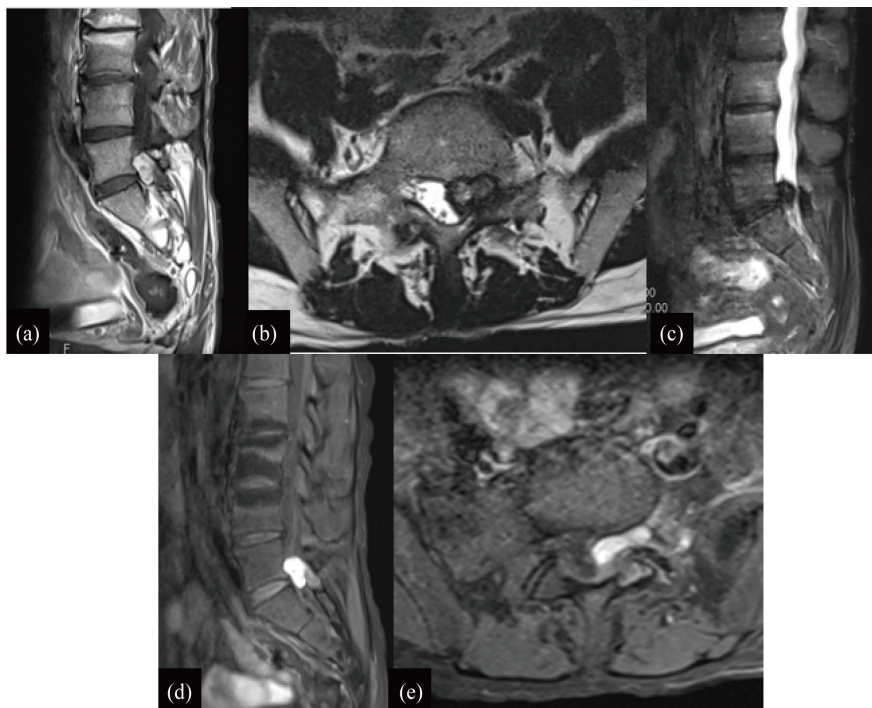
Surgical resection was performed and the diagnosis of cavernous hemangioma was confirmed histologically.

The operative follow-up was simple and the resolution of the symptoms was complete.

## 3. Discussion

### 3.1. Generalities

Cavernous hemangioma is a benign lesion knowing with several denomination in cluding cavernoma, cavernous hemangioma and cavernous malformation [1]. It



**Figure 1.** Lumbar MRI images in (a): T1 weighted FSE in sagittal plan, (b): T2 weighted FSE in axial plan, (c): T2 weighted FSE in sagittal plan after fat saturation, (d) and (e): T1 weighted FSE FS after injection of Gadolinium. Left foraminal lesion process on the L5-S1 level, purely extradural, roughly oval, well-defined and dumbbell shaped, in high signal intensity T1 weighted FSE, heterogeneous on T2 weighted FSE with salt-and-pepper aspect without significant enhancement after Gadolinium injection. It's limited by a peripheral ring in low signal intensity T2 weighted FSE.

may affect any part of the neurax including the spine, frequently located within the cerebral parenchyma in the supratentorial region [2].

In the spinal system, cavernous hemangioma arises frequently in the vertebral corpus followed by, in order of frequency, intramedullary, intradural-extramedullary, and most rarely, extradural localization. It can be in the epidural space, usually in its posterior part, in the intervertebral foramen or paravertebral space [2] [3].

Purely extradural cavernous hemangiomas are extremely rare, accounting from 5% to 12% of all spinal vascular malformation and about 4% of all epidural lesions [2] [4]. They are most commonly reported in thoracic spine and are rarely found in the lumbar space [1].

Cavernous hemangiomas can appear as sporadic or familial cases and occur generally between the third and sixth decade of life [3].

### 3.2. Etiopathogenesis

Their etiopathogenesis remains unclear and has long been debated. The most common theory that they are considering as a developmental vascular malformation with vessel's dysplasia that is forming a mesoderm. The loss of ability of

embryonic vessels to differentiate leads to the occurrence of cavernous malformations in form of a collection of small capillaries covered with a single layer of endothelium, characterized by lobules, separated by fibrous connective tissue septa, and composed of large sinusoidal and dilated vascular channels [3] [5] [6].

The embryologic origin explains the most common site of cavernous hemangioma is the dorsal spinal canal characterized by a rich venous plexus [5].

### **3.3. Clinical Symptomatology**

Clinically extradural cavernous hemangiomas shares the same symptoms of any expansive process of the epidural space compressing by the mass effect the foramina nerve roots and those of the cauda equina in the lumbar location responsible for a progressive neurological deficit. Thus, the clinical presentation is not suggestive.

Patients may also present radicular signs due either to intervertebral foramen extension of the lesion or to lumbar anterior and lateral localization mimicking clinically a disk herniation [1] [3] [6] [7].

Acute clinical deterioration may be observed in a few instances and symptoms might be more obvious related vascular movements or explained by sudden expansion of the volume of the lesions secondary to microhemorrhages and thrombotic venous occlusion within the malformations or by rupture of the cavernoma [1] [6].

The location in the thoracic spine is early revealed by compression of the spinal cord compared to the lumbar where the spinal canal is further widened.

### **3.4. Imaging**

At the present time, Magnetic resonance imaging is the most sensitive diagnostic imaging method and the modality of choice for a presumptive presurgical diagnosis.

It shows the exact location and the extension of the lesion as well as its relationship with surrounding anatomical structures. It can even provide specific information about its nature or a potential complication such as hemorrhage or thrombosis.

Familiarity with the MRI findings allows an accurate injury assessment and avoids unexpected intra-operative hemorrhage and incomplete resection.

Epidural cavernous hemangioma has different imaging characteristics from intramedullary and intracerebral cavernomas. Generally, it demonstrates a well-defined and circumscribed lobulated lesion which is intense to the spinal cord on T1 weighted FSE due to the slow blood flow and hyperintense, but less intense than cerebrospinal fluid and greater than that of fat on T2 weighted FSE due to the high content of stagnant blood. After gadolinium administration, the enhancement is usually mild and homogenous. Hyperintense signals on T1 and T2 weighted FSE indicate hemorrhagic changes.

Peripheral ring appearing as hypo intensity on T1 and T2 weighted FSE is

typically seen in intracerebral cavernoma caused by hemosiderin deposits from previous intralesional bleeding, and not previously described in the literature in purely epidural localization what was presumably explained by easier removal of blood products outside the blood-brain barrier. Nonetheless other authors have attached it to the dura interposed between the mass and spinal cord.

In some cases, the signal can be mixed on all sequences like intracerebral or intramedullary lesions as in our observation [1] [3] [8] [9] [10].

The originality of our work is that the MRI signal was characteristic pepper and salt appearance with a hypointense peripheral ring evident in T2 weighted FSE, similar to intracerebral localization which allowed us to evoke the diagnosis first.

### 3.5. Differential Diagnosis

In comparison of MRI features of this lesion with other more common pathologies at this site, epidural cavernous hemangioma may extend through the intervertebral foramen into the extraspinal region and being dumbbell-shaped which presents a challenge to radiologists, who may confuse them with nerve sheath tumors particularly located in the intervertebral foramen, and paraspinal area. It can also mimic intervertebral disk prolapse. In addition to the MRI signal and enhancement, the lack of anatomic connection with the adjacent nerve root or the neighboring intervertebral disk helps to differentiate the diagnosis.

Moreover, cavernous hemangioma needs to be differentiated from other less common diseases including metastasis, round cell tumor, sarcoidosis, histiocytosis and tuberculosis. The absence of any bony damages made metastasis, lymphoma, round cell tumor and eosinophilic granuloma less likely. Although spinal epidural granulomatous pathologies are uncommon and the association with other systemic signs and the clinical context allows to guide the diagnosis [3] [8] [9] [10].

### 3.6. Treatment

Cavernous hemangioma tends to grow and bleed, thus early surgical resection with microsurgical technique is recommended as soon as possible. It is an hyper vascular lesion with the risk of massive bleeding during the operation therefore the surgical procedure must be careful and total extirpation after coagulation is preferred [1] [9] [10].

Totally removed, these tumors don't recur, and surgical treatment is sufficient. However, for patients with incomplete resection, radiation therapy can be suggested but still controversial [1] [4].

### 3.7. Evolution

As in our case, most patients show a good prognosis with improvement of their neurological conditions and complete resolution of symptoms after surgical resection of the lesion [1] [3].

Rarely, even after its complete resection, symptoms may persist, perhaps because of scarring around the dural sac or the involved nerve root, and don't necessarily related to recurrence [4].

#### 4. Conclusions

Despite its rarity and in front of the potential risks of bleeding and compression of the cord or nerve roots, extradural cavernous hemangioma must be included in the differential diagnosis of any extra-dural spinal lesion. The preoperative diagnosis is actually made easy since the emergence of MRI.

The early and accurate diagnosis followed by complete extirpation of the lesion allow to improve the prognosis and to prevent complications.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

#### References

- [1] Hatiboglu, M.A., Iplikcioglu, A.C. and Ozcan, D. (2006) Epidural Spinal Cavernous Hemangioma—Case Report. *Neurologia Medico Chirurgica (Tokyo)*, **46**, 455-458. <https://doi.org/10.2176/nmc.46.455>
- [2] Kuytu, T., Aydin, T. and Türeyen, K. (2017) Spinal Epidural Cavernous Hemangioma: Case Report. *British Journal of Neurosurgery*, **32**, 577-578. <https://doi.org/10.1080/02688697.2017.1297365>
- [3] Nagi, S., *et al.* (2004) Imaging Features of Spinal Epidural Cavernous Malformations. *Journal of Neuroradiology*, **31**, 208-213. [https://doi.org/10.1016/S0150-9861\(04\)96993-3](https://doi.org/10.1016/S0150-9861(04)96993-3)
- [4] Gao, C.P., Xu, W.J., Ji, Q.L., Duan, F., Cui, J.F. and Liu, H. (2018) Spinal Epidural Cavernous Hemangioma: A Clinical Series of 7 Patients. *World Neurosurgery*, **111**, 183-191. <https://doi.org/10.1016/j.wneu.2017.12.006>
- [5] Sanghvi, D., Munshi, M., Kulkarni, B. and Kumar, A. (2010) Dorsal Spinal Epidural Cavernous Hemangioma. *Journal of Craniovertebral Junction and Spine*, **1**, 122-126. <https://doi.org/10.4103/0974-8237.77677>
- [6] Lim, W.J., Hur, J.W., Ahn, S.Y., Rhee, J.J., Lee, J.W. and Lee, H.K. (2016) Pure Spinal Epidural Cavernous Hemangioma: A Case Report. *The Nerve*, **2**, 87-89. <https://doi.org/10.21129/nerve.2016.2.2.87>
- [7] Bahalpha, B., Nèdri, O.D. and Lepeintre, J.F. (2015) Cavernome extradural lombaire: étude d'une observation et revue de la littérature. *AJNS*, **34**, 1992-2647.
- [8] Goyal, A., Singh, A.K., Gupta, V. and Tatke, M. (2002) Spinal Epidural Cavernous Haemangioma: A Case Report and Review of Literature. *Spinal Cord*, **40**, 200-202. <https://doi.org/10.1038/sj.sc.3101248>
- [9] Feng, J., Xu, Y.-K., Li, L., Yang, R.-M., Ye, X.-H., Zhang, N., Yu, T. and Lin, B.-Q. (2009) MRI Diagnosis and Preoperative Evaluation for Pure Epidural Cavernous Hemangiomas. *Diagnostic Neurology*, **51**, 741-747. <https://doi.org/10.1007/s00234-009-0555-2>
- [10] Lee, J.W., Cho, E.Y., Hong, S.H., Chung, H.W., Kim, J.H., Chang, K.-H., Choi, J.-Y.,

Yeom, J.-S. and Kang, H.S. (2007) Spinal Epidural Hemangiomas: Various Types of MR Imaging Features with Histopathologic Correlation. *American Journal of Neuroradiology*, **28**, 1242-1248. <https://doi.org/10.3174/ajnr.A0563>