

Case Report

Spinal Epidural Arteriovenous Hemangioma Mimicking Lumbar Disc Herniation

Kyung Hyun Kim, M.D.,¹ Sang Woo Song, M.D.,¹ Soo Eon Lee, M.D.,¹ Sang Hyung Lee, M.D., Ph.D.^{2,3}

Department of Neurosurgery,¹ Seoul National University Hospital, Seoul, Korea

Department of Neurosurgery,² Seoul National University, Boramae Medical Center, Seoul, Korea

Department of Neurosurgery,³ Seoul National University College of Medicine, Seoul, Korea

A spinal epidural hemangioma is rare. In this case, a 51 year-old female patient had low back pain and right thigh numbness. She was initially misdiagnosed as having a ruptured disc with possible sequestration of granulation tissue formation due to the limited number of spinal epidural hemangiomas and little-known radiological findings. Because there are no effective diagnostic tools to verify the hemangioma, more effort should be put into preoperative imaging tests to avoid misdiagnosis and poor decisions).

Key Words : Spinal hemangioma · Indocyanine green videoangiography · Spinal cavernous · Hemangioma · Spinal epidural hemangioma.

INTRODUCTION

Spinal epidural hemangiomas have been reported in the literature, but most of them were cavernous type hemangiomas that enable a preoperative differential diagnosis with relative ease. The occurrences of spinal epidural hemangioma are exceedingly rare. The limited number of spinal epidural hemangiomas and few radiological findings make an exact diagnosis difficult prior to surgery. A high vascularization of spinal epidural hemangiomas may result in an unexpected surgical situation in the case of preoperative misinterpretation.

In the current case, we report a case of spinal epidural hemangiomas mimicking sequestered lumbar disc herniation.

CASE REPORT

A 51-year-old woman presented with a 3-week history of lower back pain with right anterior thigh numbness. Her symptoms persisted despite conservative treatments. The patient had a magnetic resonance imaging (MRI) at a local hospital which revealed a lesion at the L3 level, located in the ventral epidural space and connected with L3/4 protruded disc material that demonstrated a heterogeneous signal at T2 weighted images

and an iso- to low signal at T1 weighted image (T1-WI). The lesion became enhanced at sagittal T1-WI with contrast (Fig. 1). Based on a presumed diagnosis of a ruptured disc with possible sequestration or granulation tissue formation, the patient underwent surgery. A right hemilaminectomy of L3 was performed, and a retracting thecal sac revealed a highly engorged vascular structure. When the structure was discovered, the surgery was stopped for further evaluation. A spinal angiography was performed but no abnormal finding was observed (Fig. 2). Due to continued patient discomfort second surgery was performed. Near-infrared indocyanine green videoangiography (ICG-VA) showed a delayed mass filling. Coagulation of the vascular supply and en bloc removal was performed (Fig. 3). Histological examination revealed a vascular lesion composed of small to medium sized veins with irregular calibers, which is consistent with an arteriovenous hemangioma (Fig. 4). The patient's postoperative recovery was uneventful and her pain improved.

DISCUSSION

The typical symptoms of epidural lesions other than disc herniation of the lumbar region are low back pain or radiculopathy

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• Address for reprints : Sang Hyung Lee, M.D., Ph.D.

Department of Neurosurgery, Seoul National University, Boramae Medical Center, 20 Boramae-ro 5-gil, Dongjak-gu, Seoul 156-707, Korea

Tel : +82-2-870-2302, Fax : +82-2-870-2709, E-mail : nslee@snu.ac.kr

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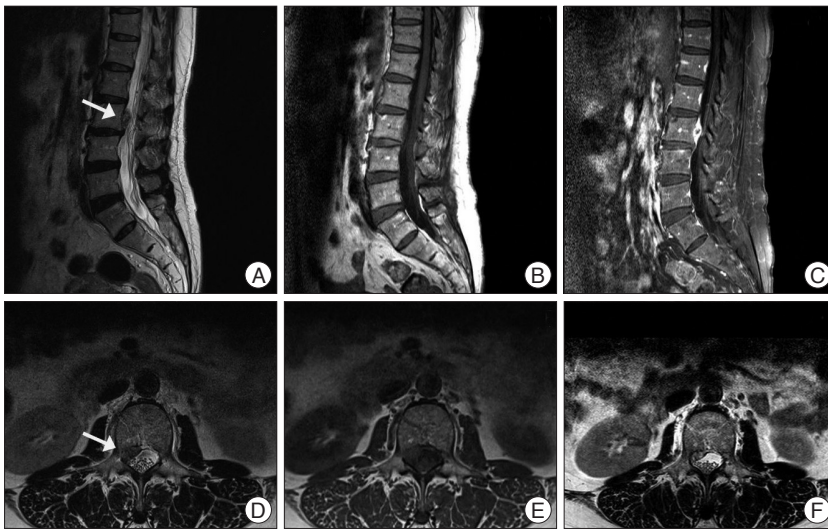


Fig. 1. A spine MR image (at present). A and D : T2 wighted image. B and E : T1 weighted image. C and F : T1 enhanced image. The figures show a L3 level posterior epidural space ovoid shape enhancing lesion with heterogeneous T2 high/low SI and T1 iso to low signal intensity.

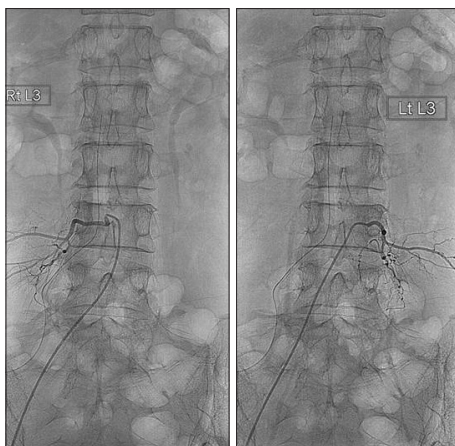


Fig. 2. A spinal angiography reveals no vascular abnormality.

which are indistinguishable from the clinical symptoms of disc herniation diseases. Moreover, spinal epidural hemangiomas are very rare. Most spinal epidural hemangiomas that have been previously reported were of the cavernous type. Also, spinal epidural hemangiomas constitute approximately 4% of all epidural tumors and 12% of all intraspinal hemangiomas⁴.

The differential diagnosis for spinal epidural hemangiomas before surgery included schwannoma, lymphoma, meningioma, angioliopoma, disk herniation, synovial cysts, granulomatous infection, pure epidural hematoma, and extramedullary hematopoiesis^{9,12}. Most epidural hemangiomas described in the literature were exclusively cavernous hemangiomas^{1,2,7}. These differ from spinal epidural hemangioma form in terms of pathology. The cavernous type displays histologically with large number of sinusoidal channels in collagenous tissue⁷, whereas the arteriovenous type shows with a cluster of abnormal arteries and veins and vessel walls containing elastin, and smooth muscle⁵.

A complete surgical en bloc removal is the treatment of choice for spinal epidural hemangiomas with mass effect because of

the excessive vascularity of hemangioma, piece to piece resection should be avoided⁶. An indocyanine green video-angiography can help surgeons understand the vasculature surrounding the mass and facilitate the en bloc removal of the hemangioma. Fluorescence angiography with indocyanine green provides real-time information regarding the patency of vessels. An ICG-VA enhances the flow direction delineation capability, flow velocity and sequence of dye filling in different components of complex spinal vascular lesions³.

Due to the high vascularization of hemangiomas, a misinterpretation may result in unexpected intraoperative hemorrhage. The incomplete surgical removal of a spinal hemangioma because

of diffuse bleeding or minimal exposure during disk surgery might result in the persistence of clinical symptoms or recurrence. Reoperation for remnant or recurrent spinal hemangioma is very difficult due to peridural or periradicular adhesion and unclear margins; as a result, complete resection cannot be guaranteed. Therefore, proper preoperative planning and complete resection during the operation is essential. For this, a preoperative suspicion of spinal hemangioma is important⁸.

As in our case, obscure radiologic findings make diagnosis difficult. An angiography needs to be considered to distinguish spinal epidural hemangiomas from disc herniation. But, like this case, an angiography may not always confirm the diagnosis of an arteriovenous hemangioma. Clinicians should be aware that an angiography cannot provide conclusive evidence of the presence of an arteriovenous hemangioma.

If spinal epidural hemangiomas are unexpectedly encountered during surgery, an ICG-VA can be helpful to diagnose and surgery. This technique provides accurate information about the flow dynamics through the anatomy of vascular lesions in real time^{10,11,13,14}.

CONCLUSION

Further study is required to recognize and to provide a differential diagnosis of spinal epidural hemangiomas. If the lesion is like a ruptured disc in MRI, we should consider spinal epidural hemangioma as one of differential diagnosis.

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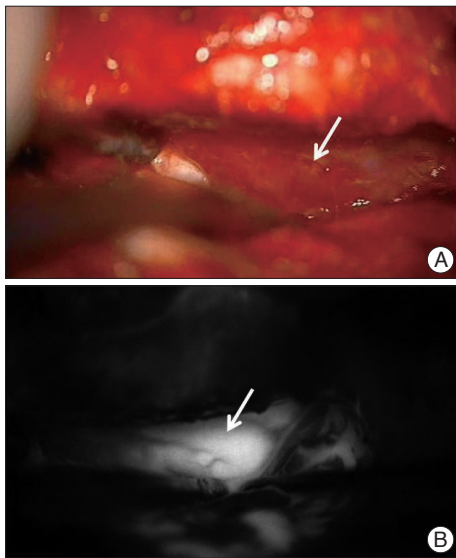


Fig. 3. A : The hyperemic vascular mass beneath the thecal sac. B : An ICG videoangiography shows delayed filling into the mass. ICG : indocyanine green.

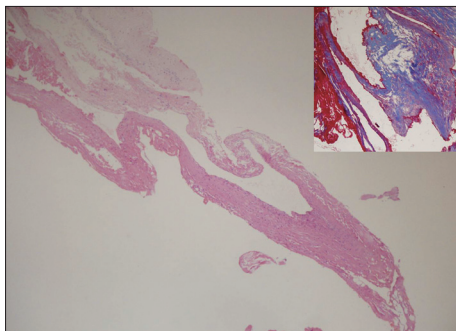


Fig. 4. Histologically, the lesion reveals several anastomosing venous structures with irregular wall thickness (hematoxylin eosin $\times 40$). A Masson's trichrome stain highlights abnormally thickened veins (inset $\times 40$).

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