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Pure spinal extradural arteriovenous malformation in the thoracolombar region: a case report

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ABSTRACT

Pure extradural spinal arteriovenous malformations (AVMs) are formed with an epidural artery, a nidus and an arterialized intradural vein in the absence of vertebral cavernous hemangioma and uncommon lesions. The most common extradural tumors are metastasis, lymphomas, benign tumors and malignant bony tumors. Herein, we present a-29-year-old Turkish woman with pure extradural mass that histopathologically diagnosed as AVM. When an extradural spinal compressive mass is detected, neurosurgeons should consider on AVM in differential diagnosis and requirement of selective spinal angiography.

Keywords: Arteriovenous malformation, selective spinal angiopraphy, extradural mass

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Pure extradural spinal arteriovenous malformations (AVM) are formed with an epidural artery, a nidus and an arterialized intradural vein in the absence of vertebral cavernous hemangioma [1]. The extradural AVMs cause neurological symptoms by increased perimedullary venous pressure and sometimes mimic other spinal pathologies [2]. In this paper, an extradural pure AVM is reported as an uncommon case.

CASE PRESENTATION

A-29-year-old woman presented with the left leg pain. The pain was aggravated by the rest. Neurological examination on admission revealed straight leg raising was positive on the left leg and no loss of sensation and power. Deep tendon reflex was not reduced. Bilateral Babinski signs were absent. Magnetic resonance imaging (MRI) showed an extradural compressive mass between the thoracal 12 (T12) and lumbar 1 (L1) vertebra (Figures 1a and 1b). Patient had an anaphylaxis history because of contrast agent allergy so MRI was planned without contrast agent. During the procedure, T12 and L1 partial laminectomy was performed and we noticed a highly hemorrhagic vascular lesion with no adherence to the dura. Arterial feeders were determined and coagulated but drainage vein was not identified (Figures 2a, 2b, and 2c). The dura opened and not found an intradural lesion so it's proved that lesion was a pure extradural lesion (Figure 2d). She had no new additional neurological deficit in the postoperative period. No lesion detected on early postoperative MRI (Figures 1d and 1e). The lesion consists of vascular structures that contain anastomosing, dilatation, congestion, and thrombus organization mixed with fat vacuoles in the microscopic examination (Figures 3a and 3b).

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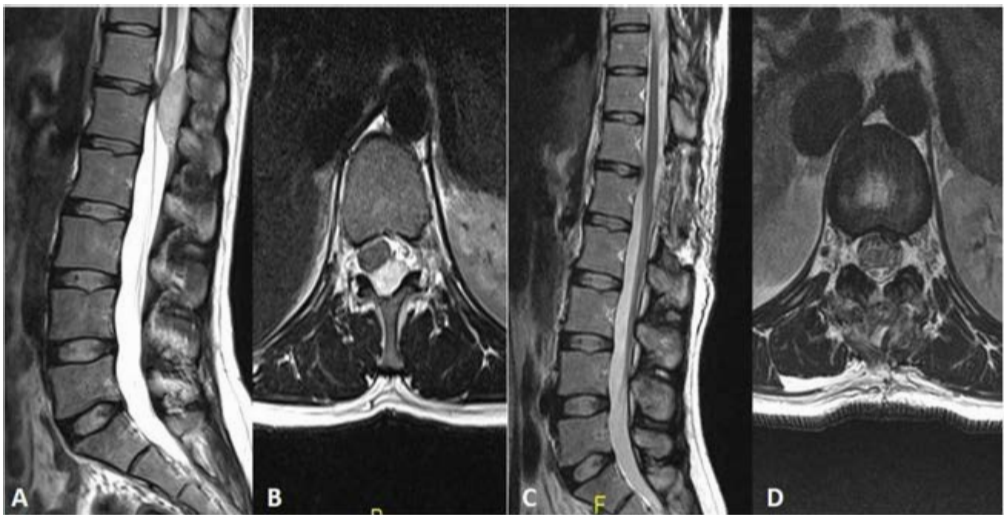

Figure 1. Preporeative thoracolombar MRI showed an extradural mass (a and b), early postoperative MRI (c) sagittal and (d) axial sections.

Vascular walls are hyalinized and have focal calcifications and different thickness (Figures 3c and 3d). So it's diagnosed as AVM. At first year follow-up, she had no leg pain and had no motor deficit in both legs. There was no lesion on the first year follow-up MRI (Figures 4a and 4b).

DISCUSSION

Spinal AVMs were firstly described by Gaupp in 1888 and natural history of spinalAVMs are still unclear [3]. Spinal AVMs are classified into 5 groups: extradural arteriovenous fistulae (AVFs), intradural

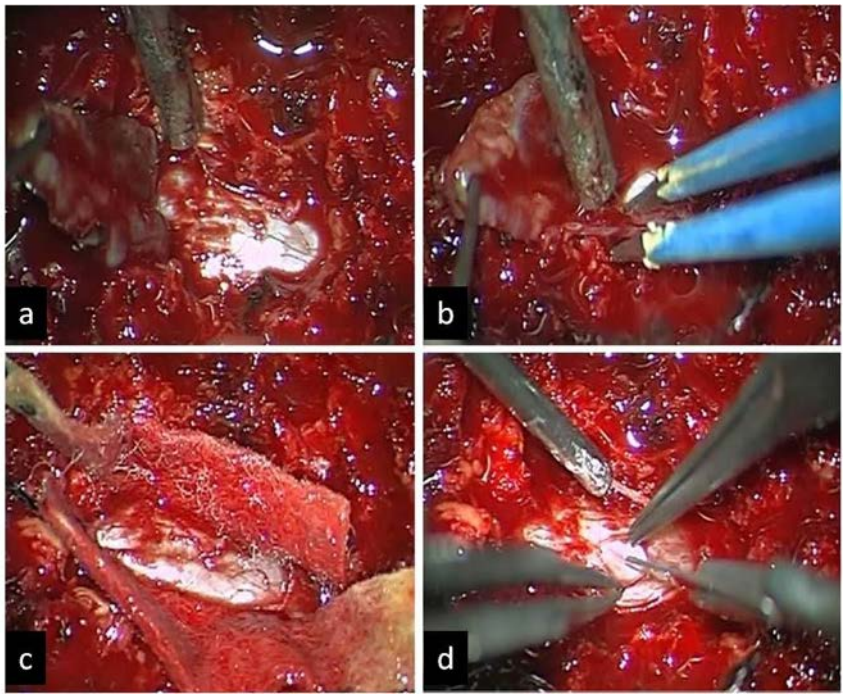

Figure 2. (a) The intraoperative view of the vascular lesion without an obvious nidus pattern after T12 and L1 partial laminectomy. (b) Bipolar coagulation of arterial feeders. (c) The view of dura after total resection of the lesion. (d) Dura opened and not found intradural lesion so it's evaluated as a pure extradural arteriovenous malformation..

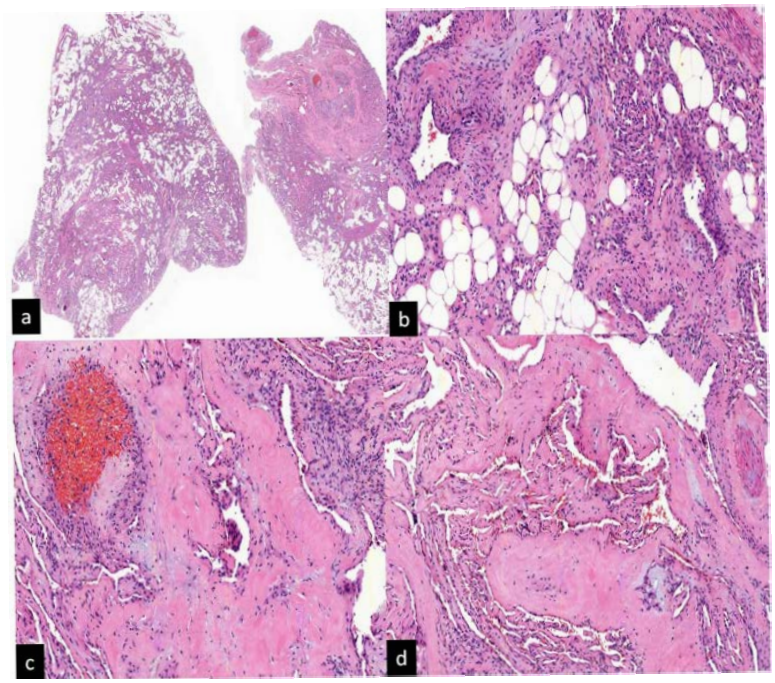

Figure 3. Vascular structures with fat cells (a and b) (H&E, x12, x153). Thrombosis and vascular endothelial proliferation in vascular lumens (c and d) (H&E, x153, x127).

AVFs, extradural-intradural AVFs, intramedullary AVMs, and conus medullaris AVM [3]. Fifteen to 20% of spinal vascular anomalies are extradural and cavernous hemangiomas are most common but AVMs are uncommon (3-4% of all intradural spinal cord mass lesions [3, 4]. AVMs are usually situated intra- and/or perimedullarily [5].

The most common dural spinal AVM is a vertebral body hemangioma that interferes with the extradural spinal canal [6]. Pure extradural spinal AVMs' nidus

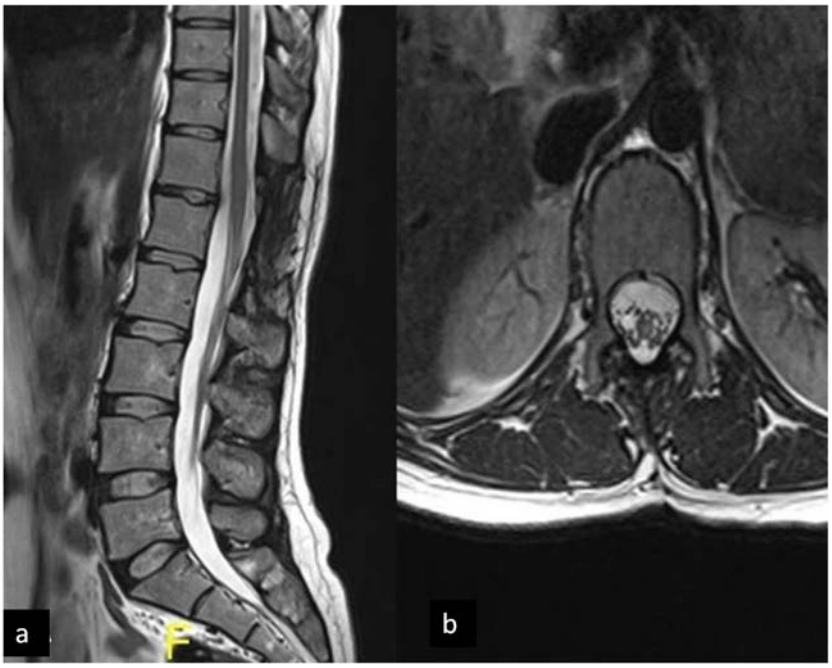

Figure 4. (a) Sagittal and (b) axial sections of postoperative first year follow up MRI, no lesion was detected

and venous drainage are only extradural without a vertebral body hemangioma, and rarely reported in the literature [1, 7-10].

Tortuous or dilated veins can be detected on the spinal MRI and suspicious of AVM but it is usually not clear [1]. We had no suspicion about AVM in the preoperative MRI. The gold standard of AVM diagnosis is selective spinal angiography [11]. We noticed no hemangioma in the adjacent vertebral body and there was no specific evidence for AVM on MRI and so selective spinal angiography was not performed.

Extradural AVMs can rarely cause spontaneous spinal epidural hematoma and sometimes can mimic Guillain-Barre syndrome [10]. There was no epidural hematoma in our case due to preoperative radiological and intraoperative view. Jonathan *et al*. [12] reported a pediatric extradural spinal AVM and specified that it was mimicking schwannoma. Literature supported us that AVMs may interfere with many lesions [10, 12].

CONCLUSION

Pure extradural lumbar spinal AVMs in the absence of vertebral body hemangiomas are uncommon in the literature. When an extradural spinal compressive mass is detected, neurosurgeons should consider on AVM in differential diagnosis and requirement of selective spinal angiography.

Informed consent

Written informed consent was obtained from the patient for the publication of this case report.

Conflict of interest

The authors declared that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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