Capillary Hemangioma: An Important Consideration in the Repertoire of Spinal Tumors

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Hemangioma is the most common benign tumor of the spine, seen in approximately 10% of the population.[1] While these tumors are mainly intraosseous, unusual occurrence within the spinal canal can be seen in 12% of the cases, 4% originating from the epidural space.[2]

This is a case of a 51-year-old female presenting with 6 months history of gradual progressive bilateral lower limb paresthesias. Two months before admission, she started complaining of bilateral leg weakness, severe back pain, urinary hesitance, fecal urgency, and saddle anesthesia. She had no relevant prior medical history. On imaging workup, a mass was noted on magnetic resonance imaging (MRI) in the dorsal epidural space of the thoracic spine, with secondary compression of the cord (Figure 1). The patient was placed on steroids and underwent complete surgical resection. On intraoperative inspection, a well-circumscribed vascular purple tumor was identified adjacent to the dura. The patient had an excellent postoperative recovery without complications. The pathology was consistent with an epidural capillary hemangioma (Figure 2).

Epidural hemangiomas are rare and are classified into arteriovenous, cavernous, capillary, or venous depending on the predominant type of vascular channel on histopathologic examination.[2] The capillary type is composed of numerous capillaries lined by flattened endothelium.[3–5] Intraspinal capillary hemangiomas are predominantly seen in males between the fourth and sixth decades of life and most commonly located at the thoracolumbar spine.[4,6] The intradural-extramedullary space is the primary location of these lesions (70%), followed by the intramedullary (14%), and epidural spaces (8%).[4,7]

The clinical presentation is common to any space-occupying lesion in the spine, including back pain, weakness, paresthesias, and sphincter problems.[3,5] MRI typically shows a well-circumscribed mass isointense relative to the spinal cord on T1-WI, hyperintense on T2-WI, with a characteristic "avid" homogeneous enhancement.[3,6–8] The presence of internal flow voids, seen in some cases, is indicative of fast-flow vascularity.[9] If large enough, these lesions can exert mass effect on the spinal cord, which can demonstrate a high T2 signal indicative of edema versus ischemia.[4,6,8] Among different types of epidural hemangiomas, the arteriovenous and venous subtypes are usually located in the anterior epidural space and are seen as a cyst-like mass of variable T1 signal, while the cavernous subtype usually presents as a solid hypervascular mass of the posterior epidural space with a rim of low T2 signal or, in some cases, as an epidural hematoma.[2]

The differential diagnosis includes meningioma, schwannoma, and hemangioblastomas (Figure 3). Spinal meningiomas show avid enhancement and intermediate to low T2 signal, as opposed to the high T2 signal of capillary hemangiomas.[10] Spinal schwannomas show heterogeneous enhancement secondary to solid and cystic components and a dumbbell morphology when neuroforaminal extension is present.[10] Spinal hemangioblastomas are rare tumors with lower T2 signal and may show flow voids.[10] All of these entities, including capillary hemangiomas, are more common in the intradural space; however, only capillary hemangiomas consistently show "avid" enhancement and high signal on T2WI.[3,6,7,9,10] Total removal is considered curative for this lesion since no recurrence has been reported after resection.[3–5]

Conflict of Interest

The authors have no conflicts of interest to declare.

Statement of Authorship

We confirm that each author has participated sufficiently in this submission, taking public responsibility for its content, and has approved this submission. PP: Organization of the images,

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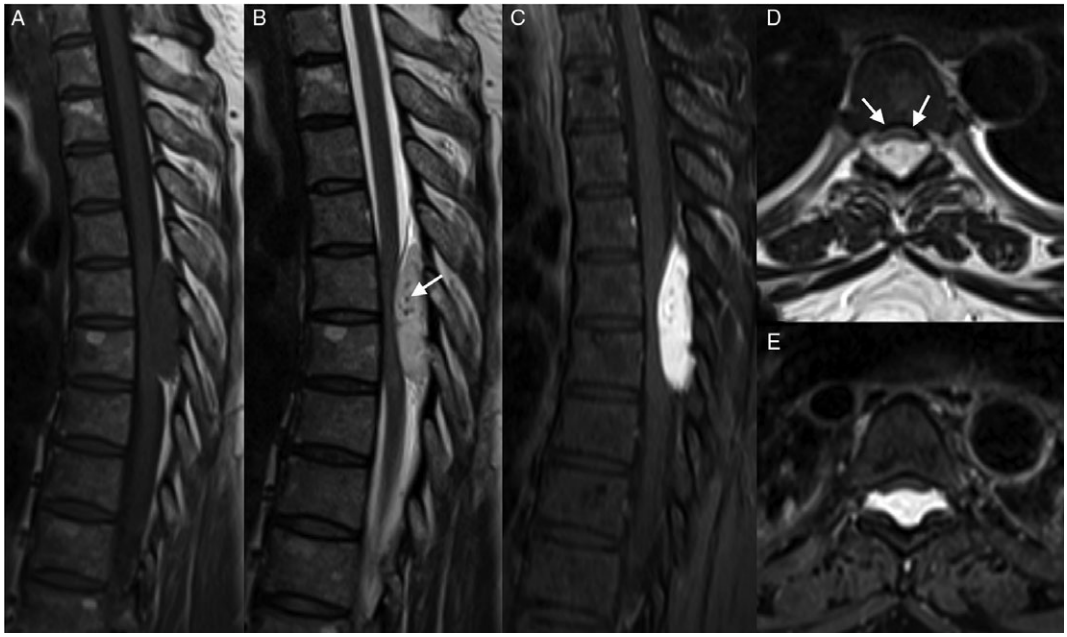

Figure 1: *Sagittal T1-WI (A), sagittal and axial T2-WI (B, D), and T1-WI post-gadolinium administration (C, E) MR of the thoracic spine. There is a high T2 signal mass with internal flow voids (B, arrow) in the posterior epidural space extending from T5 to T6 level. On postcontrast imaging, the lesion shows avid homogeneous enhancement. The underlaying cord is severely compressed, which also shows high T2 signal (D, arrows). The surrounding bony structures are unremarkable.*

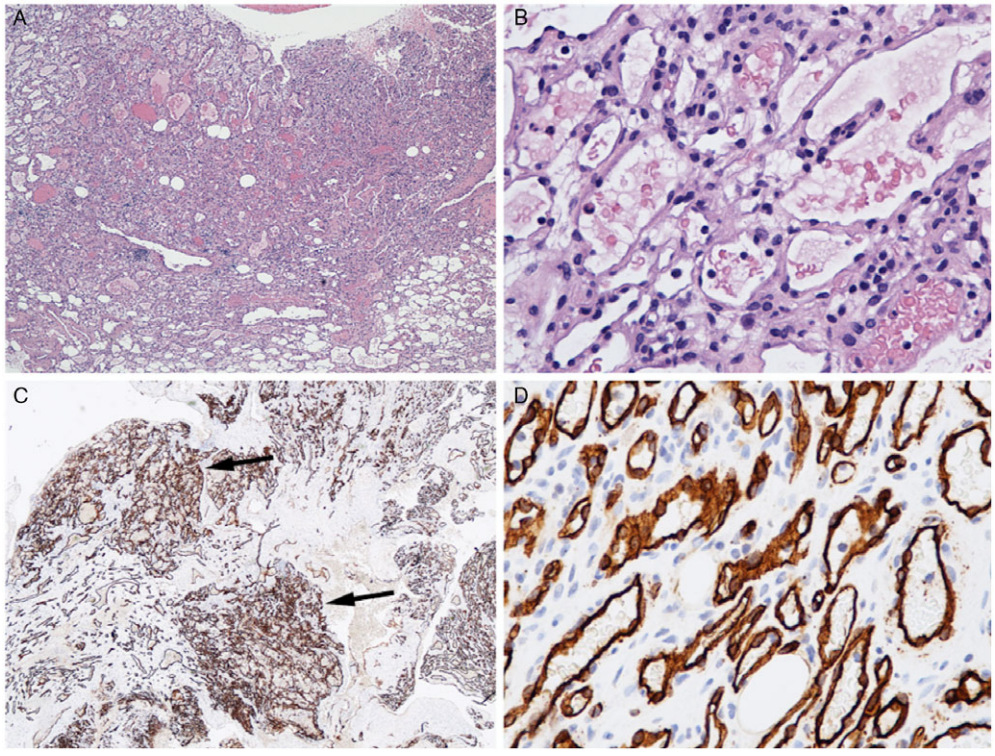

Figure 2: *The histology of the resected specimen shows a lesion in epidural fat consisting mainly of small blood vessels with a thin wall (overview A, detail B), with a tendency to clustering or lobular organization of the smaller blood vessels (overview with arrows in C, detail in D), which is best appreciated in a blood vessel wall immunohistochemistry stain. The cells in between the vascular lumina are fibroblasts and occasional mast cells, which are not positive for inhibin (hemangioblastoma), PAX8 (renal cell carcinoma), or pancytokeratins (carcinomas, images not shown). A and B, H and E, C and D CD34 immunohistochemistry. Magnification: A and C x 4, B and D x40.*

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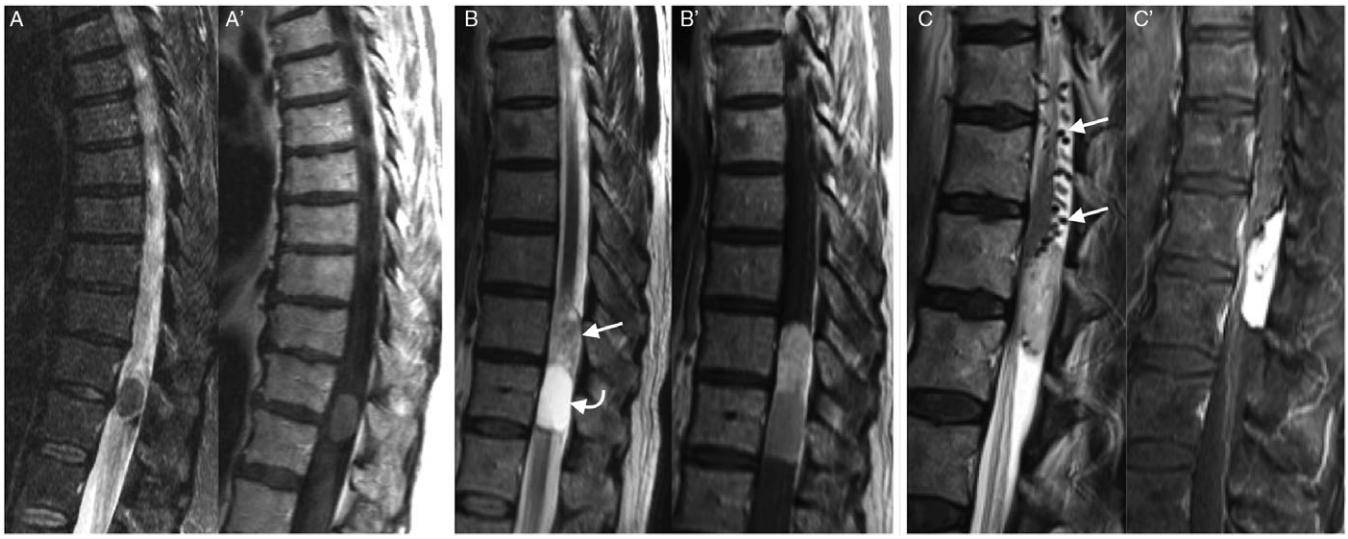

Figure 3: *Differential diagnoses of spinal capillary hemangioma. A meningioma (top left, A, A') are tumors of usually low T2 signal (A) and homogeneous, not avid, enhancement on postcontrast imaging (A'). A schwannoma (center, B, B') can be seen as a tumor with heterogeneous T2 signal (B) due to the presence of solid (B, straight arrow) and cystic (B, curved arrow) components and heterogenous enhancement (B'). A spinal hemangioblastoma (top right, C,C') shows an intermediate T2 signal (C) and peripheral flow voids secondary to venous congestion (C, arrows). On postcontrast imaging (C'), the lesion shows an avid homogeneous enhancement similar to that of a capillary hemangioma. The distinction between a capillary hemangioma and a hemangioblastoma can only be made histologically.*

review of the literature, and preparation of the manuscript; GJ: Review of the pathology and the manuscript; NZ: Review of the material and the manuscript.

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