

Acute paraparesis in adult man

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Section: Neuroradiology

Area of Interest: Neuroradiology spine

Procedure: Imaging sequences

Imaging Technique: MR

Imaging Technique: MR-Diffusion/Perfusion

Special Focus: Haemorrhage Case Type: Clinical Cases

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Patient: 74 years, male

Clinical History:

Patient presented with intense back pain aggravating in the past 3 days and compromised gait. After performing CT imaging, and considering the recent medical history of infectious spondylodiscitis, a recurrence of the infectious process was assumed and a conservative approach adopted. On the 12th day following admission, an acute paraparesis began.

Imaging Findings:

An emergency MR was performed, and the following MR sequences were obtained: sagittal T1, T2 and STIR; axial T2 with fat saturation; diffusion and ADC.

Besides the already known L2-L3 spondylodiscitis, an extensive posterior thoracic/lumbar multiloculated epidural collection was identified, involving T8-L3 segments. At T12-L1 level it reaches its maximum width, measuring 17 mm. This collection compresses the spinal cord from T8 to T12 and cauda equina from T12/L1 to L3.

The collection had a heterogeneous signal: in T1-weighted images it was predominantly isointense; in T2-weighted images it was predominantly isointense, showing hypersignal in T12-L1 segments; no signal changes occurred in STIR sequence.

These findings are compatible with an acute epidural spinal haematoma. Epidural abscess cannot be ruled out given the patient's history, and gadolinium could have helped and show enhancement. The absence of signal changes in STIR sequences and the heterogeneity of the signal makes angiolipoma or epidural fat lipomatosis unlikely.

Discussion:

The diagnosis of spontaneous spinal epidural haematoma (SSEH) was obtained after surgical decompression. This entity is described as a blood collection on the epidural space (between the dura and bony spine), occurring spontaneously without evident trauma or iatrogenic cause [1, 3, 9]. It occurs most commonly in childhood and fourth/fifth decades of life, and in this last group, more commonly in men [3, 9]. The most probable origin of the haemorrhage is the venous plexus system present in the epidural space, which is valveless and therefore vulnerable to increases in abdominal pressure [3, 4], like those that happen in Valsalva manoeuvre [3, 9]. There seems to be an association between this entity and arteriovenous malformations, coagulation disturbances (either iatrogenic, or not), vertebral haemangiomas and minor trauma [3, 9]. From this list, our patient had 2 important risk factors to SSEH: he was chronically anticoagulated with warfarin due to atrial fibrillation, and needed to discontinue this medication 6 days before acute motor symptoms due to a very high INR [8, 1]; around the same period, the patient fell and had a minor head trauma. The past history of infectious spondylodiscitis also warns us to the probability of epidural abscess.

Patients with SSEH mainly complain of acute neck, back or radicular pain. Motor, sensory and autonomic neurologic

deficits may occur and are caused by spinal cord or nerve root compression. Paraparesis may be rapidly progressive. Bladder and bowel dysfunction may occur [1, 4, 8, 9].

The imaging examination of choice if nontraumatic spinal cord compression is suspected is emergency MR [1, 2, 3]. An epidural biconvex mass hyperintense on T1 and T2-weighted sequences and retaining signal after fat suppression is the diagnostic pearl. However, typical signal changes are found as the haematoma matures. In our case, isointensity on T1 may suggest acute haematoma with less than 24 hours [3, 4, 7, 9].

Emergency decompressive surgery within 12-36 hours is the treatment of choice in symptomatic patients, if complete neurologic recovery is intended [3, 5, 7, 8]. Correction of coagulopathy is important before surgery [3, 5]. Prognosis depends on neurologic deficits prior to surgery and time between onset of symptoms and intervention [3, 4, 5, 6]. In our patient, decompressive surgery resulted in partial but important recovery of motor deficits.

This case highlights the importance of emergency MR on prompt patient management and shows that accurate radiologic reporting, identifying compression level and presumptive diagnosis, is crucial for surgical planning and good outcome.

Differential Diagnosis List: Spontaneous spinal epidural haematoma, Epidural spinal haematoma, Spinal epidural abscess, Epidural metastasis

Final Diagnosis: Spontaneous spinal epidural haematoma

References:

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Figure 1

a



Description: T1-weighted sequences show a predominantly isointense spindle-shaped dorsal epidural collection that compresses spinal cord and cauda equina. At L2-L3 level, an already known spondylodiscitis is identified. **Origin:** Neuroradiology Department, Hospital Professor Doutor Fernando da Fonseca

b



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Figure 2

a



Description: On this T2-weighted sequence, epidural collection shows heterogeneous signal (predominantly isointense). This indicates multiple stages of maturity of the haematoma [7]. **Origin:** Neuroradiology Department, Hospital Professor Doutor Fernando da Fonseca

b



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Figure 3

a



Description: At T12-L1 level, epidural collection reaches maximum width, measuring 17 mm. Compression of spinal cord from T8 to T12 and cauda equina from T12/L1 to L3 occurs, and may be responsible for clinical findings. **Origin:** Neuroradiology Department, Hospital Professor Doutor Fernando da Fonseca

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Figure 4

a



Description: Absence of change of signal on STIR sequences make fat-containing lesions less likely.

Origin: Neuroradiology Department, Hospital Professor Doutor Fernando da Fonseca

b



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Origin: Neuroradiology Department, Hospital Professor Doutor Fernando da Fonseca

c

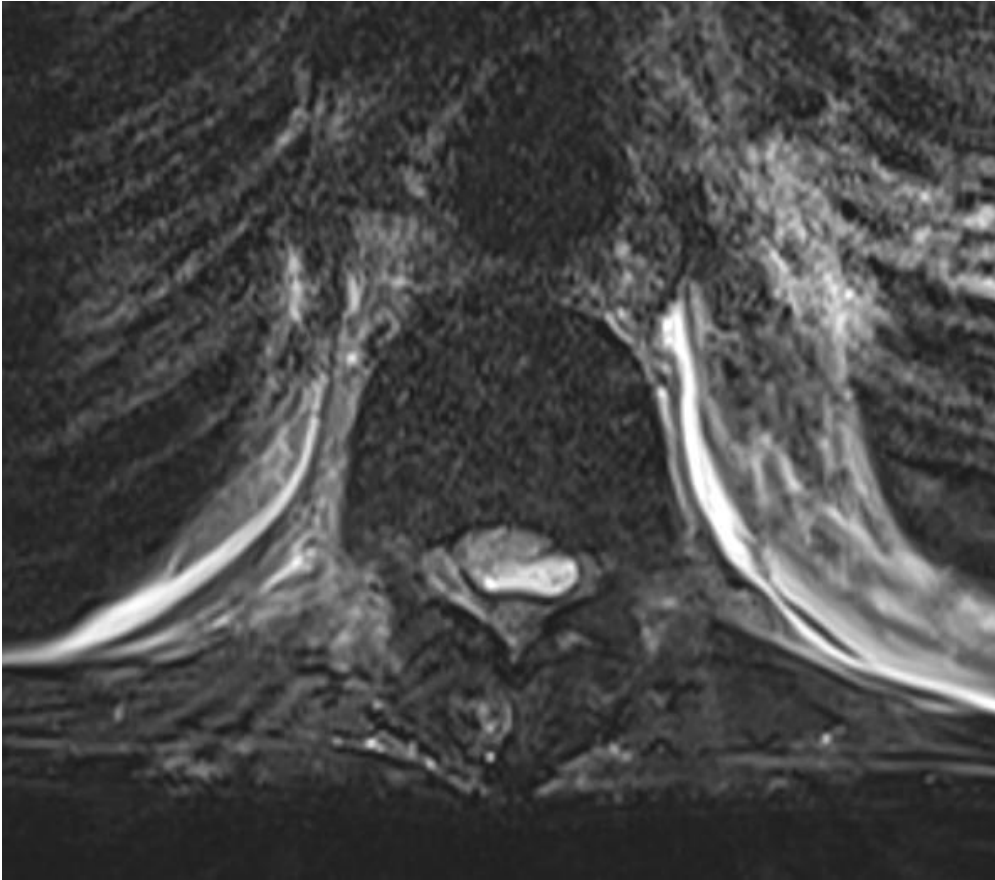


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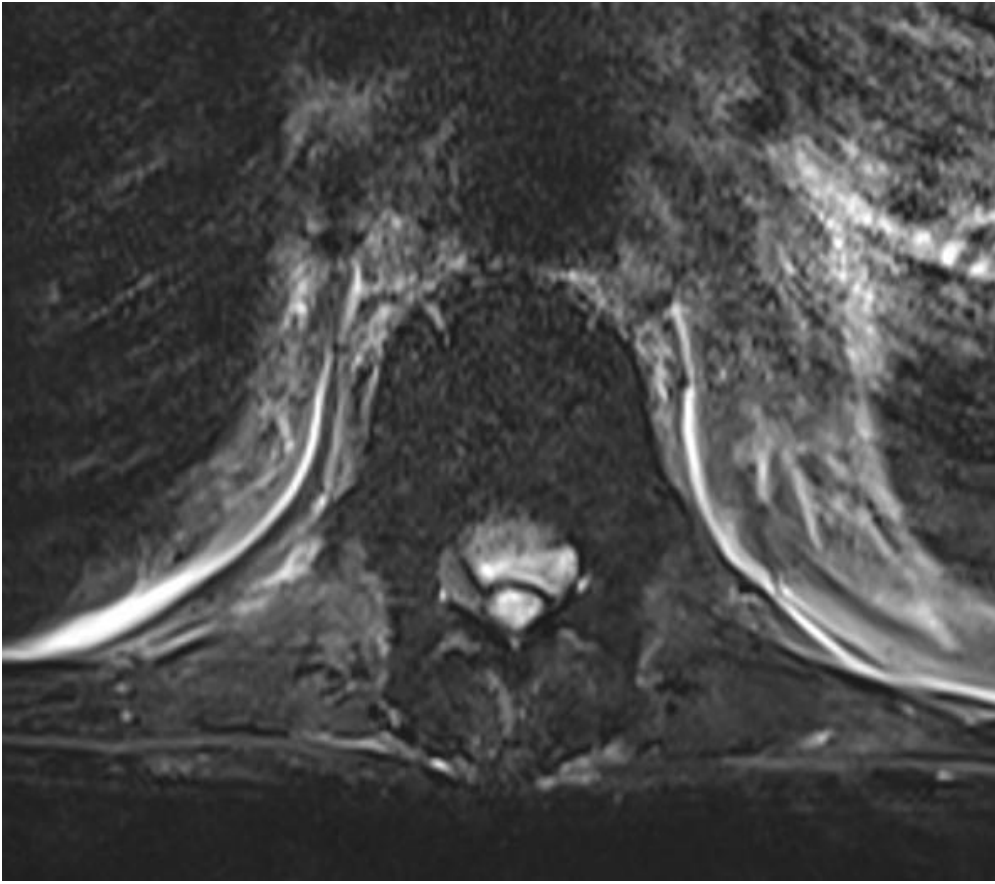
Figure 5

a



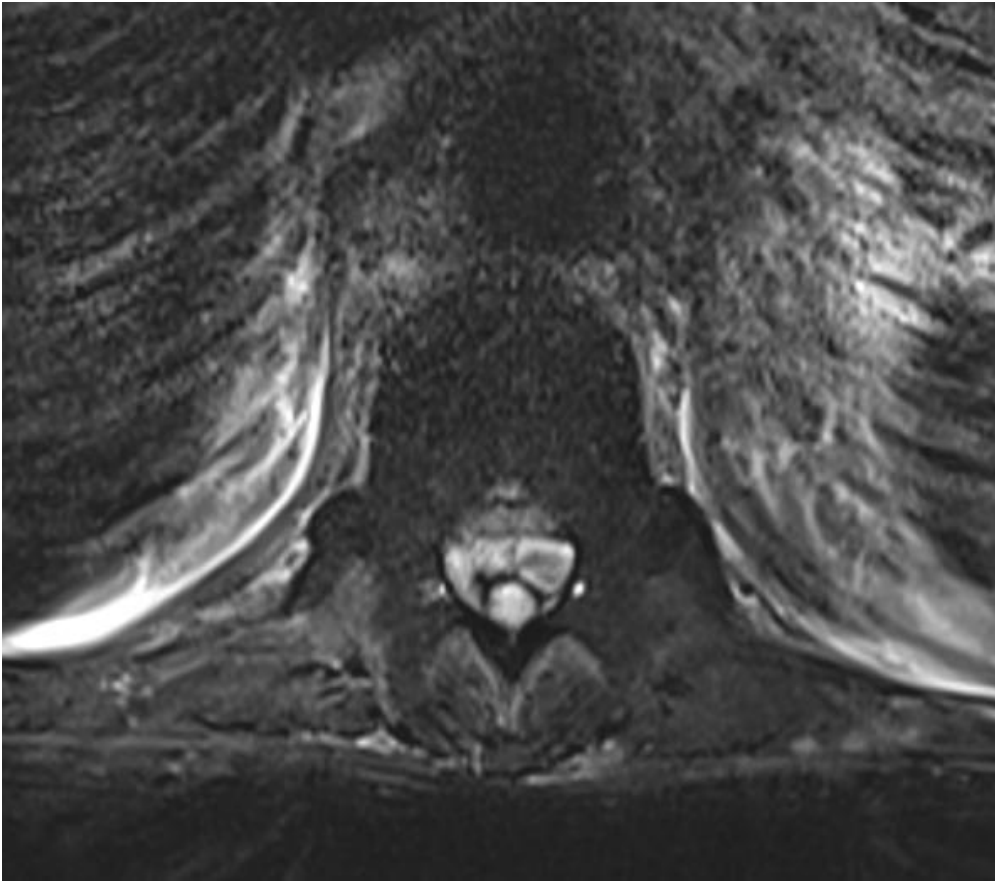
Description: In axial topography, multiloculation of the epidural collection and spinal compression is evidenced. Again, absence of loss of signal on fat saturated sequences is important on differential diagnostic. **Origin:** Neuroradiology Department, Hospital Professor Doutor Fernando da Fonseca

b



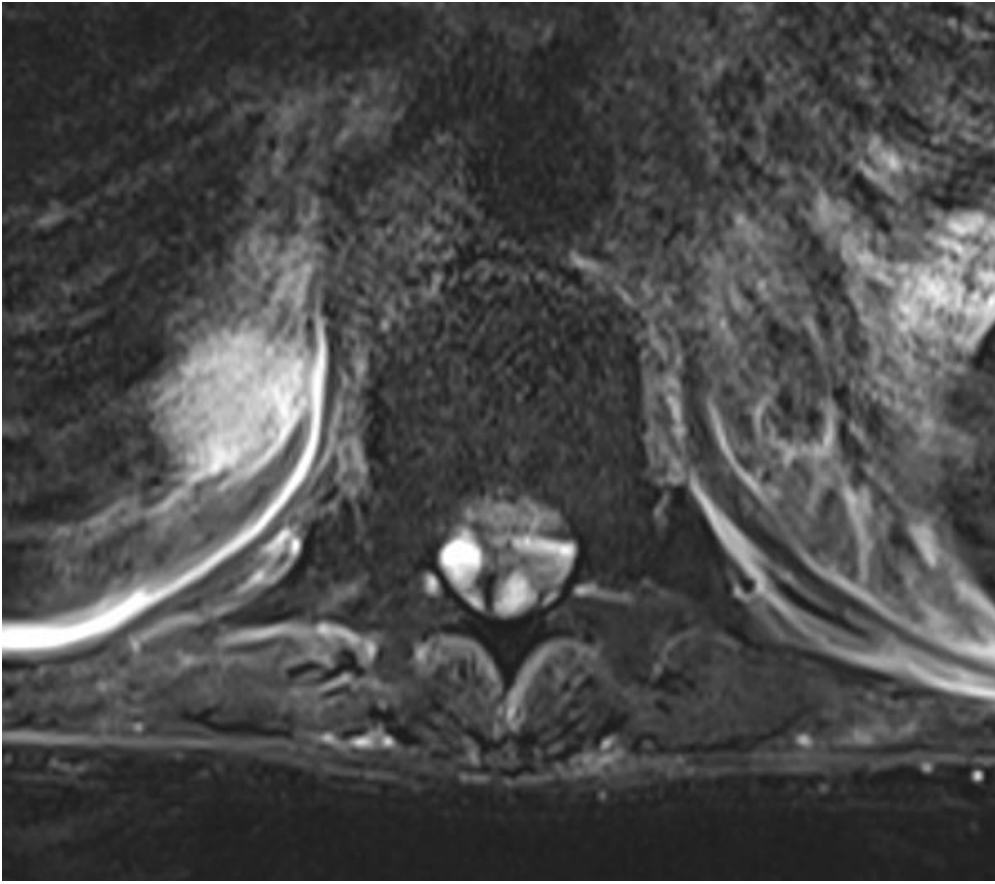
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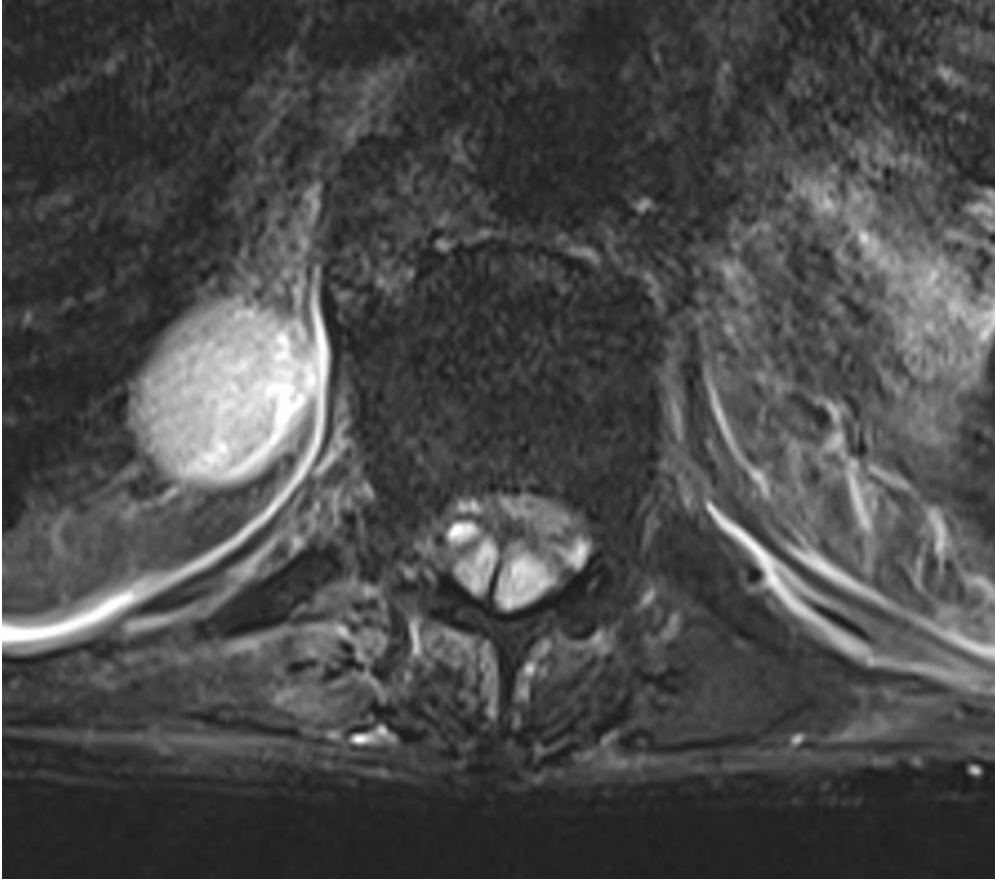
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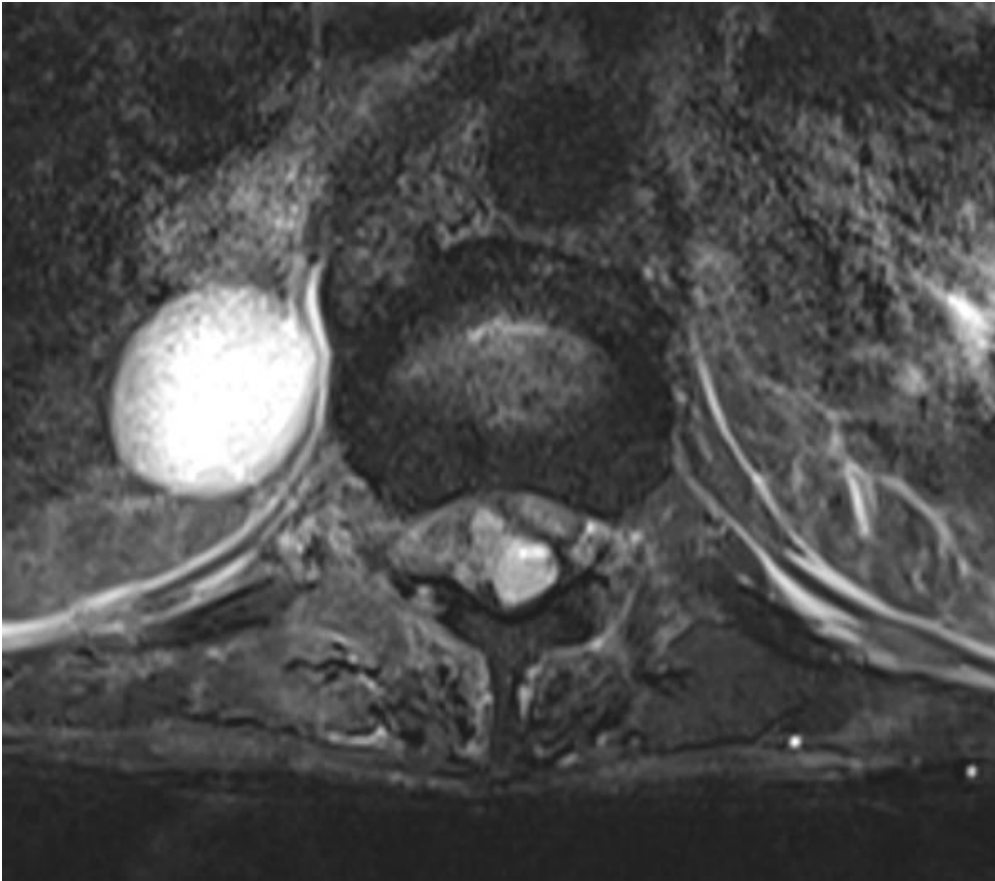
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e



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f



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Figure 6

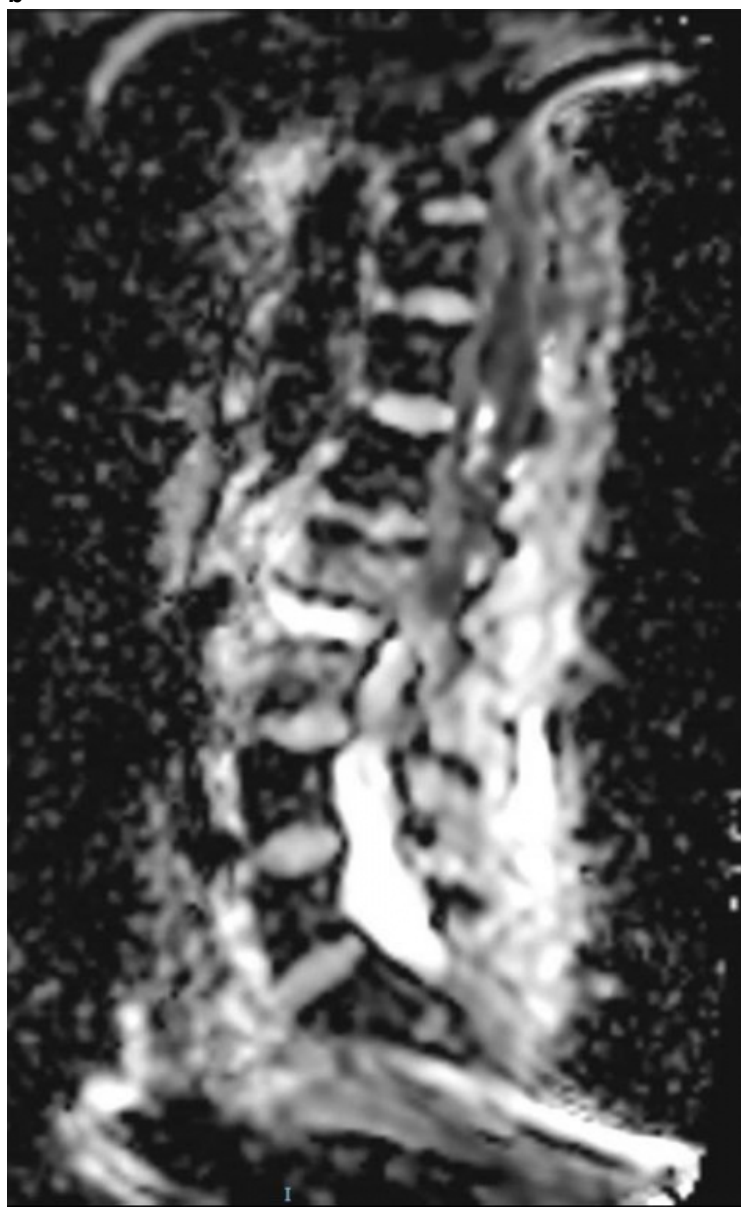
a



Description: The epidural collection shows areas of restriction to the diffusion of water molecules.

Origin: Neuroradiology Department, Hospital Professor Doutor Fernando da Fonseca

b



Description: The epidural collection also shows areas with hyposignal on ADC map. **Origin:** Neuroradiology Department, Hospital Professor Doutor Fernando da Fonseca