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# Neuroimaging Highlight

Editors: Richard Farb, David Pelz

## Spinal Ischemia Due to Intercostal Vascular Occlusion

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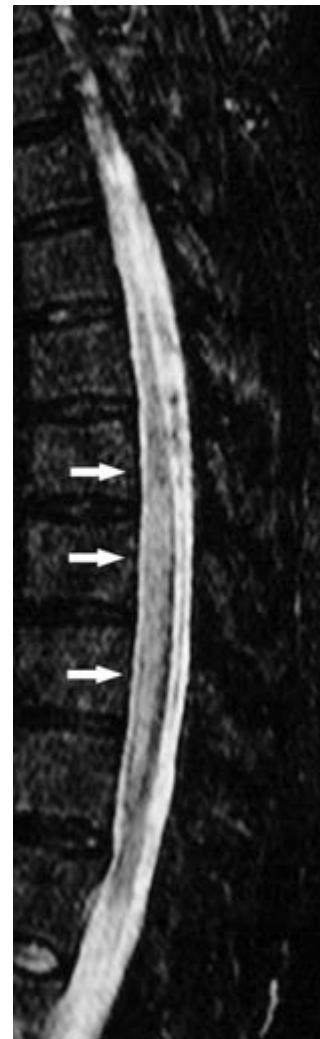
A 60-year-old woman presented with palpitations, chest discomfort, tiredness, and episodes of weakness in the lower extremities. She had no previous history of cardiopulmonary or neurological diseases. Her vital signs were normal. Clinical examination revealed leg edema on both sides. Laboratory values revealed, hemoglobin 15.0 g/dl, red cell count  $5.2 \times 10^9/l$ , white cell count  $6.8 \times 10^6/l$ , glucose 90 mg/dl, creatinin 0.79 mg/dl.

A chest x-ray did not show any abnormality. Her blood pressure was 130/80 mm Hg, the pulse was irregular from 84 to 100 beats/min. Electrocardiogram showed atrial flutter and episodes of biventricular premature contractions. There were no signs of myocardial infarction or ischemia. Two days after admission to the cardiology department she developed paraparesis that progressed to paraplegia. A brain computed tomography (CT) was normal. Magnetic resonance imaging (MRI) demonstrated spinal cord ischemia extending from T9 to the conus medullaris (Figure 1). During the MR-examination the patient became claustrophobic. Because of the extension of the diagnosed spinal cord ischemia an aortic dissection was suspected and the patient underwent computed tomographic angiography (CTA). Computed tomographic angiography revealed a partial thrombosis of thoracic aorta at the dorsal wall (Figure 2). There was no evidence of dissection of the thoracic or abdominal aorta. Furthermore, CTA showed that part of the intercostal arteries were occluded at the levels from T8 to L1 (Figure 3). Bilateral occlusion was observed from T10 through L1.

The patient was treated conservatively. There was no significant improvement of the neurological status and she was transferred into a rehabilitation unit three weeks after admission.

Spinal cord ischemia (SCI) can complicate several heterogenous diseases and syndromes, such as embolism of distinct origin, different aortic pathologies (e.g. aneurysm, dissection or atherosclerosis), cocaine misuse, and hypotension.<sup>1-6</sup> Further, this complication is also known after stent-graft repair of the thoracic or thoracoabdominal aorta.<sup>2,3,6</sup>

Spinal cord infarction is usually located in the territory of the artery of Adamkiewicz. In a high percentage of patients this



**Figure 1:** T2 weighted fat saturated sequence showing a signal hyperintensity of the spinal cord at the level T8 to the conus medullaris (arrows), consistent with ischemia.

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**Figure 2:** CT angiography showing irregular filling defects along the dorsal aorta consistent with mural atherosclerosis (arrows).

artery arises from the left T9 or T10 intercostal artery (from T9 to T12 in 75% of patients).<sup>7</sup> As no calcifications of the occluded intercostal arteries were identified on the CTA, an embolic pathogenesis may be presumed.

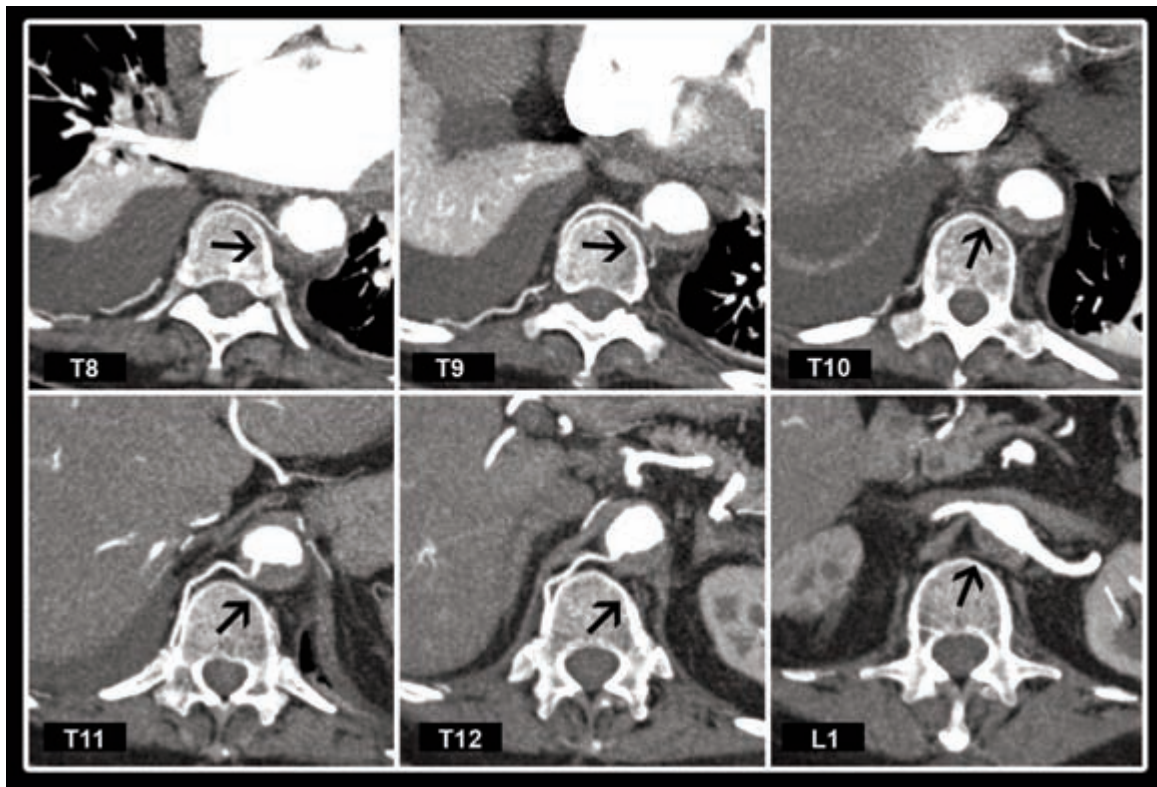
The presented case highlights the role of CTA in the diagnosis of vessel occlusion.

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**Figure 3:** CT angiography demonstrating an occlusion of the intercostal arteries (arrows).