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Images of Interest / Imagens de Interesse

Beyond Transverse Myelitis: Neuroradiology's Role in Identifying Spinal Cord Infarction

Para Além da Mielite Transversa: A Importância da Neurorradiologia no Diagnóstico do Enfarte Medular

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Abstract

Spinal cord infarction is a rare but serious condition often misdiagnosed as transverse myelitis due to overlapping clinical and imaging features. Differentiating vascular from inflammatory etiologies is critical for proper management. Neuroradiology plays a key role, with MRI being the main diagnostic tool. Among vascular causes, the most frequent are aortic disease, fibrocartilaginous embolism, and idiopathic cases. We report the case of a 53-year-old man with a history of hypertension and obesity who presented with progressive lower back pain, acute worsening, right lower extremity paresthesia, and urinary retention. MRI revealed acute spinal cord infarction with additional vertebral body bone infarction, supporting a vascular etiology. Transverse myelitis was initially suspected but ruled out after neuroradiologic assessment. The patient was treated with corticosteroids, acetylsalicylic acid, statin, and analgesics. He showed clinical and functional improvement with physical therapy, despite initial limitations due to pain. This case highlights the importance of early imaging, the role of neuroradiology in the etiologic definition of acute myelopathies, and the need to improve access to early rehabilitation to optimize functional outcomes.

Keywords

Myelitis transverse; Spinal cord ischemia; Magnetic resonance imaging; Diagnosis.

Resumo

O enfarte medular é uma condição rara, mas grave, frequentemente confundida com mielite transversa devido à semelhança clínica e radiológica. A diferenciação entre etiologias vasculares e inflamatórias é essencial para o manejo adequado. A neurorradiologia tem papel central nesse processo, com a ressonância magnética sendo o principal exame diagnóstico. Entre as causas vasculares mais frequentes, destacam-se as doenças da aorta, a embolia fibrocartilaginosa e os casos idiopáticos. Apresentamos o caso de um homem de 53 anos, com histórico de hipertensão e obesidade, que apresentou dor lombar progressiva com agravamento agudo, parestesia no membro inferior direito e retenção urinária. A ressonância magnética evidenciou enfarte agudo da medula espinhal com adicional enfarte ósseo do corpo vertebral adjacente, reforçando a etiologia vascular. A mielite transversa foi inicialmente considerada, mas descartada após avaliação neurorradiológica. O paciente foi tratado com corticosteroides, ácido acetilsalicílico, estatina e analgésicos. Evoluiu com melhoria clínica e funcional após início da fisioterapia, apesar de limitações iniciais devido à dor. Este caso destaca a importância do diagnóstico precoce por imagem, do papel da neurorradiologia na definição etiológica das mielopatias agudas e da necessidade de maior acesso à reabilitação precoce para otimizar o prognóstico funcional.

Palavras-chave

Mielite transversa; Isquemia do cordão medular; Imagem por ressonância magnética; Diagnóstico.

Case Presentation

A 53-year-old man with a history of obesity and hypertension presented with progressive lower back pain that acutely worsened, accompanied by new-onset numbness in the right lower extremity. He denied any recent trauma. The pain was persistent and prompted further evaluation. Over the following days, he developed urinary retention, requiring Foley catheter placement.

On examination, he exhibited limited weight-bearing ability despite preserved muscle strength (5/5 at rest). Neurological findings were concerning for spinal cord pathology. MRI of the spine revealed T2 and STIR hyperintense signal in the posterior columns of the lower thoracic spinal cord, with diffusion restriction on DWI supporting an acute infarction. Posterior vertebral body infarction was also noted, a finding that supports a vascular etiology.

Initial management included corticosteroids (dexamethasone), aspirin, statins, and analgesics. Neurology consultation considered and ruled out transverse myelitis, based on the absence of CSF inflammatory markers (no pleocytosis, no oligoclonal bands, only mildly elevated protein), the lack of MRI features typical of inflammatory myelopathy (no cord expansion, no post-contrast enhancement), and the presence of restricted diffusion lesions in the posterior spinal cord with concomitant vertebral body infarcts, favoring ischemic etiology. The patient experienced a vasovagal episode secondary to severe pain and leukocytosis (WBC 22,000), which improved to 13,000 following treatment with intravenous piperacillin–tazobactam. Physical therapy

was initially limited by pain but improved with optimized pain control. Despite recommendations for inpatient rehabilitation, insurance coverage was denied, and the patient was discharged to a skilled nursing facility. At the time of discharge, he was clinically stable, voiding spontaneously, tolerating diet, and continuing rehabilitation.

Discussion

Spinal cord infarction is a rare but critical diagnosis that is frequently misinterpreted as transverse myelitis, particularly in the acute setting. The overlapping clinical presentations pose a significant diagnostic challenge, where early differentiation is vital for guiding appropriate therapy.[1] The most frequent pattern of acute spinal cord ischemia involves the anterior spinal artery territory, typically presenting with anterior cord syndrome. In our case, however, the infarction predominantly affected the posterior columns, which is less common but clinically and radiologically relevant for the differential diagnosis.

Neuroradiology plays a central role in distinguishing vascular etiologies from inflammatory, infectious, or demyelinating processes. MRI is the cornerstone of diagnosis, particularly looking for diffusion restriction on diffusion-weighted imaging, and giving attention to associated findings such as vertebral body infarction. This pattern—spinal cord T2 hyperintensity with associated vertebral body infarction—strongly favors a vascular etiology.[2]

The vascular supply of the spinal cord—primarily via segmental arteries branching into anterior and posterior radiculomedullary branches—also perfuses adjacent vertebral structures. This anatomical detail explains why spinal cord ischemia may present with concomitant vertebral body infarction.[1]

Common causes include aortic pathology, fibrocartilaginous embolism, and idiopathic mechanisms. Early and accurate neuroradiologic interpretation is essential to distinguish spinal cord infarction from transverse myelitis, as their clinical overlap often leads to misdiagnosis. The identification of vertebral body infarction on MRI provides a key imaging marker that strongly supports a vascular etiology, directly influencing therapeutic decisions and prognosis.[1,2,3] (Fig. 1)

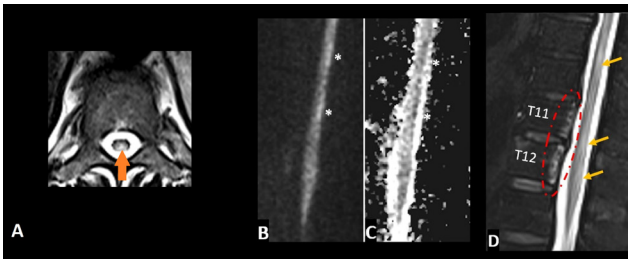

Figure 1 – Thoracic spine MRI images – axial T2-weighted (Figure A), sagittal diffusion-weighted (Figure B), ADC map (Figure C), and sagittal STIR (Figure D) sequences. T2 hyperintensity in the posterior columns of the lower thoracic spinal cord (orange arrows) and conus medullaris, with restricted diffusion (white asterisks). STIR hyperintensity is observed in the posterior wall of the T11 and T12 vertebral bodies (dashed red circle), suggesting bone infarction, which is a confirmatory sign of spinal cord infarction in this context.

In conclusion, vascular etiologies should always be considered in the differential diagnosis of acute myelopathy, particularly in older patients or those with vascular risk factors. Prompt MRI with careful neuroradiologic evaluation is essential, with attention to markers such as vertebral body infarction that support a vascular etiology. Finally, healthcare systems should ensure timely access to rehabilitation services, which are crucial for optimal functional recovery. (Fig. 1)

Ethical Disclosures / Divulgações Éticas

Conflicts of interest: The authors have no conflicts of interest to declare.

Conflitos de interesse: Os autores declaram não possuir conflitos de interesse.

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Confidentiality of data: The authors declare that they have followed the protocols of their work center on the publication of data from patients.

Confidencialidade dos dados: Os autores declaram ter seguido os protocolos do seu centro de trabalho acerca da publicação dos dados de doentes.

Protection of human and animal subjects: The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Protecção de pessoas e animais: Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia da Associação Médica Mundial.

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