ISSN 0008-3194 (p)/ISSN 1715-6181 (e)/2026/259–262/$2.00/©JCCA 2026

U.S. Veteran with dural ectasia secondary to severe axial spondyloarthritis: imaging case review

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Cases detailing dural ectasia from severe axial spondyloarthritis are limited in published literature. This report documents the rare and complex presentation of a 65-year-old male to a chiropractic clinic. Imaging and clinical features as well as differential diagnosis are summarized.

(JCCA. 2026;70(2):259-262)

KEY WORDS: axial spondyloarthritis, dural ectasia, cauda equina syndrome

Vétéran américain présentant une ectasie durale secondaire à une spondylarthrite axiale sévère: étude de cas d'imagerie

Les cas d'ectasie durale attribuable à une spondylarthrite axiale sévère sont peu nombreux dans la littérature publiée. Le présent rapport décrit la présentation rare et complexe d'un homme de 65 ans dans une clinique chiropratique. Les caractéristiques radiologiques et cliniques ainsi que le diagnostic différentiel sont résumés.

(JACC. 2026;70(2):259-262)

MOTS CLÉS: spondylarthrite axiale, ectasie durale, syndrome de la queue de cheval

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Conflicts of Interest:
The authors have no disclaimers, competing interests, or sources of support or funding to report in the preparation of this manuscript.
The involved patient provided consent for case publication.

Case presentation

A 65-year-old white male U.S Navy veteran presented to the chiropractic clinic with complex medical history of HLA-B27+ radiographic axial spondyloarthritis (r-axSpA) initially diagnosed in 1994. While he was treated with disease modifying anti-rheumatic drugs (DMARDs) early in the course of the disease, it remained mostly unmanaged following unfavourable response to medications. The veteran later underwent surgical placement of an intrathecal (IT) pump in 2006 to alleviate symptoms secondary to axial spondyloarthritis (axSpA). Continued progression of diffuse ankylosis subsequently led to dural ectasia and arachnoiditis resulting in symptoms of cauda equina syndrome including fecal retention, sexual dysfunction, and right lower extremity weakness. The veteran underwent surgery consisting of multilevel laminectomy from L1-L2 to L5-S1 to alleviate these symptoms alongside placement of a lumboperitoneal shunt in 2022.

At time of presentation to the chiropractic clinic in 2025, the veteran's chief complaint was diffuse axial stiffness and immobility alongside bilateral lower extremity radiating paresthesia, muscle spasming, fasciculations, and weakness. As many of his daily activities were hindered by these symptoms, the veteran's goals for treatment were to identify additional treatment options for his pain and to prolong need for future wheelchair use. At time of presentation, the veteran utilized a four-wheel rollator for ambulation assistance.

Upon examination, the veteran demonstrated intact upper extremity reflexes, strength, and sensation, while lower extremity deep tendon reflexes were absent and sensory deficits were present affecting the circumference of his legs bilaterally from his knees to the plantar and dorsal aspects of his feet. Tremor or fasciculations were absent at examination. All cervical and lumbar ranges of motion were markedly reduced.

His most recent lumbar magnetic resonance imaging (MRI) from August of 2025 prior to chiropractic consultation revealed distension of the thecal sac with scalloping involving the lamina and facets from L2 downward, consistent with dural ectasia (Figure 1). These findings were grossly similar to MRIs obtained in April 2024 and May 2022. The previously placed lumboperitoneal shunt remained intact, entering the spinal canal at L2-L3 and terminating at the L1-L2 level. Intrathecal baclofen pump remained intact as well. Nerve roots of the cauda equina appeared laterally displaced along the walls of the thecal sac consistent with arachnoiditis. Thin marginal syndesmophytes, Romanus lesions with 'shiny corners', and vertebral body squaring were observed throughout the lumbar spine, with evidence of fusion at the spinous processes tips, consistent with the patient's history of axSpA. The remainder of the lumbar spine showed no significant disc bulging, herniation, spinal stenosis, or neuroforaminal stenosis.

Given the veteran's complex presentation with multiple contraindications to spinal manipulation (IT pump presence, shunt presence, severe ankylosis, and dural ectasia), he was given the alternative option of a short trial of acupuncture in the chiropractic clinic. The veteran opted for this, and four visits were completed over an eight-week period. The veteran reported decreased pain and tension that lasted for a week following each treatment, along with the feeling that his gait was smoother during ambulation with the four-wheel rollator. Upon completion of the fourth visit within the chiropractic clinic, the veteran opted to continue acupuncture treatment and was referred to the service line for a full trial of care.

Discussion

This case describes a complex presentation of late stage axSpA progression with a rare neurologic complication of dural ectasia secondary to the disease. Axial spondyloarthritis is a seronegative, multisystem, inflammatory disease characterized by inflammation of the axial skeleton affecting 0.3-1.4% of the global population.[1] This condition can be further classified into radiographic (r-axSpA) and non-radiographic (nr-axSpA) manifestations.[2,3] While both subgroups tend to have similar clinical presentations, they are distinguished by the presence of definitive sacroiliitis on plain film imaging. As the disease progresses, chronic inflammatory processes can lead to abnormal new bone formation affecting the sacroiliac joints and entheses in the spine, potentially leading to diffuse syndesmophyte formation which bridges adjacent vertebral bodies resulting in ankylosis.[4]

Further uncommon complications, such as dural ectasia are seen in severe and untreated cases. This occurs secondary to chronic inflammation and is visualized as erosion and/or scalloping secondary to enlargement of the dural sac.[5] Increased pressure from this enlargement can lead to nerve root compression and damage resulting

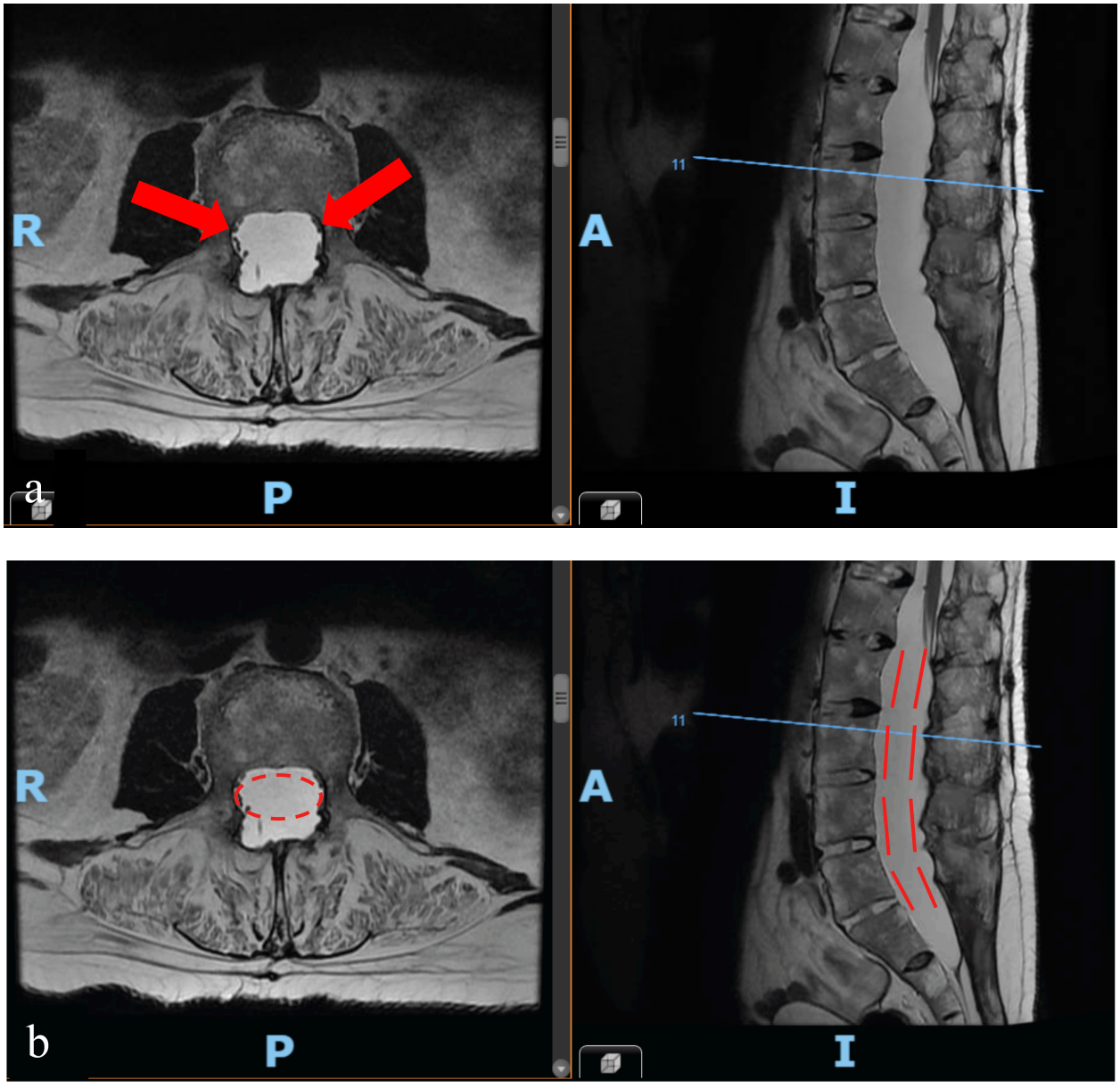

Figure 1.
(a) T2 weighted lumbar spine MRI demonstrating dural ectasia and subsequent arachnoiditis (red arrows). (b) Red dashed line approximates normal canal volume on axial and sagittal views.

in the development of cauda equina syndrome features, termed "CES-AS Syndrome".[6,7] Prevalence of dural ectasia is unknown, but it has also been associated with conditions including Marfan Syndrome and osteogenesis imperfecta, as well as status-post trauma and surgical interventions. One differentiating feature of dural ectasia in axSpA is involvement of the dorsal aspect of the spinal canal, while other causes typically involve the ventral aspect. The key imaging features of dural ectasia are provided in Table 1.

Table 1.
Key imaging features of dural ectasia

- Enlargement/Widening of the dural sac
- Vertebral (osseous) scalloping
  - Dorsal aspect of spinal canal involvement with axial spondyloarthritis
  - Ventral aspect of spinal canal involvement (posterior vertebral body scalloping) with Marfan Syndrome and other causes
- Subsequent arachnoiditis of cauda equina

Only one case of dural ectasia managed within a chiropractic clinic has been reported in the literature, which involved treatment to a separate spinal region and was not secondary to axial spondyloarthritis.[8] Reporting of this condition in a chiropractic care setting is limited both by the presence of dural ectasia and complications associated with conditions or factors which may lead to its development. Treatment considerations should be case-by-case, but are likely to be largely limited to a myofascial and pain management focus.

Key Messages:

- Dural ectasia is a complication of various systemic diseases including axial spondyloarthritis that often leads to serious neurological deficits including cauda equina syndrome.
- Treatment in the acute phase is primarily surgical decompression, while in the chronic phase is focused on pain management.
- While common chiropractic treatment of spinal manipulation is contraindicated, treatments including myofascial release, massage therapy, and/or acupuncture may be considered based on the patient's specific presentation.

Abbreviations:

axSpA	axial spondyloarthritis
CES-AS	Cauda Equina Syndrome in Ankylosing Spondylitis
DMARDs	disease-modifying anti-rheumatic drugs
IT	intrathecal
MRI	magnetic resonance imaging
nr-axSpA	non-radiographic axial spondyloarthritis
r-axSpA	radiographic axial spondyloarthritis

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