

Arachnoiditis ossificans and syringomyelia: A unique presentation

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Abstract

Background: Arachnoiditis ossificans (AO) is a rare disorder that was differentiated from leptomeningeal calcification by Kaufman and Dunsmore in 1971. It generally presents with progressive lower extremity myelopathy. Though the underlying etiology has yet to be fully described, it has been associated with various predisposing factors including vascular malformations, previous intradural surgery, myelograms, and adhesive arachnoiditis. Associated conditions include syringomyelia and arachnoid cyst. The preferred diagnostic method is noncontrast computed tomography (CT). Surgical intervention is still controversial and can include decompression and duroplasty or durotomy.

Case Description: The authors report the case of a 62-year-old male with a history of paraplegia who presented with a urinary tract infection and dysautonomia. His past surgical history was notable for a C4–C6 anterior fusion and an intrathecal phenol injection for spasticity. A magnetic resonance image (MR) also demonstrated a T6-conus syringx. At surgery, there was significant ossification of the arachnoid/dura, which was removed. After a drain was placed in the syrinx, there was a significant neurologic improvement.

Conclusion: This case demonstrates a unique presentation of AO and highlights the need for CT imaging when a noncommunicating syringx is identified. In addition, surgical decompression can achieve good results when AO is associated with concurrent compressive lesions.

Key Words: Arachnoiditis ossificans, intrathecal phenol, syringomyelia

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INTRODUCTION

Arachnoiditis ossificans (AO) is a rare pathological entity that was differentiated from benign leptomeningeal calcification by Kaufman and Dunsmore in 1971.^[3] They reported that AO was associated with vascular anomalies, adhesive arachnoiditis, and progressive myelopathy, noting that the condition was often discovered during surgery and surgical results were often poor. AO was further divided by Domenicucci *et al.* in 2004 into three types based on computed tomography (CT) and magnetic resonance (MR) findings.^[2] Type I AO is semicircular and surrounds half of the dural sac; Type II AO is circular and fully surrounds

the sac, and Type III AO is at the level of the caudal roots and has a honeycomb appearance on imaging. The simultaneous occurrence of AO and noncommunicating syringomyelia have also been noted previously.^[1]

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In this report, we describe a patient presenting with dysautonomia and a noncommunicating syringomyelia attributed to an intrathecal phenol injection.

CASE REPORT

TC, a 62-year-old male, quadriplegic secondary to a diving accident 34 years previously (at which time he was treated with a C4–C6 anterior cervical decompression and fusion), presented with dysautonomia. He had received an intrathecal phenol injection for spasticity several years later.

When MR demonstrated a large syrinx extending from T6 through the conus, he was scheduled to undergo drainage of the syrinx [Figure 1a and b].

A laminectomy of T12 through L1 was performed and the intact dura was incised in the midline. Significant calcification was discovered [Figure 2]. Extension of the laminectomy up to T11 and down to L2 revealed further calcification. After removing a significant amount of calcification, the tip of the conus was opened and a shunt was passed in, draining cerebrospinal fluid (CSF).

Postoperatively, TC's dysautonomia regressed. Notably, a thoracic CT scan [Figure 3a and b] demonstrated a rim of calcification surrounding the entire cord and tapering to a posterior semi-circle in the upper thorax extending up to the T5–T6 level.

DISCUSSION

There are several theories regarding pathogenesis of AO such as chronic adhesive arachnoiditis, irregular calcium metabolism, genetic factors, the next stage in the lifecycle of arachnoidal granulations, and now, intrathecal phenol injection has been associated with AO.^[2]

The concurrence of syringomyelia with AO is considered either purely incidental, the result of vascular ischemia resulting in cavitation or due to a disturbance of CSF flow.

Although there is continued controversy surrounding the surgical treatment of AO, in this case, as in several others good results were achieved with decompression and shunt placement.^[4]

CONCLUSION

Cases of AO are exceedingly rare and the full extent of these lesions should be documented utilizing CT.^[5] MR, however, should also be performed to search for any associated syringomyelia. Good results have been achieved by treating AO with noncommunicating syringomyelia with laminectomy accompanied by decompression/excision of ossified tissue and shunt placement in the conus.^[4]

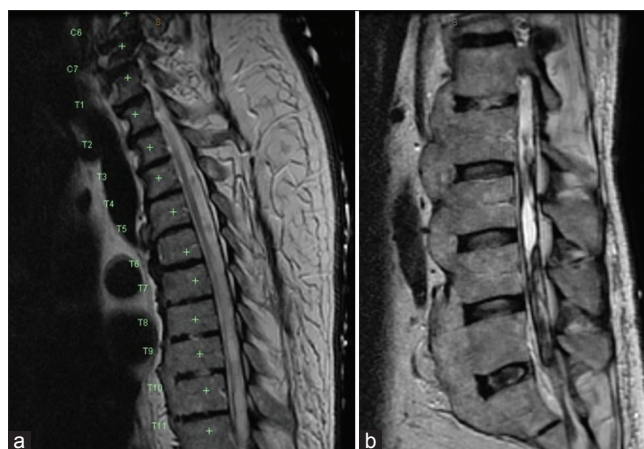


Figure 1: (a) Sagittal magnetic resonance imaging of thoracic spine demonstrating noncommunicating syrinx. (b) Sagittal magnetic resonance imaging of lumbar spine demonstrating irregular enhancement around dural structures

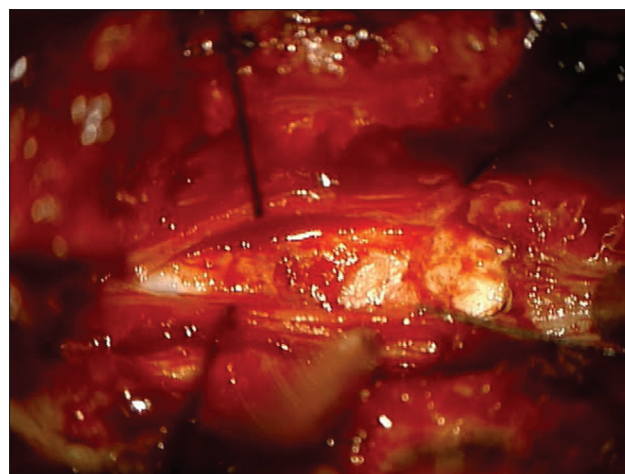


Figure 2: Intra-operative view of intradural calcification

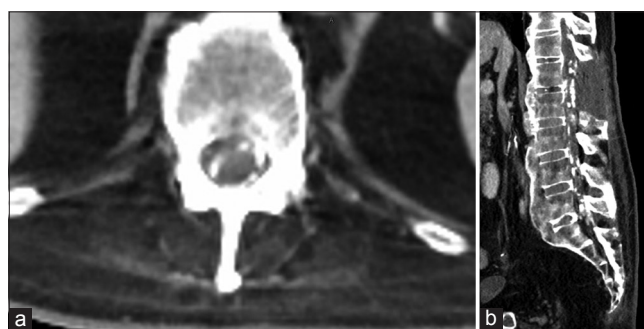


Figure 3: (a) Axial computed tomography of thoracic spine demonstrating calcification surrounding spinal cord. (b) Sagittal computed tomography demonstrating hyperintensity in spinal canal

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Conflicts of interest

There are no conflicts of interest.

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