ABSTRACT Spinal dural arteriovenous fistulae are the most common vascular malformation of the spinal cord. Patients typically present with slowly progressive myelopathy that is often wrongly diagnosed as degenerative cervical or lumbar stenosis. Spinal magnetic resonance imaging showing cord hyperintensity with associated flow voids posteriorly are pathognomonic. Definitive diagnosis and localization are achieved with spinal angiography. Treatment options include endovascular embolization and surgical ligation with good results. We present a 46-year-old gentleman with acute paraplegia secondary to a thoracic dural arteriovenous fistula. He was treated with surgical management with improvement in symptoms. We aim to highlight the importance of early diagnosis and management of this potentially treatable condition.

KEYWORDS Spinal dural arteriovenous fistula, Paraplegia, Surgical obliteration

Case report

A 46-year-old patient with no comorbidities presented to the emergency department with a 10-day history of numbness of both lower limbs followed by a one-day history of sudden onset of weakness of both lower limbs with sensory loss and bladder involvement. Clinical examination revealed flaccid paraplegia with Grade 0 power in both lower limbs, decreased sensations below umbilicus and bladder involvement. A clinical diagnosis of thoracic myelopathy was made, and he underwent an MRI of the spine with contrast. MRI showed cord signal changes on T2 weighted images in the thoracic and lumbar areas with multiple vascular flow voids posteriorly extending from the thoracic cord down to the conus (Figure 1, 2). The possibility of an SDAVF was considered, and he underwent a spinal angiogram (DSA).

DSA showed the presence of a dural arteriovenous fistula at L5-S1 level on the right side with feeders from the lateral sacral artery of the posterior division of the right internal iliac artery. The fistula drains via the filar vein into the perimedullary venous plexus of the spinal cord (Figure 3). Coil embolization and surgical ligation were offered, and the patient attenders opted for surgical management. Accordingly, he underwent an L5-S1 laminectomy and division of intradural filum vein and obliteration of AVF on the right side.

Postoperatively, he was started on physiotherapy and exercises. He presented for follow up at two weeks, during which time his motor power improved to Grade 3, and he was able to...
Figure 1: T2 sagittal sections of thoracic and lumbar cord showing long segment hyperintensity extending from D7 level down to the conus with multiple, fine, serpentine tortuous perimedullary flow voids along the length of the spinal cord (arrows) representing the dural arteriovenous fistula.

Figure 2: T2 axial sections of cord showing hyperintensity involving anterior two-thirds of cord with intradural extramedullary flow voids in posterior spinal cord.

walk with support. Repeat MRI showed the disappearance of flow voids and reduction in spinal cord hyperintensity(Figure 4). He will be kept under follow up.

Discussion

SDAVF is a rare but important cause of paraplegia which can present both acutely as well as with a progressive course. They result from abnormal intradural connections between meningeal branches of the segmental artery and a single intradural vein resulting in retrograde flow in the arteries. The draining veins get arterialized, resulting in venous congestion. This, in turn, leads to progressive myelopathy presenting in middle-aged patients presenting with sensory disturbances, lower limb weakness, back pain and bladder involvement[6]. Because of the variable clinical presentation, there occurs a delay in diagnosis in most cases ranging from 12-44 months. A spinal angiogram is a gold standard for diagnosis. However, MRI of the spine demonstrating cord oedema and hyperintensities and also flow

Figure 3: Digital Subtraction Angiogram showing dural AVF at L5-S1 level on the right side with feeders from the lateral sacral artery of the posterior division of right internal iliac artery. The fistula drains via the filar vein into the perimedullary venous plexus of the spinal cord.

Figure 4: Repeat MRI Spine T2 sagittal sections showing the disappearance of the flow voids and reduction in spinal cord hyperintensity.
voids posteriorly are a useful diagnostic tool. For the treatment of SDAVF, disconnection of the fistula is done by occlusion of the distal part of the feeding artery or the proximal part of the draining vein, which can be done either surgically or by endovascular occlusion using embolic agents. It is a treatable disorder with a good prognosis for recovery of functions if diagnosed and managed early. However, delay in diagnosis may lead to permanent neurological deficits[7].

Conclusion
Spinal Dural Arteriovenous fistulae are an important cause of acute or chronic lower limb weakness in middle-aged patients. A high index of suspicion is essential for proper and timely diagnosis. Effective treatment leads to good outcomes and prevents permanent neurological sequelae.

Abbreviations
- Spinal Dural Arteriovenous Fistula
- MRI-Magnetic Resonance Imaging
- DSA-Digital Subtraction Angiogram

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Conflict of interest
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References