

Conservative Treatment of Lumbar Canal Stenosis Secondary to Epidural Venous Plexus Engorgement: A Case Report

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Abstract

Background: Epidural venous plexus (EVP) engorgement has been rarely reported as a cause of radiculopathy and back pain with different possible underlying pathologies. Because of their rarity, these cases can be easily missed on imaging due to a lack of awareness.

Case Report: We present a case of a 58-year-old, obese woman with a history of treated breast cancer who had been experiencing lower back pain and bilateral sciatica for one year. Clinical examination showed positive signs of neurotension with no neurological deficit. Magnetic resonance imaging (MRI) with contrast showed substantial engorgement of the epidural veins, causing lumbar canal stenosis at the level of L5 and S1. Non-operative treatment with pain medications and pregabalin was successful and improved her symptoms significantly.

Conclusion: Lumbar canal stenosis secondary to epidural varicose veins is a rare cause, and it can be easily missed on imaging. An engorged EVP should be considered in the differential diagnosis of radiculopathy in obese patients. There is an increased risk of bleeding with surgical treatment of such a condition.

Keywords: Epidural Injections; Lumbar Region; Pain; Spinal Canal; Spinal Injections; Stenosis

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Background

Inter-vertebral disc herniation and spinal stenosis are common causes of low back pain and radiculopathy. However, any space-occupying lesion can lead to compression and impingement of the nerve roots and secondary spinal canal stenosis, resulting in back pain and radiculopathy (1-3). Epidural venous plexus (EVP) engorgement has been rarely reported in the literature to cause radiculopathy and back pain (2, 4-7). Possible underlying pathologies include vascular malformations, thrombosis, Budd-Chiari syndrome, pregnancy, and portal hypertension (HTN) (8-13). Because of their rarity, these cases can be easily missed on imaging due to a lack of awareness (14).

Surgical treatment in this condition may be challenging, and this is due to a higher risk of intraoperative bleeding (15). However, surgical and nonsurgical options have been shown to have good clinical outcomes for such conditions (4-6). We presented a case of a 58-year-old obese woman who was diagnosed with lumbar canal stenosis secondary to epidural varicose veins. The patient was treated nonoperatively with analgesia and physiotherapy, and the clinical outcomes were satisfactory.

Case Report

A 58-year-old woman, a known patient of diabetes mellitus (DM) and HTN, was controlled with oral antihypertensive and hypoglycemic medications. The patient had a history of left breast invasive ductal carcinoma and was treated with wide local resection, adjuvant chemotherapy, followed by radiotherapy. She has been disease-free for the past 12 months.

The patient was referred to our spine clinic for a history of one year of gradual, non-traumatic lower back pain associated with bilateral lower limb radiation. Her pain was five out of ten, and it was associated with bilateral foot numbness. The pain was not related to certain positions or activities, affecting her daily life activities with difficulty with walking for long distances, and she denied any bowel or bladder dysfunction.

Clinically, the patient had a body mass index (BMI) of 33.8 kg/m², and she had a positive straight leg raising test on the right side at 70° and normal bilateral lower limb sensation and power. She was able to perform a tandem gait. Her initial lumbar spine radiographs showed mild lumbar spine degeneration at the L4 and L5 with normal coronal and sagittal spine alignment (Figure 1).

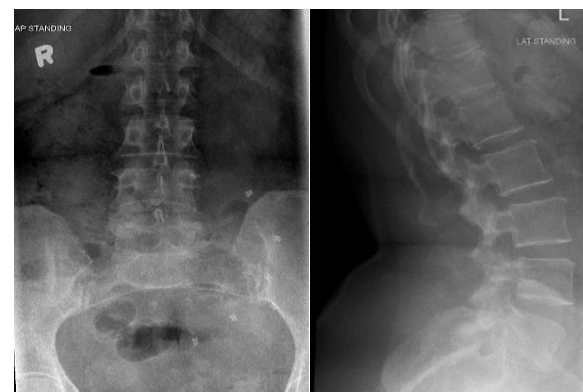


Figure 1. Anteroposterior (AP) (left) and lateral (right) radiographs of the lumbosacral spine showing mild degenerative changes at the lumbar spine with no significant listhesis of the vertebra bodies

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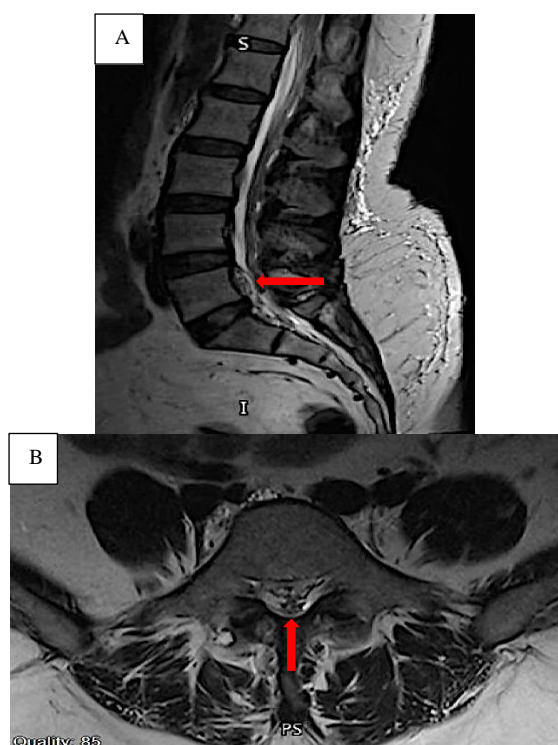


Figure 2. Sagittal (A) and axial (B) cuts of T2 weighted magnetic resonance imaging (MRI) of the lumbosacral spine showing an oval-shaped lesion (red arrow) at the posterior aspect of L5-S1, causing significant lumbar canal stenosis

Further radiological evaluation with magnetic resonance imaging (MRI) was performed to evaluate possible lumbar canal stenosis.

Imaging Features: The MRI showed an oval-shaped lesion with low signals on T1 fat-saturated sequences and intermediate to high signals in T2 weighted images seen posterior to the L5 vertebral body down to the S1 level, causing spinal canal narrowing (Figures 2 and 3).

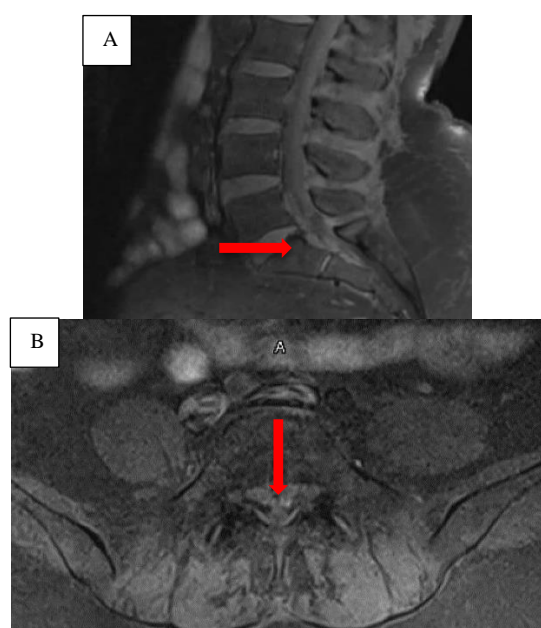


Figure 3. Sagittal (A) and axial (B) cuts of T1 fat-saturated sequence magnetic resonance imaging (MRI) of the lumbosacral spine showing an oval-shaped lesion (red arrow) at the posterior aspect of L5-S1, causing significant lumbar canal stenosis

Post-contrast enhancement of the lesion on the T1 fat-saturated sequence was observed (Figure 4). Metastatic disease was at the top of our differential diagnoses; further evaluation with a positron emission tomography (PET) scan was obtained and ruled out. However, there was substantial engorgement of the epidural veins with post-contrast enhancement, mainly at the level of L5-S1; there was significant compression of the nerve roots with associated lumbar canal stenosis (Figure 4). An abdominal computed tomography (CT) scan ruled out intra-abdominal mass, inferior vena cava (IVC) thrombosis, or vascular malformation.

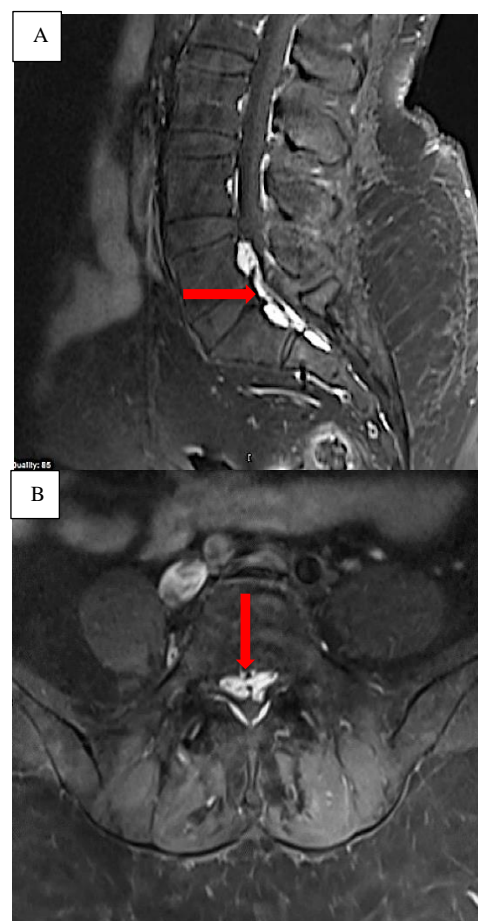


Figure 4. Sagittal (A) and axial (B) T1 fat-saturated sequence magnetic resonance imaging (MRI) with post-contrast enhancement of the epidural veins causing spinal canal stenosis with bilateral compression of the nerve roots

Intervention and Follow-up: Following the MRI findings, the patient was referred to the pain team for further management. She was started on 75 mg of pregabalin twice daily, and she had a significant improvement in her symptoms. She continued on 75 mg of pregabalin twice daily for a total of six months; then, the dose was tapered to once daily as a maintenance dose. Alongside the medication, she was having physiotherapy and hydrotherapy for lumbar spine strengthening. The patient is still on routine follow-ups with the pain team outpatient department, and her symptoms are well-controlled. Clinically, she has no neurological deficits, and her straight leg raising test is similar to her initial presentation. Currently, she is not experiencing any pain related to her back.

Discussion

We are reporting a case of a 58-year-old woman who suffered from lumbar canal stenosis secondary to substantial engorgement of the epidural veins. However, she did not have any neurological deficit at presentation that necessitated surgical intervention and decompression of the lumbar canal. Therefore, the patient was referred to the pain team for nonsurgical treatment, which was successful in controlling and stabilizing her symptoms.

Common causes leading to spinal canal stenosis and radiculopathy include inflammatory, neuropathic, ischemic, and mechanical causes (1, 2, 9, 10, 16). However, vascular abnormalities that cause mechanical compression of the nerve root or the thecal sac are very uncommon causes and account for 0.07% to 1.2% (2, 4, 5, 9, 17, 18).

The literature discusses several pathophysiological theories for forming venous epidural vascular anomalies. Wong et al. suggested that epidural varicose veins were secondary to mechanical compression of the venous plexus by disc herniation or spondylolisthesis (19). Gumbel et al. postulated the possibility of primary epidural varicose veins without any underlying intraspinal pathology (20). Our patient did not have any disc herniation, which could cause epidural vein compression and enlargement of the vessels. She had an increased BMI, which might be a possible cause of the EVP engorgement. Jeong et al. reported that obesity might be a potential cause of such a condition, in which it causes increases in the intra-abdominal pressure and compressive force on the EVP, leading to compression of the thecal sac and lumbar radiculopathy (4).

Radiological diagnosis of such a condition may be challenging. However, MRI, and mainly, T1 weighted with fat saturation post intravenous contrast are the best examinations to show the EVP (6). MRI can also show the extent of the varicosities of the epidural veins, as demonstrated in our case. However, a PET scan should be obtained for patients with a history of cancer to rule out any recurrence of the disease or metastatic disease, as in our case.

There has been controversy regarding treatment options in patients with spinal stenosis secondary to varicose epidural veins. As these lesions are usually diagnosed intraoperatively, some authors have advocated surgical decompression with good results and complete resolution of the symptoms (6). However, other authors have reported good clinical outcomes with conservative treatment. Endres reported a satisfactory clinical outcome in treating epidural varicose veins with peripheral analgesia combined with pregabalin (5). Furthermore, Jeong et al. treated their patient with a caudal epidural block, but the patient only had a 30% improvement for a short time; in their study, they did not attempt another trial of the epidural block due to the risk of epidural veins puncture and risk of bleeding, and eventually, the patient was treated with oral analgesia with visual analogue scale (VAS) score of four-six (4). However, our patient was treated with pregabalin and had a good clinical response with significant improvement in her symptoms.

Conclusion

Lumbar canal stenosis secondary to epidural varicose veins is a rare cause; hence, it can be easily missed on radiographic imaging. An engorged EVP should be considered in the differential diagnosis of radiculopathy

in obese patients. Surgical treatment of this condition carries an increased risk of bleeding.

Conflict of Interest

The authors declare no conflict of interest in this study.

Acknowledgements

This study was approved by our local institution's medical research center (Hamad Medical Corporation, Doha, Qatar) (Approval ID: MRC-04-24-548).

The data supporting this study's findings are available from the corresponding author upon reasonable request.

A written informed consent was obtained from the patient to publish this case report and accompanying images.

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