INTRODUCTION

- Spinal cord stimulation (SCS) has been widely used in the management of various chronic pain conditions
- Indications for SCS include failed back surgery syndrome, complex regional pain syndrome, and other chronic neuropathic pain conditions. SCS can also be used for peripheral vascular disease, phantom limb pain, refractory angina, spinal lumbar stenosis, post-thoracotomy pain syndrome, and chronic abdominal pain (1,2).
- It is estimated that 12,000 SCS systems are implanted every year worldwide (3).
- SCS implantation has been reported to be generally safe (4).
- It is estimated that 12,000 SCS systems are implanted every year worldwide (3).
- Complications are electrode migration (the most common) and rare complication include intraoperative neurologic injury (1).
- However, there is very little published data on the rare, but serious risk of spinal cord compression associated with SCS placement.

CASE REPORT

- 82-year-old female with PMHx of LDDD, scoliosis and lumbar spinal stenosis, had persistent 8/10 pain in the lower back pain and in the posterior-lateral thighs and calves.
- She described her pain as constant achy in the lower back and sharp, shooting in the legs and no pain in the thoracic back.
- Her pain is increased with walking and was partially relieved with rest.
- The patient underwent transfemoral ESI with temporary improvement and a SCS trial was offered to her.
- PE prior to the trial revealed an antalgic gait using single point cane, thoracic spine showed kyphosis, strength testing: bilaterally showed hip flexors, left knee extensors, dorsiflexors, extensor hallucis longus and plantar flexors 5/5 except the right hip flexor 4/5.
- The SCS trial procedure was uneventful.
- Two spinal cord stimulators were positioned at the T8 level.
- Therefore, this trial was deemed successful and permanent SCS was scheduled in three weeks.
- Her pain pattern and physical exam were unchanged before the permanent stimulators were placed.

For the permanent SCS procedure, a Medtronic MRI compatible pulse generator and two SCS were implanted successfully and tolerated procedure well.
- Two hours after the procedure during her evaluation for discharge, the patient was found unable to stand independently but there were no complaints of weakness or increased pain in the lower back and legs, and there was no swelling or hematoma at the surgical sites.
- Strength testing bilaterally in sitting position revealed hip flexors 4/5, knee extensors 4/5, dorsiflexors and extensor hallucis longus 5/5.
- Radiologist refused to perform MRI despite documentation of MRI compatibility was presented.
- Due to high suspicion of spinal cord compression, the decision was made to remove the SCS.
- A thoracolumbar spine MRI was obtained (figure 1-5), which revealed no signs of spinal cord injury, however, it showed severe stenosis at T12-L1 level (figure 1).
- POD#1, patient was discharged home at POD#7, the patient physical exam findings returned back to baseline.

DISCUSSION

- In this case, the patient clearly displayed signs and symptoms of spinal cord compression after the permanent SCS system was implanted.
- Interestingly, she underwent a successful trial in which two similar percutaneous leads were placed in same region of the epidural space for five days without any problems.
- One explanation is increased spinal stenosis due to progressive or new onset of disc bulge and facet joint hypertrophy after the trial procedure.
- The disc bulge at T12-L1 level as shown in Fig. 1 could be a new development since trial leads were removed.
- This is supported by the presence of the bright T2 signal in the posterior annulus which is an indication for a recent annular tear.
- Our neurologic exam revealed absent position sense at bilateral distal interphalangeal joints of the great toes and absent vibratory sensation with 128 Hz tuning fork at bilateral lateral malleoli and the absent proprioception and vibratory sense clearly suggested this is a case of dorsal column compression.
- Our case suggests risk of spinal cord injury may be increased in the setting thoracic spinal stenosis.
- It is worth noting that thoracic stenosis is frequently associated with lumbar stenosis (5).
- These studies clearly supported the notion that there is a high incidence of asymptomatic thoracic spinal stenosis in elderly patients with symptomatic lumbar stenosis (6,7).

CONCLUSION

- Despite serious neurological complications related to SCS implantation are rare (8), this case suggested these complications can occur, and early recognition of the signs of spinal cord compression and removal of the spinal cord stimulator in a timely fashion may prevent permanent spinal cord injury.
- In addition, it may be prudent to perform imaging studies to rule out severe thoracic spinal stenosis for elderly patients with a history of lumbar stenosis, especially symptomatic lumbar stenosis prior to placing any SCS in the thoracic spine.

REFERENCES