Pseudomeningocele, A Rare Complication of Intrathecal Pain Pump Placement and A Nidus for Infection

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Case Description

A 74 year-old female with a history of persistent chronic pain s/p intrathecal pain pump (2023) and spinal cord stimulator (2022), failed back surgery syndrome (FBSS), and recent T9-Pelvis fusion with L4 pedicle subtraction osteotomy (PSO) and intrathecal drug delivery system (IDDS) removal presented from an outside hospital with two days of bilateral lower extremity pain, patient-reported fever, and continued serosanguinous drainage from her previous IDDS site. Two weeks prior to presentation a pseudomeningocele was identified from L2-L5 due to a complex dural rent at the catheter entry site with a cerebrospinal fluid (CSF) leak. The patient then underwent intrathecal pump explantation with a complex dural tear repair.

CT revealed postoperative changes from the thoracolumbar spinal fusion without hardware complication and removal of right lower lumbar subcutaneous IDDS unit with fluid in the removal cavity. Thoracic and lumbar MRI redemonstrated a large postoperative fluid collection within the decompression cavity from L1 to S1 with extension into the dorsal epidural space, a subcutaneous collection in the right posterior soft tissues at L2-3, and a second superficial midline postoperative collection from T9-10 through L1.

Two weeks postoperatively the patient had lumbosacral pain and bilateral radicular pain radiating down the buttocks and bilateral anterior thighs. Additionally, the patient exhibited increased weakness in bilateral lower limbs with intact sensation. Significant labs included elevated CRP and ESR, though the patient was afebrile without leukocytosis on admission. Infectious labs and imaging were obtained with initiation of empiric intravenous vancomycin and Zosyn.

Ultimately the patient underwent incision and debridement of the lumbar spine and intraoperative cultures were collected. New surgical drains and wound vac were placed. Intraoperative cultures later grew Klebsiella, thus the patient was transitioned to IV ceftriaxone for 6 weeks. Given persistent pain despite intravenous Dilaudid and oral oxycodone, patient-controlled analgesia with Dilaudid was initiated with continued Lyrica for neuropathic pain. Given improvement in pain control prior to discharge, the patient was transitioned back to as needed oxycodone with close pain management follow up 2 weeks later.

Diagnostics

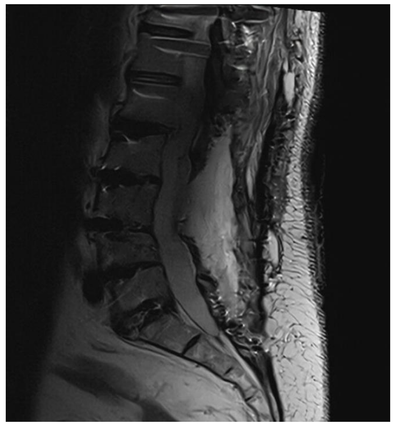


Figure 1. MRI lumbar spine demonstrating postoperative fluid collection extending from the dorsal epidural space and within the decompression cavity from L1-2 through S1, measuring approximately 12.2 cm craniocaudal and up to 3.1 cm anteroposterior.



Figure 2. MRI thoracic spine noting a second superficial midline postoperative collection extending from T9-10 through L1, without definite communication to the deeper lumbar collection.

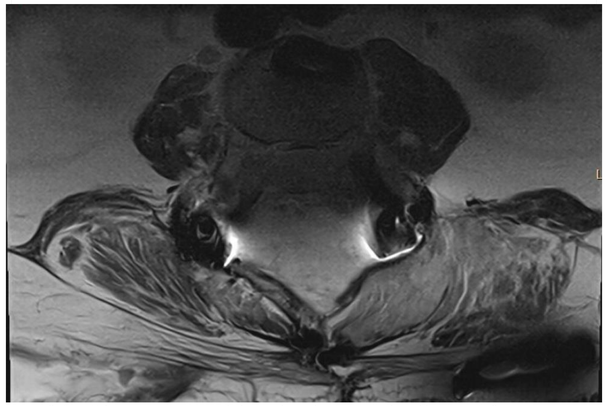


Figure 3. Axial MRI lumbar spine demonstrating postoperative fluid collection at the level of L3

Discussion

IDDS has been utilized for decades as an effective treatment for chronic pain, especially in patients with cancer-related pain or pain refractory to conservative management. Intrathecal pain modulation allows for substantial analgesic dose reduction and mitigation of dose-related side effects.[1, 2] However, IDDS still carries significant procedural risks such as infection, hardware malfunction, and dural tears related to instrumentation. In this case, it is likely the patient's pseudomeningocele and subsequent surgical site infection were a result of the IDDS and catheter placement leading to complex dural tear and CSF leak. Cases of asymptomatic pseudomeningocele with low risk of complication may be managed conservatively, yet cases with refractory symptoms or risk of subsequent complications such as infection, tension pseudomeningocele, or retained catheter fragments should be evaluated promptly and considered for surgical intervention.[1, 3, 4]

Conclusions

IDDS is an effective therapy for chronic and cancer-related pain, reducing analgesic doses and side effects, but carries risks such as infection, hardware failure, and dural injury. In this case, pseudomeningocele and infection likely resulted from catheter-related dural tear and CSF leak. Asymptomatic pseudomeningocele may be managed conservatively, while symptomatic or high-risk cases—particularly with infection or complications—require immediate surgical intervention. Thus, clinicians should always be cognizant of pseudomeningocele risk after IDDS implantation.

References

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