

TO EXPLANT OR NOT TO EXPLANT: MANAGEMENT OF AN INTRATHECAL PUMP DUE TO POSSIBLE ABDOMINAL POCKET SITE INFECTION

Rohan M. Krishnan, M.D., M.S., Emma Fu, M.D., Brendan Astley, M.D.

Case Western Reserve University - MetroHealth Medical Center, Cleveland, Ohio

Background

An intrathecal pain pump is often used as an escalation in pain management for patients experiencing severe, long-term pain that has been refractive to other approaches including oral formulations, procedures, and physical therapy. Complications associated with implantation of an intrathecal pump include infection, cerebrospinal fluid (CSF) leak, and mechanical problems that require repositioning or replacement.¹ Here we describe a case of an intrathecal pump requiring explant due to possible infection.

Case presentation

Our patient is a 67 year old female status post laminectomy of L5-S1 (1989), status post fusion of L4-L5-S1 (1990), status post explant Medtronic spinal cord stimulator (2010), status post fusion L2-L4 (2016), status post removal of bilateral epidural ANS Nevro stimulator (2020), s/p laminectomy/discectomy (2020) with a past medical history significant for post laminectomy syndrome, degenerative disk disease, spinal stenosis, lumbosacral spondylosis, and chronic lower back pain presenting for pain management due to worsening chronic right thigh pain, bilateral sacroiliac pain, and chronic lumbar pain since her discectomy in August 2020. She described the pain as sharp and intense, made worse by forward flexion with radiation down both legs with numbness and tingling worse on the right side. She took Tylenol, Tizanidine, Venlafaxine, Pregabalin, status post multiple trigger point injection, status post multiple epidural steroid injections, and status post multiple lidocaine infusion IV therapy with no relief. Due to a worsening course of intractable pain, an intrathecal Medtronic two-segment catheter was placed at the T9 level with SynchroMed II 40 mL pump at the location of the left intercostal area in June 2021.

Hospital Course:

Her pain appeared to be well controlled with the intrathecal pump and lidocaine infusion therapy over the course of a year. In June of 2022, the patient noticed a small amount of clear to yellow fluid from the scar site of the pump pocket and described the drainage as intermittent in nature. On physical exam she had a small scar fistula at the superior area of the pump pocket. She did not have any clinical signs of meningitis but did have some accompanying nausea and vomiting with weight loss. Complete blood count showed no signs of leukocytosis and erythrocyte sedimentation rate and C-reactive protein were both normal. A computerized tomography (CT) scan of the Thoracic/Lumbar Spine showed no focal fluid collection surrounding the pain pump or evidence of a sinus tract to the skin. She was initiated on cephalexin 500 mg oral 4 times daily and doxycycline 50 mg oral 2 times daily (BID), and scheduled for a scar revision surgery. Dissection was carried down to the pump and no obvious signs of infection were noted. Operative cultures were obtained and CSF was sent for cultures as well. Aerobic operative cultures showed 4+ polymorphonuclear leukocytes but no organisms. All other operative cultures and CSF cultures were negative for growth as well. She completed her antibiotic course and her pump was not explanted at the time of the scar revision. Her intrathecal pump worked well for her with no complaints of pain at the pump site or drainage. In February 2023, the Pt began complaining of a small amount of pus draining from the pump incision site. On physical exam, there was no tenderness at the pump site but there was some redness. She was initiated on doxycycline 50 mg oral BID and cephalexin and scheduled for an immediate explant of her intrathecal pump. Her pump was explanted and a small pinpoint area above the abdominal pump incision site was made in the case of possible drainage. Operative cultures were taken and all were negative for growth. Following explant of the intrathecal pump, some drainage was noted from the small pinpoint area that was serosanguinous in nature with no purulence or odor. She completed her course of antibiotics and reported no signs of infection in follow-up visits. The decision was eventually made to re-implant the intrathecal pump months later due to ongoing inadequate pain management.

Discussion:

Drug delivery system infections tend to occur relatively early after implantation and typically involve the abdominal pocket site. Typical microorganisms responsible for this infection include Staph epidermidis which can contaminate the device at the time of implantation. Management of a drug delivery system infection typically includes inpatient hospitalization, parenteral antibiotics, and complete removal of the implanted device. In this case, the decision was made to explant the device despite the absence of infectious signs on physical exam, labs, and microbiology cultures. It is important to weight the costs and benefits of device explanation in the lens of the patient. For this patient, prevention of further complications such as meningitis or other central nervous system (CNS) infections outweighed the benefits of pain control. The decision to re-implant the device should be carefully considered and implanted in the contralateral abdominal wall, opposite from the original site of infection.² In this case, the pump was reimplanted in a pocket location in the lumbar/sacral area away from the site of the original intrathecal pump.

References

1. “Intrathecal Pain Pump.” Wwww.hopkinsmedicine.org, 16 Dec. 2022, www.hopkinsmedicine.org/health/treatment-tests-and-therapies/intrathecal-pain-pump
2. Follett, Kenneth A, et al. “Prevention and Management of Intrathecal Drug Delivery and Spinal Cord Stimulation System Infections.” Anesthesiology, vol. 100, no. 6, 1 June 2004, pp. 1582–1594, <https://doi.org/10.1097/00000542-200406000-00034>. Accessed 24 Apr. 2023.