

Sympathetic Nerve Block to Treat Pediatric Complex Regional Pain Syndrome (CRPS)

Daniel Cho, BS¹, Kevin Tang, BS¹, Haijun Zhang MD²,

¹Rutgers New Jersey Medical School; ²Rutgers Comprehensive Pain Management Center

Introduction

Complex regional pain syndrome (CRPS) is a debilitating, multifactorial, chronic pain condition that is characterized by allodynia, hyperalgesia, and cutaneous findings. In pediatric patients, CRPS is more often diagnosed in the lower over the upper extremity. There is also evidence to suggest psychological factors are at play in pediatric CRPS patients. There is a tendency for higher-stress environments and learning difficulties in pediatric CRPS. Thus, a multidisciplinary treatment plan is employed to treat pediatric CRPS. However, invasive management should be utilized in patients who fail conservative pain management. In the presented case, we demonstrate the use of a lumbar sympathetic nerve block to achieve adequate pain relief in a pediatric CRPS patient.

Methods

The patient was draped in a sterile manner. The lumbar spine was identified under fluoroscopic guidance. The proposed trajectory was anesthetized with 2 ml of 1% lidocaine. A spinal needle was directed to the target point and advanced through the lateral view until the needle tip reached the anterior third of the same vertebral body, at which point the stylet was removed. After negative aspiration, 1 mL iohexol contrast solution was injected. Injection of 9 mL of 0.25% bupivacaine mixed with 1 mL of (40 mg/ml) triamcinolone was performed. The needle was removed followed by appropriate pressure for hemostasis. The same steps were repeated on the left side of L3.

Case Report

A 12-year-old male with a past medical history of migraines and attention deficit hyperactive disorder initially presented to the office with 3 months of sharp pain and hypersensitivity throughout his left leg. The patient reported a baseline pain of 7/10 daily which worsened with walking and standing. Intermittent edema and skin discoloration was also noted. This began following a left knee injury while playing soccer. Imaging showed no abnormal findings. He began physical therapy as well as gabapentin, acetaminophen, lidocaine patches, and diclofenac gel which did not adequately treat his pain. This patient was then identified as a candidate for left lumbar sympathetic nerve block. Fluoroscopic-guided left lumbar sympathetic nerve block was performed at the levels of L1 and L3. The injectate included 0.25% bupivacaine and triamcinolone. Following the procedure, the patient reported significant pain relief for the next 3 months, but the pain gradually returned. The patient underwent a repeat left lumbar sympathetic nerve block and has since achieved the same adequate pain relief.



Figure 1. Spread of contrast solution in lateral view on fluoroscopy.

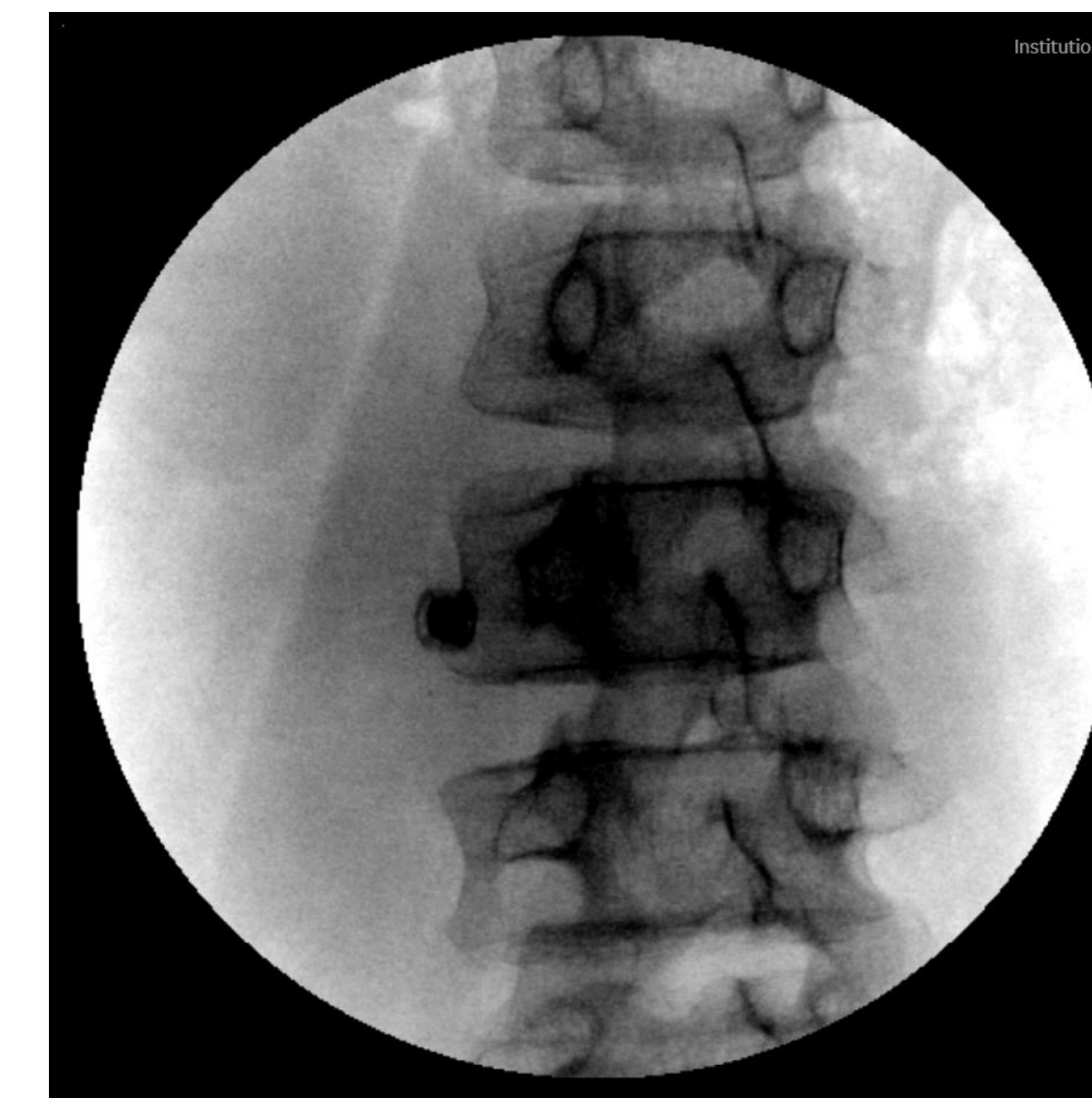


Figure 2. Spread of contrast solution in anteroposterior view on fluoroscopy.

Discussion

Sympathetic nerve blockade is able to provide pediatric patients with appropriate pain relief in those who fail conservative therapies for pediatric CRPS. However, due to the multifaceted nature of pediatric CRPS, invasive pain management should still be supplemented with other rehabilitative treatment therapies. Sympathetic nerve blocks are not the only invasive form of pain management therapies. There have been other cases of successful pain relief from other procedures including spinal cord stimulation, transcutaneous electrical nerve stimulation, and intraspinal analgesic infusions. There has yet to be established a preferred procedure for the treatment of pediatric CRPS. As seen in this case, the symptoms of this patient's CRPS returned over the course of the next few months after his first lumbar sympathetic nerve block indicating the potential limitations of long-term pain relief. Other therapies with potential long-term effects still need to be explored.

References

1. Low, A. K., Ward, K., & Wines, A. P. (2007). Pediatric complex regional pain syndrome. *Journal of Pediatric Orthopaedics*, 27(5), 567-572.
2. Borucki, A. N., & Greco, C. D. (2015). An update on complex regional pain syndromes in children and adolescents. *Current opinion in pediatrics*, 27(4), 448-452.
3. Rodriguez-Lopez, M. J., Fernandez-Baena, M., Barroso, A., & Yáñez-Santos, J. A. (2015). Complex regional pain syndrome in children: a multidisciplinary approach and invasive techniques for the management of nonresponders. *Pain Practice*, 15(8), E81-E89.
4. Martin, D. P., Bhalla, T., Rehman, S., & Tobias, J. D. (2013). Successive multisite peripheral nerve catheters for treatment of complex regional pain syndrome type I. *Pediatrics*, 131(1), e323-e326.
5. Kemler, M. A., Raphael, J. H., Bentley, A., & Taylor, R. S. (2010). The cost-effectiveness of spinal cord stimulation for complex regional pain syndrome. *Value in health*, 13(6), 735-742.

