Regional Please?: Resolution of Neuropathic Pain Following Peripheral Nerve Block

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Introduction

• Complex regional pain syndrome (CRPS)
  • An uncommon disease with a prevalence of less than 2% in most studies
  • A regional, posttraumatic, neuropathic pain problem
  • Categorized as CRPS Type 1 or Type 2
  • Depending on the presence of direct nerve injury
• Physical therapy (PT) is the first-line treatment; however, multimodal therapy is often necessary and includes psychological support, medications, regional anesthetic blockade, and spinal cord stimulation
• Our patient had probable CRPS Type 2 of her LE, which resolved following a single-shot peripheral nerve block (PNB) performed for post-operative analgesia.
• This is the first case report we are aware of where severe pain and neuropathic symptoms resolved following a PNB intended solely for post-operative pain relief.

Case Presentation

• An 11-year-old, 47 kg, Hispanic female who sustained a left open femur fracture, tibia fracture, and dislocated knee following a MVC. For initial surgical treatment, an external fixator was placed.
• Serial neurovascular checks revealed increasing pain, parasthesias, and worsening motor function in the superficial and deep peroneal nerve distributions. Subsequent procedures included wound vac changes, and IMN of the femur.
• As an outpatient, she underwent PT, OT, and wound care, but still had persistent motor and sensory loss in the distribution of her great toe and complained of severe allodynia and hyperesthesia of her left leg wound site
• This was so severe, she could not sleep with sheets on her leg

Case Continued

• The patient developed traumatic Genu Valgum and underwent tibial and femoral hemiepiphiodeses 8 months after her initial injury.
• GA with PNBs for post-operative analgesia was planned, given her history of chronic pain.
• Post-induction, a single-shot, ultrasound-guided block of the tibial and common peroneal nerves in the popliteal fossa were performed with 0.2% Ropivacaine. Ultrasound-guided femoral and obturator PNBs were also performed with Ropivacaine 0.2%. She recovered in the PACU with minimal pain. POD 1, her block resolved and she was discharged.
• At her 2-week follow up appointment, she reported significantly decreased allodynia and hyperesthesia at her initial wound site. Coincidently, sensation and motor function to her left great toe was also nearly back to normal.

Discussion

• We found this patient’s clinical course to be unique and highly intriguing.
• Despite 7 months of intensive therapy for her chronic pain, there was no improvement in her symptoms.
• Then, following a final procedure and an anesthetic including a PNB, both pain and motor function rapidly improved.
• Some practitioners avoid regional anesthesia in the setting of ongoing nerve deficits for fear of worsening nerve damage and function. Perhaps in the setting of neuropathic pain or CRPS, this should not be completely ruled-out, and might have long-lasting benefits.
• We propose that the block may have “reset” the problematic nerve.
• Although the outcomes for CRPS in children and teenagers are generally good, some are left with irreversible crippling changes and regional anesthesia may offer a possible solution.

References:
3. Cote and Lerman’s A practice of Anesthesia for Infants and Children 5th ed. Elsevier Saunders; 2013: Ch. 44.
4. Complex Regional Pain Syndrome Fact Sheet,” NINDS, Publication date June 2013.

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