Cervical Epidural Analgesia for Management of Pain Associated With Digital Vasculitis Secondary to Rheumatoid Arthritis

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Background and Objectives. Cutaneous vasculitis is a devastating extra-articular manifestation of rheumatoid arthritis. The potential consequences of digital vasculitis are necrosis, ischemia, infarction, and eventually gangrene. Methods. A 54-year-old woman with a long history of rheumatoid arthritis developed an acute onset of severe diffuse occlusive cutaneous vasculitis beyond the head of the metacarpals (documented by angiogram). Despite treatment with high-dose prednisone and Cytoxan, her symptoms were poorly controlled. Cervical sympatholysis via continuous epidural infusion of bupivacaine was then initiated to manage her pain as well as to treat the vasoconstrictive sequelae of the cutaneous vasculitis. Results. The cervical epidural infusion relieved the pain and produced significant resolution of the symptoms. Conclusions. This case highlights the rational use of continuous cervical epidural block for the management of pain and improvement in blood flow to vasoconstricted upper extremities and digits resulting from vasculitis due to rheumatoid vasculitis. Reg Anesth 1997; 22: 188–191.

Key words: digital vasculitis, rheumatoid arthritis, cervical epidural block.

Digital vasculitis secondary to rheumatoid arthritis associated with high circulating rheumatoid factors is an extremely painful and debilitating disorder (1,2). Progressive vasculitis may cause ischemia, infarction, necrosis, and gangrene of affected extremities and particularly the digits. Traditional treatment has consisted of medical therapy with prednisone, methotrexate, and cyclophosphamide. This case report describes the use of cervical epidural analgesia (CEA) as an adjunct to medical therapy in the treatment of a patient with rheumatoid arthritis who developed digital vasculitis with concurrent ischemia.

Case Report

A 54-year-old woman with a long history of severe rheumatoid arthritis and no history of Raynaud's was evaluated for increasing pain and paresthesia in the third, fourth and fifth fingers of her left hand. Her prednisone was increased from 5 mg to 30 mg daily by mouth, with no improvement. She denied fever, chills, and a history of alcohol, tobacco, or drug abuse. She was admitted to the University of Michigan Medical Center (UMMC) and referred to the dermatology service. On presentation, brown spots in her nail beds, blue ischemic fingertips with areas of dermal necrosis, and ulnar deviation of the digits as well as a swan neck deformity were noted. Laboratory evaluation revealed a white blood count of 13,900/mm³ hematocrit of 37.6%, and platelet count of 392,000/mm³. Medications on admission included methotrexate 15 mg orally every week, diclofenac 75 mg by mouth twice daily, and prednisone 30 mg
by mouth every day. While in the hospital her oral prednisone was increased to 40 mg twice daily, yet her signs and symptoms persisted. Acetaminophen 300 mg with codeine 30 mg orally four times per day was initiated to treat her increasing pain.

Laboratory determinations at the UMMC revealed that her immunoglobulins G and M were positive, suggestive of thrombosis, and heparin therapy was initiated on the second day of hospitalization. Five days after admission, she showed no response to the medical treatment and required intravenous meperidine for analgesia. On the sixth hospital day, an angiogram revealed a normal aortic arch and major vessels proximal to the wrist. It also revealed diffuse and marked small vessel disease involving all digits, with little blood flow beyond the head of the metacarpals, suggesting severe occlusive vasculitis (Fig. 1). Cytoxan was initiated and heparin was discontinued. Despite Cytoxan, her signs and symptoms persisted and she reported a 7 on a 0–10 verbal analog pain scale.

On the eighth hospital day, the Anesthesiology Adult Acute Pain Service was consulted for a home pain medication regimen in anticipation of discharge and recommended CEA as an appropriate therapeutic option for pain management and treatment of the concurrent ischemia. After written informed consent had been obtained, the presence of functional intravenous line was documented, and monitors were placed for blood pressure, continuous pulse oximetry, and electrocardiography. The patient was placed in the sitting position and was prepared and draped in a sterile fashion. With observance of strict aseptic technique, an 18-gauge Tuohy cervical epidural needle was placed in the midline at the C6–7 interspace. The epidural space was identified by the hanging drop technique. An epidural catheter was advanced 3 cm into the epidural space. A standard 2-mL test dose of 1.5% lidocaine with 1:200,000 epinephrine was negative for intravascular or subarachnoid injection.

Immediately after administration of the anesthetic test dose, the patient reported an analog pain scale score of 5 and immediate warmth in her digits. Improved color was noted in her fingertips (Fig. 2). A 0.0625% bupivacaine infusion at 4 mL/h was started, and she continued to experience increased warmth and decreased pain. Throughout her remaining hospitalization, she reported an analog pain score of 3–4 and no longer required supplemental opioids. The CEA was discontinued after 7 days (14th hospital day), since no further dermatologic benefit could be obtained from the epidural infusion. The patient denied paresthesias, cold extremities, or digit pain, and there was significant resolution of the dermatologic signs of cutaneous vasculitis. On the 14th hospital day, she was discharged in stable and improved condition, requiring no analgesics. Six months after discharge, she continued to be pain-free, with no exacerbation of her symptoms.

**Discussion**

Sympathetic block is a proven method of diagnosing and treating pain problems due to sympathetic hyperactivity while increasing blood flow to the affected area (3). Lumbar sympathectomy (surgical and chemical) is commonly used to treat peripheral vascular disease and rest pain (4). However, continuous infusion of a low concentration of local anesthetic by pump is a relatively modern innovation to provide sympatholysis and analgesia. The cervical epidural technique is well documented in the anesthesiology literature for diagnosing and
treat pain in the neck and upper extremities (5–7). However, CEA has never been reported as a therapeutic option for the management of the cutaneous manifestations of vasculitis associated with rheumatoid arthritis.

Despite the many benefits of cervical epidural block, it lacks the specificity of the stellate ganglion block (SGB). Techniques for continuous unilateral block of the stellate ganglion have been described (8). However, this technique would be cumbersome at best for bilateral block, and we considered the use of an epidural catheter to be safer approach.

Although this patient’s inciting event was not sympathetically mediated, the physiologic manifestations of her disease process were due to decreased perfusion of both hands. Thus, sympathetic block via cervical epidural infusion seemed a logical approach to provide improved blood flow as well as analgesia while medical therapy was being initiated to treat the primary rheumatologic arthritis. Continuous infusion of a low concentration of bupivacaine via the cervical epidural route was initiated and maintained by a CADD—PCA ambulatory infusion pump (Pharmacia Deltec, St. Paul, MN) in order to provide sympathetic block and analgesia.

Medical management may have been instrumental in resolving this patient’s symptoms. However, the fact that she received immediate analgesia from the epidural local anesthetic provides evidence that sympathetic block was critical for pain and symptom control. The prompt improvement of the dermatologic manifestations of cutaneous vasculitis suggests that CEA prevented further progression while possibly causing regression of the disease process.

This case report describes the successful use of sympathetic block by the cervical epidural technique as a temporizing measure in a patient with rheumatoid arthritis and acute-onset vasculitis and ischemia. Furthermore, this case suggests that sympathetic block may be an appropriate adjunct to medical therapy in rheumatoid arthritis patients with vasculitis affecting other organ systems and extremities with accompanying ischemia.

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Cervical Epidural Analgesia for Digital Vasculitis  •  Green and de Rosayro  191

References