Repeted Stellate Ganglion Blockade Using a Catheter for Pediatric Herpes Zoster Ophthalmicus

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TREATMENT for the pain associated with acute herpes zoster traditionally has included sympathetic blockade.1,2 In many cases, a series of blocks may need to be performed over a short period of time. The performance of nerve blocks in children is more complex than that in adults, because it may be impossible to attain the required level of cooperation from the patient without concurrent administration of general anesthesia. We report on our experience with a pediatric patient with acquired immune deficiency syndrome (AIDS) who had acute herpes zoster ophthalmicus.

Case Report

A 24 kg, 8-yr-old boy with a history of human immunodeficiency virus (HIV) infection acquired perinatally, was admitted to the Pediatric Service. He had a 2-week history of acute herpes zoster of the ophthalmic division of the right trigeminal nerve and complained of severe, constant, burning facial pain and itching. Treatment was started with acyclovir (200 mg) intravenously three times a day, codeine phosphate (30 mg) and acetaminophen (300 mg) (Tylenol #3, McNeil Pharmaceutical, Raritan, NJ) orally every 4 h or as needed for pain), and morphine sulfate (1 mg) intravenously every hour or as needed for severe pain. Failure of these measures to control his pain resulted in consultation of the Anesthesia Pain Service.

On examination, the patient appeared anxious, in pain and tearful, with a pulse of 120 beats per min and a respiratory rate of 24 breaths per min. A maculopapular rash with crusty lesions covered the right side of his face. He had conjunctivitis and cervical lymphadenopathy. There was allodynia and hyperesthesia of the affected area. The rest of his physical examination yielded no abnormal results.
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Laboratory investigations revealed the following: a white blood cell count of 6,200/mm³, a hemoglobin concentration of 12.4 g/dl, and a platelet count of 94,000/mm³. Glucose, electrolytes, creatinine, bilirubin, and chest x-ray were normal.

The patient was given amitriptyline (2.5 mg, or 0.1 mg/kg) orally every night, and a stellate ganglion block was scheduled for the following morning. It was our judgment that the patient would require general anesthesia for the procedure; we elected to place a catheter designed for continuous stellate ganglion blockade so that a series of blocks could be performed, if necessary, without the need for repeated needle placement.

After the initial dose of amitriptyline was administered, the patient experienced his first night of uninterrupted sleep since admission. His pain, however, was unchanged, so the next day, after appropriate fasting, the patient was brought to the Block Room for placement of the stellate ganglion catheter.

During the procedure, the patient's vital signs were monitored with an automatic blood pressure cuff, pulse oximeter, electrocardiogram, and skin temperature probes applied to both palms. Propofol was titrated for sedation, for a total of 80 mg over 30 min. With the patient in the supine position, the neck was extended, prepared, and draped. Chassaignac's tubercle was identified, and the sternoclavicular muscle and the carotid sheath were retracted laterally with two fingers. A 5-cm, 20-G ordinary hypodermic needle was inserted perpendicularly to the skin until direct contact with the transverse process of the sixth cervical vertebra was made. The needle then was withdrawn 2 mm, and after negative aspiration for blood or cerebrospinal fluid, 0.5 ml 0.25% plain bupivacaine was administered. There was no change in vital signs after approximately 1 min; an additional 5 ml of the same solution then was administered slowly through the needle. A 24-G catheter with guide wire then was introduced through the needle until the catheter encountered resistance against the transverse process. The guide wire and needle then were withdrawn, leaving the catheter in place. The catheter was secured with clear adhesive, and the catheter's marking at the skin was noted.

Conjunctival injection and miosis consistent with Horner's syndrome developed on the ipsilateral side within 3 min of placement of the block. The ipsilateral hand showed a 2°C increase in temperature, with no change evident in the contralateral hand's temperature. The patient was allowed to recover from the propofol. When questioned immediately after he awoke, the patient denied having any pain. Later that day, he did not require any opiates for pain, although his pain was not abolished completely. The block was repeated when the Horner's syndrome resolved, which occurred later that evening. The block then was repeated daily. At the catheter on the 2nd, 3rd, and 4th days. The patient did not experience a recurrence of the pain after the second day of reinjection of the catheter; the number of blocks selected was based on the recommendation of Currey et al.,3 rather than on the presence of pain. Before each redosing, the catheter was checked for migration by identification of the markings on the catheter, aspiration of the catheter, and injection of 0.5 ml 0.25% bupivacaine with epinephrine (1:200,000) as a test dose. This then was followed by the injection of an additional 4 ml of the same solution. Each redosing resulted in the development of Horner's syndrome. On the 4th day, the catheter was removed after the last redosing. There were no signs of infection at the catheter site.

The patient was discharged to his home with directions to take amitriptyline (2.5 mg) every night, didanosine (10 mg) twice a day, and sulfamethoxazole (400 mg) and trimethoprim (80 mg) (Septra, Burroughs Wellcome, Research Triangle Park, NC) every day. He remained pain-free when he visited the Pain Clinic 2 weeks later. At that time, the acute episode of herpes zoster had resolved. The amitriptyline then was discontinued.

Discussion

Acute herpes zoster represents reactivation of the dormant varicella zoster virus in the dorsal root ganglion (usually associated with an earlier infection with chickenpox). The virus replicates and moves peripherally along sensory nerves to the skin.1 Illness in children related to HIV infection was reported in 1982.3 Herpes zoster is a common cause of morbidity and mortality in patients infected with HIV.5,6 The incidence of acute herpes zoster in HIV-infected hemophilia children from 1979 to 1986 was reported to be 39 of 202, or 2.3/1,000 person-months. This is significantly higher than the 0.15/1,000 person-months incidence of acute herpes zoster in healthy children.7 With the expected increase of HIV infection in the pediatric population, more cases of pediatric herpes zoster are expected to be reported.6,8

Herpes zoster ophthalmicus occurs when the ophthalmic branch of the trigeminal nerve is affected. It usually is accompanied by severe pain and is associated with a high incidence of scarring and complications, which may include iridocyclitis, keratitis, and even loss of vision.28 Treatment of herpes zoster ophthalmicus should include treatment of the underlying disease state and the immunologic suppression, if present.8 Treatment of the pain can be difficult, because neuropathic pain may be relatively resistant to traditional analgesics.6

Stellate ganglion block has been shown to alter the course of acute herpes zoster ophthalmicus by reducing the pain in the acute phase and reducing the incidence of postherpetic neuralgia, although the mechanism for this reduction is unclear.3,10 The best results are obtained with early intervention, i.e., within 2–3 weeks of the appearance of the rash; clinical response will determine the frequency and number of blocks needed. Currey et al. have recommended performing 3–5 stellate ganglion blocks during the acute phase of herpes


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zoster ophthalmicus. This poses potential management problems in the pediatric age group. The level of cooperation needed to perform the series of blocks safely and expeditiously usually requires heavy sedation or general anesthesia in young patients. Although the stellate ganglion lies at the level of the seventh cervical vertebra, we selected the well-described approach of performing the block at the level of the sixth cervical vertebra to avoid the risks associated with the lower approach, viz., pneumothorax and hemothorax. Malmqvist et al. have shown that both approaches are equally effective for upper cervical sympathetic blockade. The efficacy of the block in our patient was confirmed by the development of Horner’s syndrome and temperature changes in the ipsilateral arm at the time of the first injection and with each subsequent injection of the catheter with local anesthetic. Although stellate ganglion blockade in pediatric patients has been reported, to our knowledge, this is the first report of placement of a catheter to perform a series of stellate ganglion blocks, thereby avoiding repeated needle placements and general anesthetic administration in a pediatric patient.

In conclusion, we report a case of acute herpes zoster ophthalmicus treated successfully with repeated stellate ganglion blocks through a percutaneous catheter. We feel that this is a reasonable and acceptable alternative to multiple, single-shot blocks in the pediatric patient.

References