

C H A P T E R

Pain of Herpes Zoster and Postherpetic Neuralgia in the Elderly

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AND POSTHERPETIC NEURALGIA

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NEUROLYTIC BLOCKS

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value. Somatic nerve blocks of the trigeminal nerve, brachial plexus, paravertebral nerves, intercostal nerves, and the sciatic nerve are of limited value unless a neurolytic block is performed. Sympathetic nerve blocks may not only relieve the pain of acute herpes zoster but decrease the incidence of the development of postherpetic neuralgia.²⁷ To be most effective, they should be done within the first 2 months after onset. Stellate ganglion blocks may be used for pain in the head, neck, and arms. Thoracic epidural blocks are utilized for pain in the thoracic area, and lumbar sympathetic blocks are used for the management of pain in the lower body. TENS is another modality that may be effective on occasion in some patients who are refractory to other forms of treatment.

Postherpetic Neuralgia

Several new procedures are available to geriatric patients for the management of pain related to postherpetic neuralgia. Nerve blocks have traditionally played an important role in intractable pain management in geriatric patients and remain a primary anesthetic focus. They are utilized primarily for the interruption of nociceptive pathways and to facilitate physical therapy. Nerve blocks are used in geriatric patients when pain becomes too severe or persistent and cannot be controlled by nonnarcotic analgesics. When nerve blocks with local anesthetics are ineffective, neurolytic neural blockade should be considered as well as neurolysis with cryoanalgesia or radiofrequency thermo-coagulation. If these modalities are not effective, one must consider a dorsal column stimulator or peripheral nerve stimulator. Ultimately, if significant pain relief has not been achieved with these modalities, implantation of a morphine pump must be considered.

Many types of nerve blocks and agents have been used for the management of the chronic pain associated with postherpetic neuralgia. It is beyond the scope of this chapter to list all the blocks and agents that may be used for chronic pain in geriatric patients. Injections of nerve blocks have been used therapeutically as well as diagnostically since the introduction of cocaine by Carl Koller in 1884.²⁸ Sihota and associates²⁹ and Reiestad and coworkers³⁰ reported on the use of an implantable interpleural catheter for the management of postherpetic neuralgia in the thoracic area. However, this technique does not provide permanent relief. A newly designed epidural catheter (Racz Cauda Cath, Medic Epimed Int.) made from spiral stainless coils coated with fluoropolymers has been introduced and is being used frequently by anesthesiologists for pain management. The advantage of this catheter is that it facilitates radiological localization during placement under fluoroscopy and can be repositioned and aspirated for repeated injections.³¹

NEUROLYTIC AGENTS

Neurolytic substances have provided pain relief for patients, including those with postherpetic neuralgia, since the 1930s. Racz and colleagues³² reported on

the utilization of the instillation of diluted solutions of phenol through special epidural catheters over a period of days. The first report of the injection of a neurolytic solution for the treatment of pain was written in 1863 by Lutton.²⁵ Neurolytic therapeutic blocks for chronic pain management were initially developed by neurosurgeons. In 1925 Doppler used phenol for neurolysis.²⁵ and Maher reported on the use of phenol subarachnoid neurolysis in 1955.²⁵

Phenol produces destruction of both myelinated and nonmyelinated nerve fibers. Histological changes in nerves caused by phenol cannot be distinguished from those caused by alcohol. Phenol can cause postinjection neuritis, but the incidence is lower than that with alcohol. Phenol allegedly has a greater affinity for vascular tissue than for neural tissue. It has therefore been reported that phenol can cause damage to perineural vascular tissue.³³ However, when Racz and colleagues³¹ compared morphological changes that occurred after epidural and subarachnoid injection of phenol, it was noted that no spinal cord damage had occurred when epidural phenol was administered. However, neurological tissue damage did occur after subarachnoid injection. Phenol does not pass easily through the dura, the dural sleeve, or the nerve roots. Repeated injections of 6% phenol into the epidural space were reported to be safe.³² Therefore, phenol may be used when there is significant residual burning associated with postherpetic neuralgia. All procedures utilizing phenol should be done with two-dimensional fluoroscopy. The concentrations of phenol used at the authors' institution vary from 3% to 6%. To obtain concentrations below 6%, phenol may be mixed with saline or water. Otherwise, phenol is mixed in glycerin for neurolysis because it is soluble in glycerin. Phenol is hyperbaric if mixed with glycerol, and the painful area must be in the dependent position when one performs a nerve block. Phenol neurolysis is accomplished by means of repeated administration of the agent through an indwelling catheter. Therefore, this procedure mandates inpatient hospitalization.

NEUROLYTIC BLOCKS

Neurolytic blocks are not totally permanent blocks; essentially no neurolytic nerve block is permanent. Neurolytic blocks last from days to months, and the response varies. Pain may recur, and consequently, the block must be repeated. Because neurolytic agents result in skin sloughing if injected superficially, neurolytic procedures should be done only for deep, well-localized lesions.

Stellate Ganglion Block

In some instances, chronic pain in a geriatric patient suffering from acute herpes zoster or postherpetic neuralgia may be due to involvement of distal fibers of the sympathetic nervous system. It is not uncommon at the authors' institution to do a stellate ganglion block with a local anesthetic (bupivacaine) and/or a phenol nerve block when indicated for complex cases of postherpetic

blood vessel. Subsequently, 1 to 2 ml of nonionic contrast material is administered to identify placement of the needle tip. When the dye is injected, the fluoroscopically obtained picture is observed for a characteristic linear spread over the anterior surface of the psoas muscle on the lateral fluoroscopy view and under the vertebral body silhouette on anteroposterior fluoroscopy projection. The spread of the dye linearly for three vertebral bodies should ensure adequate interruption of the sympathetic chain. If a three-vertebral body spread is not encountered, the needle tip should be repositioned. Once it has been ascertained by fluoroscopy and dye spread that the needle tip is in proper position, 6% phenol is used for neurolysis. The recommended volume is 3 to 10 ml at L2 and a similar volume at L4. Complications of this block include an intravascular injection; perforation of the aorta, vena cava, or kidney; hypotension; sexual dysfunction; and a somatic nerve root injection.

Epidural Block

An advantage of epidural phenol is its applicability for pain occupying a wide dermatomal distribution or pain that is bilateral. The injection of epidural phenol affects dorsal (sensory) nerve roots and spares the anterior (motor) roots. Phenol is the most commonly used epidural neurolytic drug. Epidural neurolytic drugs should not be administered through a needle, as the needle may migrate after the administration of a test dose, and a high risk of paralysis will occur if the neurolytic injectate is administered in the subarachnoid space. At the authors' institution, an epidural catheter is placed for epidural injection. Injections are then carried out daily until the patient's symptoms subside and do not return for at least 24 h. To perform the procedure for epidural phenol injections, the patient is taken to the fluoroscopy room and positioned with the painful side down. A Racz RK 16-gauge epidural needle (Medic Epimed Int.) is placed in the epidural space, using a paramedian approach. Then, using a loss of resistance technique with both air and saline, the needle is placed in the epidural space. At that time, using fluoroscopy, the Racz Epidural Catheter (Medic Epimed Int.) is placed one to two segments above the desired nerve root. An aspiration is performed. After a negative aspirate for blood and cerebrospinal fluid has been confirmed, 2 to 3 ml of 0.25% bupivacaine is administered as a test dose. After confirmation of no profound sensory or motor blockade, further local anesthetic is given to a total volume of 5 to 10 ml, depending on the location (cervical, thoracic, or lumbar spinal segment). It must be confirmed pharmacologically that there is no subdural or subarachnoid placement of drug, as this precludes the use of phenol. The patient should report relief of pain without evidence of extensive sensory deficit and no motor block. If motor block results, the procedure is canceled. Subsequently, on the next day, 6% phenol is injected in 0.5-ml increments until pain relief has been reported by the patient. The patient is positioned with the painful side down and repositioned head up at a 30-degree dorsal lateral tilt to facilitate the spread of phenol to the dorsal root ganglia. The patient is kept in this position

for 1 h after the phenol deposition. Each daily phenol injection is preceded by aspiration of the epidural catheter. The phenol injections usually take 2 to 3 days to reach the endpoint of 24 h of pain relief. If pain returns by 10 to 12 days, a second series is carried out. Long-lasting pain relief of postherpetic neuralgia usually follows the second series of injections.

Epidural phenol administration is not without potential complications, including damage to nerve and blood vessels, headaches, paresthesias, muscular paresis, and rectal or bladder dysfunction. Patients are more prone to transient weakness in the upper lumbar nerve root area, i.e., weight-bearing muscles, but they experience very few problems in the sacral nerve roots if injections are administered unilaterally. Over 2000 epidural phenol injections have been administered at the authors' institution without any serious complications. Most of these administrations were in patients with nonmalignant painful conditions.

ALTERNATIVE TREATMENTS

Hypertonic Saline

Hypertonic saline was first used for intrathecal injection to treat intractable facial pain caused by tumors.³⁴ Its mechanism of action is speculative. Excellent results have been reported in the authors' institution after the administration of 10% sodium chloride in combination with local anesthetics and steroids administered epidurally for chronic painful conditions caused by postherpetic neuralgia. It is believed that this technique decreases inflammation along nerve roots and dorsal ganglia. This inflammation, which is secondary to the acute herpes zoster infection, can cause scarring around the involved nerve roots. When the pain is confined to the lower lumbar or lumbosacral area, it is recommended that a special epidural catheter [i.e., a 16-gauge Racz RK needle (Medic Epimed Int.)] be placed caudally. Once this needle has been placed into the caudal canal, an injection of 10 ml of iohexol [(Omnipaque-240) (Winthrop-Breon, New York)] is administered to produce an epiduralgram that outlines filling defects where the effective nerve roots are involved. This will identify the causation of pain. At the authors' institution, these nerve roots have been freed by threading a Racz Cauda Cath into the painful nerve roots (Fig. 24-1 and 24-2). Subsequently, 10 ml of 0.25% bupivacaine containing 4 mg/ml of triamcinolone is injected into the scarred area. Hyaluronidase 1500 units with preservative-free normal saline also may be injected into the painful nerve root area. After a latency period of 30 min, 10 ml of hypertonic sodium chloride (10%) is administered through the epidural catheter. The catheter is taped into place, and reinjection is carried out on postprocedure days 1 and 2. Repeated injections of hypertonic saline give prolonged benefits to patients compared with administering only one dose of hypertonic saline epidurally. It is particularly efficacious if the specific nerve root involved in the painful postherpetic neuralgia syndrome is determined before injection and the local anesthetic, steroid, hyaluronidase, and hypertonic saline are deposited directly



Figure 24-1 Pain from postsurgical scar formation and an inflamed nerve root may require epidurolysis to decrease pressure and inflammation at that nerve root. Dye is prevented from filling out the left L4 nerve root, which is consistent with this patient's physical exam.



Figure 24-2 Placement of the epidural catheter to the painful nerve root for delivery of drug, which otherwise would not reach this area of pain generation because of either epidural scarring or inflammation.

onto it or in close proximity to it. For thoracic pain, a thoracic catheter is placed below the level of the painful area and advanced to the area of scarring demonstrated by fluoroscopy.

Radiofrequency Thermocoagulation

Radiofrequency thermocoagulation (RFTC) has been recently utilized for the management of trigeminal nerve pain caused by postherpetic neuralgia. This technique can provide a long-term interruption of the lumbar sympathetic chain as well. It is an outpatient procedure and essentially lacks the complications of chemical neurolysis. An RFTC lesion is controllable as well as discreet. To perform this procedure, the use of fluoroscopy is essential. A Teflon-coated needle (Radionics, Inc.) with a 5- or 10-mm active tip is inserted. A thermocouple electrode is placed through the SMK needle (Radionics, Inc.). Once the needle tip is in proper position, Omnipaque-240 (Winthrop-Breon, New York) is injected to verify the needle position. Once needle confirmation has been ascertained, stimulation of the sensory nerves at 50 to 70 Hz is done. Next, stimulation of motor nerves at 2 to 5 Hz is done. If no tingling or motor nerve stimulation is observed, another aspiration is performed, and 0.5% bupivacaine is administered to decrease the pain associated with RFTC. At that time, thermocoagulation is accomplished by setting the dial at 80°C for 70 s.

Nerve Stimulators

Occasionally, a dorsal column stimulator is implanted percutaneously for the treatment of persistent chronic pain associated with postherpetic neuralgia. The mechanism of action of the dorsal column stimulator is still debated. Electrical interference with multiple ascending and descending polysynaptic pathways may be the mechanism for decreasing nociception. Placement of a dorsal column stimulator for intractable pain caused by postherpetic neuralgia is effective in decreasing that pain.³⁵ Before the placing of a dorsal column stimulator, a trial stimulating catheter is commonly placed through a Racz RK (Medic Epimed Int.) 16-gauge epidural needle proximal to the painful area. A patient must receive at least a 50 percent decrease in pain before a permanent dorsal column stimulator is placed.

A peripheral nerve stimulator may also be used for the management of postherpetic neuralgia that affects peripheral nerves. At the authors' institution, placement of both a peripheral nerve stimulator and a dorsal column stimulator has been performed to provide adequate analgesia for postherpetic neuritis of the right proximal radial nerve in an elderly patient.

Cryoanalgesia

Cryoanalgesia may also be used to provide long-term pain relief without the use of drugs in the somatic nerves of patients with acute herpes zoster. Cryoanalgesia is indicated when a long-term reversible and peripheral nerve