Sciatic Catheter Placement Via Fluoroscopy, Nerve Stimulation

NEW YORK CITY—A new technique for placing a sciatic nerve catheter with the patient in the prone position, using fluoroscopy and nerve stimulation, has been developed by investigators at Texas Tech University Health Sciences Center, Lubbock, Tex., under Dr. Gabor Racz. The technique is used to manage patients with chronic leg pain and edema.

The optimum catheter position is determined by electrical stimulation, and lidocaine is infused to achieve local block plus systemic analgesic effects. Infusion rates are established in an inpatient setting, then patients are discharged and infusion continued.

Local anesthetic infusion via this catheter results in peripheral, unilateral analgesia that is effective in treating chronic pain while allowing the patient to ambulate, and that poses little risk of epidural abscess or hematoma, or of catheter erosion into the dura, according to Dr. Eric Lewandowski, who presented the technique here recently in an exhibit at the 51st annual Postgraduate Assembly of the New York State Society of Anesthesiologists.

Describing results in the first 13 patients, he told *Anesthesiology News* that "our experience thus far is anecdotal and uncontrolled. But we had fair, good or excellent pain relief in all cases except for one patient in whom the catheter was dislodged."

No significant complications resulting from this block have been documented. However, residual dysesthesia, infection, hematoma or injection of unintended solutions could occur.

Technically, the technique is relatively straightforward, Dr. Lewandowski commented. The patient is placed in the prone position, and the posterior superior iliac spine, greater trochanter and ischial tuberosity are located by fluoroscopy. A line is drawn that connects the posterior iliac spine and the greater trochanter. The midpoint is identified and a perpendicular line drawn in a caudal direction. Another line is drawn in the greater trochanter and ischial tuberosity.

"You divide the line in three parts and draw a line vertically from the medial third mark upwards to intersect the other line," Dr. Lewandowski explained. "The point of entry is where the two lines meet."

In the initial approach, the entry point is infiltrated with a local anesthetic. A blunt 16-gauge 7″ needle is introduced perpendicularly 1 cm through the skin to reach the piriformis muscle. A 22-gauge needle is inserted subcutaneously and a positive lead attached. A negative lead is attached to the proximal shaft of the needle. A Medtronic Trial Pulse Generator is attached to the leads and set at maximum output.

"Slowly advance the needle anteriorly until the piriformis muscle, which is identified by contrast solution, is twitching," Dr. Lewandowski described. "Advance the needle until piriformis muscle stimulation stops and foot twitching is observed in the affected limb. This indicates proximity to the sciatic nerve."

Next, he said, prepare an Electro-Kath for insertion through the needle. Attach the negative lead of the stimulator to the distal contact wire of the Electro-Kath. Pass the catheter to the level of the lesser trochanter for foot movement, then remove the needle and attach the catheter hub connector.

The next step is to connect a syringe to the catheter and inject 3 mL of anesthetic solution. Direct electrical stimulation of the sciatic nerve should then stop. The catheter is sutured into place. Then 15 to 30 mL of 2% lidocaine or 0.5% bupivacaine is injected through an attached bacteriostatic filter.

The posterior sacral approach to the sciatic nerve is contraindicated in cases of anticoagulant therapy, septicemia, local infection, recent injury at the site of injection to the nerve, or when a patient is unable to lie in the prone position.

Patients with complex regional pain syndrome type I and type II, vascular insufficiency, and unilateral leg edema are frequently managed with lumbar epidural catheters, Dr. Lewandowski noted. There are, however, inherent risks with long-term placement of an epidural catheter. Use of a sciatic catheter can eliminate those risks, and the unilateral affected limb can be specifically treated without numbing or weakening of the opposite limb.

—*Linda Pembrook*

Based on a report at the ***51st annual Postgraduate Assembly of the New York State Society of Anesthesiologists*** *and an interview with* ***Dr. Eric Lewandowski.***