



Chronic Low Back Pain Patient with Intermittent Lower Extremity Pain Responds to Percutaneous Neuromodulation Therapy

Richard Seroussi, M.D., M.Sc.

Attending Psychiatrist
The Everett Clinic, Adult
Rehab and Spine Center,
Everett, Washington

Clinical Assistant Professor
University of Washington,
Department of
Rehabilitation Medicine

Summary

Percutaneous neuromodulation therapy (PNT) is a minimally invasive, nonpharmacological therapy for low back pain involving the delivery of electrical stimulation through percutaneous electrodes placed within the lumbar paraspinal and gluteal tissues. This case study describes a female patient who has had low back pain since an automobile accident two years previously. She has had persistent low back and left buttock pain, despite extensive trials of chiropractic treatment, physical therapy and exercise programs, and repeated epidural steroid injections. The patient is unable to sit for more than 60 minutes at one time, interfering with work, driving, and recreational activities such as going to the movies. When she has a flare-up, her pain also radiates into the left calf. A four-week course of weekly percutaneous neuromodulation therapy (Vertis PNT™) was administered as part of a clinical trial. After four sessions, PNT provided enough pain relief to allow the patient to return to her pre-exacerbation level of pain and activity without the necessity of more invasive procedures, such as further steroid injections or surgery.

Clinical History and Presentation

This 48-year-old woman suffered low back pain with a significant component of intermittent left lower extremity pain since her involvement in a motor vehicle accident in October 1998. Initial treatments, including chiropractic care and oral analgesics, achieved minimal pain relief. The patient's chiropractor referred her to The Everett Clinic for consultation with a psychiatrist in June 1999 for ongoing, intrusive low back pain symptoms.

The patient reported that her pain was severe enough to prevent her from sitting for periods of greater than one hour. Although she was able to continue her employment as a social worker, it was necessary for her to stand during meetings with clients, and she occasionally missed work

altogether. Other activities involving sitting—such as driving and watching movies—also proved difficult. When her pain flared, sitting became intolerable, and she also developed worsening left posterior calf pain.

On initial physical examination at The Everett Clinic, the patient had left lower extremity weakness in a left L5 nerve root distribution. She also had decreased sensation to pin prick in the left lateral calf and foot. Her straight-leg raise was positive on the left, with pain into the left posterior calf. An MRI of the lumbar spine showed a probable annular tear at L5-S1 and a bulging disc at the same level. The patient's clinical picture was consistent with left lumbar discogenic pain with a radicular component.

The patient had a trial of physical therapy. After six weeks, she reported no significant improvement in pain, and her physical examination was unchanged. The patient then received a left L5-S1 transforaminal epidural steroid injection (left L5 nerve block) under fluoroscopy. At a follow-up appointment one month later, she reported moderate improvement after the injection. She had been able to use a home physiotherapy ball under direction of a physical therapist. She also could walk farther than before the injection but continued to be unable to sit for extended periods and could not return to her usual activities.

In January 2001, the patient presented with an exacerbation of pain and chose to undergo a second epidural steroid injection. One month after the injection, she reported some improvement, with intensity of pain fluctuating between 1 and 8 on a 10-point visual analog scale (VAS).

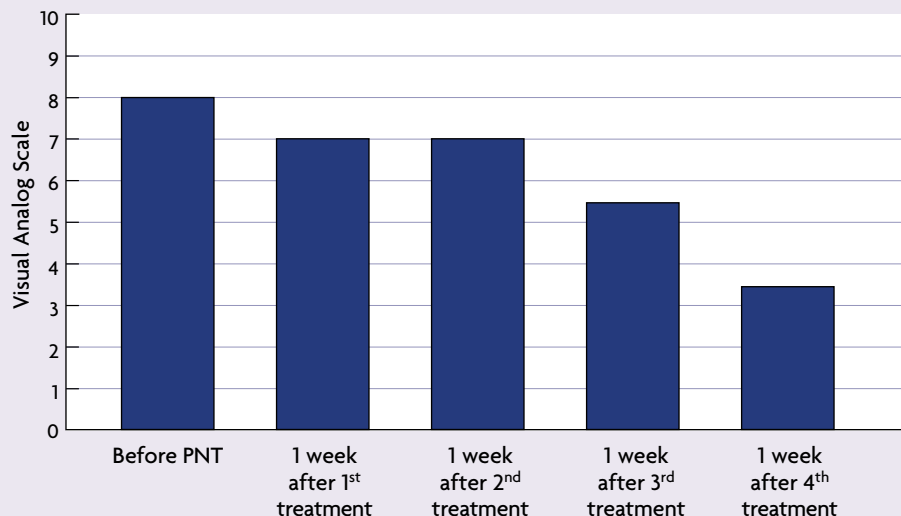
Her ability to function, however, had not returned to the level prior to her most recent episodic flare-up.

In April 2001, the patient returned with further worsening of her low back and left lower extremity pain. A second MRI showed no marked disc herniation but rather a new disc bulge at L4-L5, and again a chronic disc bulge with annular tear at L5-S1. She then was enrolled in a clinical trial of PNT (Vertis Neuroscience, Seattle, Washington). She also received a surgical consultation for possible intradiscal electrothermal annuloplasty (referred to as the IDET® procedure).

PNT Results

In April 2001, the patient underwent weekly 30-minute PNT sessions over a period of four weeks. During PNT, an array of five fine-gauge electrode pairs were inserted to a depth of 3 centimeters, enabling the delivery of electrical stimulation to the

Change in Leg/Buttock Pain over 4 Treatments



paraspinal tissues, in close proximity to the lumbar spinal nerve roots. The patient's response to the first two treatment sessions was limited, as illustrated by her VAS measures for pain. However, following the third treatment session, the patient was experiencing measurable benefit and one week following the fourth treatment, she had experienced significant pain relief, most notably for her left-sided leg and buttock pain. She described herself as "a late bloomer," in reference to the delayed benefit she received from PNT. The patient's initial leg/buttock VAS score was 8.0, improving by 56% to 3.5 by the end of the four-week trial.

Following PNT therapy, the patient returned to her baseline functional status and avoided further epidural injections. She continues her home exercise routine and can sit more comfortably for longer periods of time. Overall, the patient reported a high degree of satisfaction with the therapy. In a follow-up visit in August 2001—16 weeks after her course of PNT therapy and 20 weeks since she began the treatment—the patient inquired about the future availability of PNT, expressing interest due to concerns about future flare-ups of pain and her desire to avoid more invasive procedures.

Discussion

This patient was highly motivated to improve her chronic low back pain and intermittent lower extremity pain. Yet, close adherence to physical therapy and home exercise programs, as well as participation in chiropractic treatment, failed to adequately resolve her pain.

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One of the goals of treatment for this patient's exacerbation in pain was to allow her to resume her daily routine and continue with her exercise regimen. The patient had been experiencing a pain flare-up for several weeks when she enrolled in the PNT trial. The PNT therapy was well tolerated, and the patient was pleased with the results.

Future Considerations

If the patient's pain flares again, a repeat course of PNT likely would be a good option for pain relief. PNT may be especially beneficial for low back pain patients with frequent episodes of lower extremity pain caused by low back pain.

A savings in healthcare expenditures is likely to be another benefit of PNT. In particular, this patient underwent two MRI scans, participated in extensive physical therapy and chiropractic care, and required two epidural injections. She also was being evaluated for a possible surgical procedure (IDET). In summary, with the benefits of PNT, the patient was able to avoid these more invasive and expensive care options for episodic treatment of her low back and related lower extremity pain. ■

Dr. Seroussi practices physical medicine and rehabilitation at The Everett Clinic, a multispecialty clinic in Everett, Washington. He is a clinical assistant professor at the University of Washington School of Medicine. He also is medical director of Vertis Neuroscience, Seattle, Washington.



14301 SE First Street • Vancouver, WA 98684
Tel: 800-597-2695 • Fax: 360-882-2317 • www.pnthealth.com