Peripheral Nerve Stimulation (PNS): Trial

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Key Concepts

- PNS therapy, like spinal cord stimulation (SCS) therapy, includes a trial or test phase, as well as an implant phase.
- This staged treatment should only be offered to appropriate candidates, who are appropriately screened, and only after careful setting of realistic goals and expectations for pain and functional improvement.

Introduction

Implantation of a peripheral nerve stimulator is performed in two stages, which are similar to the two stages of spinal cord stimulation. During the first stage, an electrode lead is inserted via the percutaneous or surgical approach directly over a targeted nerve, in the vicinity of a targeted nerve or branch, or in a generalized region of pain. The trial of stimulation lasts several days or weeks. Three PNS techniques are used by neuromodulators for various types of neuropathic pain: (1) PNS, in which leads are implanted in subcutaneous tissue, over a specific sensory nerve, which correlates with the painful area; (2) Percutaneous PNS, in which leads are implanted subcutaneously in the region of a sensory nerve territory; (3) PNFS, in which leads are implanted within a perceived or generalized area of pain.

The goal of PNS or percutaneous PNS is to produce tingling paresthesias along the territory of a specific stimulated nerve. The goal of PNFS is to distribute paresthesias in an electrical field around the lead's active electrodes, without achieving a clearly defined nerve distribution, which results in a concentric stimulation-induced sensation/paresthesia in a specific area of precise zone of pain, without radiation, and without following a specific named nerve target.

Candidacy

Patients with extremity pain, which is limited to the distribution of a single nerve, are better candidates for PNS. Patients with pain in the trunk, chest, and abdomen are better candidates for PNFS. Pure sensory nerves are generally better targets for PNS than mixed motor/sensory or pure motor nerves, whereby stimulation may also provoke unwanted motor stimulation. Patients should have documented 50% or greater improvement in pain and level of function during a trial of stimulation. Standardized pain rating scales, as well as functional assessment tools, can be used before trial, at the end of trial before lead removal, and again at baseline, after lead removal to more accurately gauge response to trial stimulation. Patients and providers should have a candid discussion to review this trial information before deciding whether it is appropriate to proceed with implant. Decision to move to implant should not be rushed.

Suggested Reading

1. Levy RM. Differentiating the leaves from the branches in the tree of neuromodulation: the state of peripheral nerve field stimulation. Neuromodulation. 2011;14:201–5.
2. Nashold Jr BS, Goldner JL, Mullen JB, Bright DS. Long-term pain control by direct peripheral-nerve stimulation. J Bone Joint Surg Am. 1982;64:1–10.

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