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Peripheral Nerve Stimulator for Unassisted Nerve Blockade

To the Editor:—The introduction of peripheral nerve stimulators (PNS) in the practice of regional anesthesia has resulted in a debate over whether there are any advantages to their use over the paresthesia technique. One obvious advantage is that PNS cause minimal discomfort to patients, because the low stimulating currents used (0.1–2.0 mA) readily stimulate the larger A-α motor fibers more than C pain fibers.[1] This is in contrast to paresthesia technique, which by its nature will cause varying degrees of discomfort. A second advantage of PNS is that patient cooperation is not needed during the procedure, so a block can be performed in an anesthetized patient. The incidence of nerve damage may be decreased compared with paresthesia technique.[3–8] The success rate with use of PNS is equal to or greater than that from eliciting paresthesias.[9]

Besides the initial cost of the stimulator and the continued expense of the insulated needles, a frequently cited disadvantage associated with the use of the nerve stimulator is a need for additional personnel.[10] This is because PNS usually require frequent changes in the intensity of the stimulating current during needle advancement toward the nerve. Because most anesthesiologists prefer to use sterile technique while performing a nerve block, the use of PNS is generally thought to require an extra person for manipulation of the output current.[10,11] Whereas in a teaching institution this is usually not an important issue, in a busy private practice it may present a significant disadvantage, because most anesthetic practices do not have the luxury of involving an additional person in performing regional blockade.

With this in mind, we invented a device with a foot pedal to control the current applied during the performance of the regional nerve blockade.* The invention is a combination of the Dual Stim Plus nerve stimulator (model NS-2CA, Life-Tech, Houston, TX) and a modified KORG two-channel volume pedal (model KVP-001; fig 1).

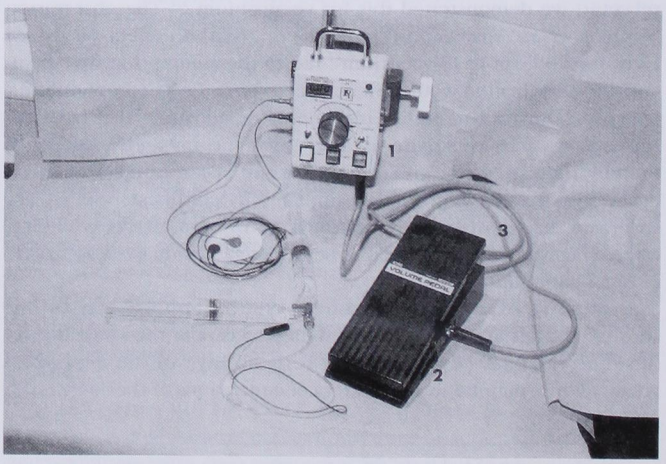

Fig. 1. (1) Peripheral nerve stimulator; (2) foot unit for control of the intensity of the stimulating current; (3) cable for electrical connection of the foot unit and the peripheral nerve stimulator.

* Peripheral Nerve Stimulation Device for Unassisted Nerve Blockade (US patent Application serial No. 08/419,419). St. Luke's-Roosevelt Hospital Center is the owner of proprietary rights in the device. If those rights are licensed, Dr. A. Hadžić and Dr. J. Vloka, as coinventors, may receive a share of the net profits, if any, on royalties paid to the Hospital Center.

These two devices were connected and tuned electronically to result in smooth and precise current control by pressing on the foot pedal. The new unit controls the output current in an infinite number of ranges when the foot controller is used (*i.e.*, 0–0.5 mA, 0–1.5 mA), which allows for more precise current delivery. When connected to a standard dummy load of 2 kiloOhms and tested on the Sony Tektronix 314 oscilloscope (Tektronix, Beverdon, OR), the electrical characteristics of the device were essentially identical to those of the original PNS. The invention has been approved for use on patients by our Biomedical Department at St. Luke's-Roosevelt Hospital Center (#S0012871) and has been used successfully in our clinical practice. Because the foot controller is detachable, the same unit can be used with or without foot attachment.

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Is General Anesthesia Required?

To the Editor:—The report by Lonngvist[1] regarding the successful use of a laryngeal mask airway in general anesthesia in low-weight premature infants undergoing cryotherapy for retinopathy or prematurity was interesting. However, we question why infants with retinopathy with prematurity need to have their surgery performed under general anesthesia.

One of us (G.E.S.) has been performing cryotherapy for retinopathy of prematurity since 1985 under local anesthesia. All surgeries have been performed in the neonatal intensive care unit with the attending neonatologist present. The infants generally have received very mild sedation. Anesthesia consists of installation of a topical anesthesia followed by bus-tenons injection of lidocaine in each of the four quadrants. This anesthesia has been adequate for all of the procedures that have been done, including those in which a conjunctival incision was necessary to reach far posteriorly with a cryoprobe to treat posterior disease.

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