

Treatment of Chronic Pain in Back and Legs with "Hybrid" Neuromodulation Technique: a Combination of Spinal Cord Stimulation and Peripheral Nerve Stimulation

Eugene G. Lipov, MD, Jay R. Joshi, MD, and Konstantin V. Slavin, MD

Advanced Pain Centers, Hoffman Estates, Illinois and Department of Neurosurgery, University of Illinois at Chicago, Chicago, Illinois



Introduction

The problem of chronic back and leg pain in patients with failed back surgery syndrome (FBSS) remains unsolved as none of the currently available approaches is universally successful in achieving lasting pain control. Spinal cord stimulation (SCS) is effective in terms of control of radicular pain but rarely provides adequate control of pain in the lower back. Recently, a technique of subcutaneous peripheral nerve stimulation (SPNS) was introduced to control pain in selected group of patients in whom back pain dominates the clinical picture. At the same time, SPNS does not control neuropathic pain that stems from lumbosacral radiculopathy and involves lower extremities. Therefore, we started using a combined technique of SCS and SPNS (the Hybrid technique) that has a potential of controlling both axial pain in lumbar area and radicular pain that involves one or both lower extremities.

Materials and methods

Ten patients with chronic medically intractable pain due to FBSS were treated with "Hybrid technique." Successful trial (>50% of pain relief in both back and leg pain) was necessary for permanent implantation. Two quadripolar leads were implanted subcutaneously in the region of maximum pain as identified by each patient, and single octopolar lead was placed epidurally at the level of maximum paresthesias covering the painful areas of lower extremities. During follow-up (mean - 4 months), pain relief, patient satisfaction and surgical complications were recorded in prospective fashion.

Results

Out of 10 patients selected for "hybrid technique" treatment, 8 (80%) passed the trial and underwent permanent implantation. At the latest follow up, mean reduction in pain intensity was 70% for back pain and 80% for leg pain; 20% described 100% pain relief. There were no surgical complications.

Conclusions

Hybrid technique that combines spinal cord and subcutaneous peripheral nerve stimulation approaches appears to be safe and effective for back and leg pain relief allowing one to achieve better results than each of its components used separately.