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High-Frequency Spinal-Cord Stimulation Effective in Treating Chronic Upper Limb and Neck Pain

: Presented at [AAPM](#)

By Erik MacLaren, PhD

DENVER -- March 11, 2019 -- High-frequency spinal-cord stimulation (HF-SCS) provides safe and effective long-term pain relief for patients with chronic upper limb and neck pain, according to results of a prospective trial presented at the 35th Annual Meeting of the American Academy of Pain Medicine (AAPM).

Kasra Amirdelfan, MD, IPM Medical Group, Inc. Walnut Creek, California, and coworkers reported data from a multicentre prospective trial of HF-SCS using a frequency of 10kHz to treat patients with chronic, intractable pain of the neck and upper limbs reported at ≥ 5 cm on a 0 to 10 cm visual analog scale (VAS).

A total of 55 patients with a mean age of 55.8 years underwent trial stimulation, including 42 (76.4%) with neck pain and 24 (43.7%) with upper-limb pain. A total of 49 patients (89.1%) had positive results from the trial, defined as $\geq 40\%$ pain relief, and were implanted with 2 epidural leads, which spanned the C2 through C6 vertebral bodies. These patients were then followed for 12 months post-procedure.

Pain scores for patients with neck pain fell significantly, from 7.6 at baseline to 2.4 at 3 months and 1.5 at 12 months. Likewise, patients with upper-limb pain reported a reduction in pain scores from 7.1 at baseline to 1.8 at 3 months and 1.0 at 12 months.

Patients who experienced $\geq 50\%$ pain relief relative to baseline scores were defined as responders. The number of responders in patients with neck pain was 32/42 (76.2%) at 3 months, rising to 33/37 (89.2%) at 12 months. In patients with upper-limb pain, the number of responders was 20/24 (83.3%) at 3 months and 19/20 (95.0%) at 12 months.

Full pain remission (VAS score ≤ 2.5), was reported in 26/42 (61.9%) patients with neck pain at 3 months and in 29/37 patients (78.4%) at 12 months, while 19/24 (79.2%) patients with upper-limb pain were classified as remitters at 3 months, rising to 16/20 (80.0%) at 12 months.

The researchers also explored function in patients with neck pain using the Pain Disability Index (PDI). They observed that the PDI for the overall patient population fell from a mean of 42.4 ± 11.8 (n = 45) at baseline to 16.9 ± 12.8 (n = 39) at 12 months post-implant.

Finally, there were 9 device- or procedure-related adverse events during the study, all of which were resolved without aftereffects, and no neurological deficits were reported in any patients.

Chronic pain in the upper limbs and neck has been difficult to treat using spinal-cord stimulation at conventional frequencies for several reasons, including difficulty tolerating paraesthesia in this area, migration of the epidural leads, and incomplete coverage of the painful area.

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