Subcutaneous trigeminal nerve field stimulation for refractory trigeminal pain: a cohort analysis.

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Abstract

BACKGROUND: Neurosurgical pain management of drug-resistant trigeminal neuralgia (TN) is highly challenging. Microvascular decompression is a first-line neurosurgical approach for classical TN with neurovascular conflict, but can show clinical relapse despite proper decompression. Second-line destructive techniques like radiofrequency thermocoagulation have become reluctantly used due to their potential for irreversible side effects. Subcutaneous peripheral nerve field stimulation (sPNFS) is a minimally invasive neuromodulatory technique which has been shown to be effective for chronic localised pain conditions. Reports on sPNFS for the treatment of trigeminal pain (sTNFS) are still sparse and primarily focused on pain intensity as outcome measure. Detailed data on the impact of sTNFS on attack frequency are currently not available.

METHODS: Patients were classified according to the International Headache Society classification (ICHD-3-beta). Three patients had classical TN without (n = 3) and another three TN with concomitant persistent facial pain (n = 3). Two patients suffered from post-herpetic trigeminal neuropathy (n = 2). All eight patients underwent a trial stimulation of at least 7 days with subcutaneous leads in the affected trigeminal area connected to an external neurostimulator. Of those, six patients received permanent implantation of a neurostimulator. During the follow-up (6-29 months, mean 15.2), VAS-scores, attack frequencies, oral drug intake, complications and side effects were documented.

RESULTS: Seven out of eight patients responded to sTNFS (i.e. ≥50 % pain reduction) during the test trial. The pain intensity (according to VAS) was reduced by 83 ± 16 % (mean ± SD) and the number of attacks decreased by 73 ± 26 % (mean ± SD). Five out of six patients were able to reduce or stop pain medication. One patient developed device infection. Two patients developed stimulation-related side effects which could be resolved by reprogramming.

CONCLUSIONS: Treatment by sTNFS is a beneficial option for patients with refractory trigeminal pain. Prospective randomised trials are required to systematically evaluate efficacy rates and safety of this low-invasive neurosurgical technique.

KEYWORDS: Chronic neuropathic pain; Neuromodulation; Peripheral nerve field stimulation; Post-herpetic trigeminal neuropathy; Trigeminal neuralgia

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