

C2 Area Neurostimulation: a surgical treatment for fibromyalgia.

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plus editorial comment by K.Slavin USA

Bilateral subcutaneous quad electrodes placed across the upper occipital region-2 cm above a line level with the tops of ears (conventional lower occipital electrode placement for occipital headache not effective for fibromyalgia body pain).

Low-frequency (6 to 30 Hz), low pulse width (50 μ s) strong as tolerable stimulation.

12 patients with fibromyalgia including headache.

Prospective study up to six months: significant improvement in pain scores, fatigue, mood and quality of life (SF36).

Patient Jennifer C age 62 years

25 year history of increasingly severe and disabling widespread pain including headache diagnosed as fibromyalgia.

Thoracic outlet decompression surgery

Depression, sleep disturbance and fatigue

Recently become virtually bedbound

Marginal response to medication (including amitriptyline and Lyrica)

Admitted to Bethesda Hospital for inpatient CBT treatment from the Achieve programme occupational therapist and clinical psychologist.

Trial stimulation consisted of bilateral ANS octrodes placed across subcutaneous upper occipital region level with 2 cm above the top of the ears. Initial five days of trial in Bethesda Hospital then discharged home for further two week trial.

Outcome:

Head pain abolished

Body pain reduced about 50%

Sleep satisfactory, no longer sleeping during day

Mood improved

Activity capacity increased (gradually using pacing techniques)-no longer using crutches.

Tramadol and panadeine forte decreased by > 60%, ceased Lyrica remaining on amitriptyline.

Wants permanent stimulator

Motor Cortex Stimulation for intractable head pain.

Motor cortex stimulation in clinical practice for the last 15 years or so.

Indications:

Central nervous system and neuropathic pain in the upper body

e.g. brachial plexus deafferentation and phantom limb pain,

post stroke pain,

neuropathic pain relating to trigeminal nerve and occipital nerve deafferentation or trauma (but not trigeminal neuralgia). Postherpetic neuralgia facial pain.

Motor cortex stimulation improves motor function as well as pain control with benefit demonstrated in Parkinson's disease and following stroke.

Response to transcranial magnetic stimulation may predict response to motor cortex stimulation.

Initial clinical studies included patients who had failed to respond to deep brain stimulation and results were generally in the 50% range later studies yielded around 75% success.

Relatively few serious complications associated with motor cortex stimulation. Seizures if voltage increased too high but there had been no reports of patients developing long-term seizure disorder. Stimulation is undetectable by the patient except via analgesic effect.

Patient Annemarie H. age 53 years

Developed left occipital head pain about 20 years ago.

Initial management from of Dr Peter Goadsby neurologist and Professor Lance and after failure of pharmacological management underwent two left occipital neurectomy procedures (Peter Blume) without any sustained benefit.

Left C23 facet radiofrequency procedures performed by Prof Nick Bogduk and in more recent years further C23 procedures and sphenopalatine radiofrequency by Dr Phil Finch in Perth.

Continuous and increasingly severe left hemi-cranial pain symptoms with some lesser neuropathic pain in the left neck and shoulder and arm regions. Severe head pain episodes had migrainous characteristics.

Mood remained relatively positive with good family support.

Activity and function significantly restricted.

Sublingual ketamine lozenges 100 mg was the only analgesic with any (very modest) effect- limited by sedation.

In 2006-2007 she failed to respond to trial of occipital nerve (remnant) and cervical spinal cord stimulation.

During trial cervical cord stimulation the left upper cervical cord was found to be electrically relatively unresponsive with stimulation perception on the right side of the body only.

Failed to respond adequately to trial of intrathecal hydromorphone, clonidine, bupivacaine and midazolam with spinal catheter outlet in the mid-cervical region.

Motor cortex stimulation trial and implant (Medtronic) by Mark Dexter at Westmead hospital during November 2007.

Stimulation 30Hz, 120 μ s and 1.5-5 V.

Outcome:

Anne-Marie currently reports that she is pain free during the day with some modest pain appearing in the evening requiring some increase in stimulation strength

She has been able to cease taking routine analgesics.

Remaining concern is some ongoing tenderness over the implanted electrodes and connectors under the scalp and also some ongoing tenderness over the scalp in general which can disturb her sleep.

She is delighted by the overall outcome.

Patient Linda.C age 57 years

Lifelong history of left hemi-cranial migraine with strong family history .
Additional cluster headache type symptoms and more recently developed some neuropathic left neck and shoulder region pain.
In 2005 she developed a self-limiting CRPS episode following a left foot fracture injury.

In recent years migraine became increasingly severe, continuous and refractory to antimigraine, analgesic and antineuropathic medication. She became very disabled, virtually confined to a darkened room. She developed associated depression but in general coped reasonably well with good support from her family. She required antidepressant medication and received CBT psychotherapy.

During 2005-2007 she underwent trials of occipital nerve and supra orbital nerve stimulation which were unsuccessful-provoked exacerbation of pain . Trial of cervical spinal cord stimulation seemed successful-perhaps up to 50% pain reduction but difficult to assess. Permanent cervical spinal cord stimulator implant less successful than trial-estimated about 20-30 % pain reduction-continued to use most of the time. Came to rely on up to nine IM injections a day of midazolam 5-10 mg and fentanyl 25 µg.

Motor cortex stimulation trial and implant by Mark Dexter Westmead hospital February 2008.

Outcome: Using the stimulator through the day and night for 3-4 hours alternating on/off periods she has been able to abolish migraine and cluster headache episodes.

The analgesic response to stimulation is virtually instantaneous, interestingly if she overuses stimulation she can provoke head pain hence the current on-off usage pattern

She has some continuing pain in the left supra orbital region which is now reasonably responsive to paracetamol. She also has some continuing pain in the left neck region and she is going to look at reactivating her cervical stimulator at some stage for this problem.

She remains on the norspan 20 patches for the time being and she is also continuing to have some midazolam injections -tapering. She is no longer having the midazolam for pain symptoms but is requiring it to keep in check benzodiazepine withdrawal symptoms.

? First use of motor cortex stimulation for intractable chronic migraine.

Marked improvement in activity capacity including social activity during the day, improvement in sleep and corresponding improvement in mood state – tapering antidepressants .

