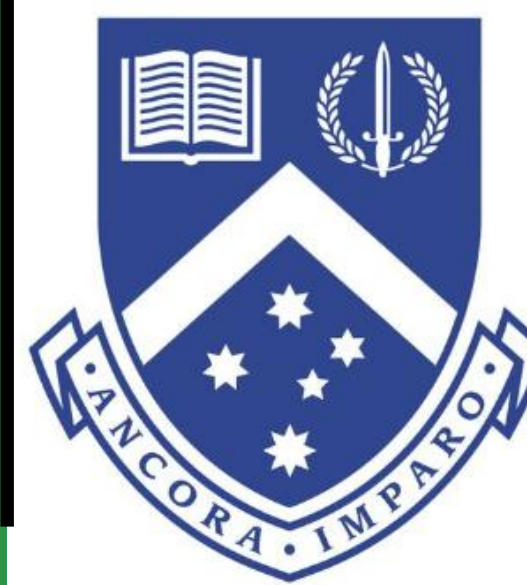




Scrambler neuromodulation non-invasive Therapy for chronic refractory neuropathic pain. An audit of the first 12 months.



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Introduction

Refractory chronic neuropathic pain is challenging to manage. Especially the cohort who do not benefit from or tolerate conventional treatment including invasive therapy.

Scrambler therapy is a non-invasive electro-analgesia neuromodulation treatment used to treat chronic neuropathic, nociplastic and cancer pain resistant to usual treatments. The goals of Scrambler Therapy are to eliminate pain during a treatment session and obtain long-lasting analgesia from a series of an average 10 (range 2-20) consecutive treatment sessions over a 2-week period (range 2days -4weeks).

Scrambler Therapy retrains the brain with 'dermatomal sandwiches' of synthetic "non-pain" information produced by up to 5 artificial paired neurons that is transmitted by cutaneous C fibre receptors to the central nervous system. Scrambler stimulation consists of 16 types of signals like normal action potentials with a frequency from 43 to 52 Hz, current of 3.5 to 5.5mA, voltage of 6.5 to 12.5V for 7 to 11 microseconds, grouped in trains of 4 similar but different waveforms that are constantly varied by a proprietary algorithm.^{1,2}

This is different to traditional transcutaneous electrical nerve stimulation (TENS) of A-Beta fibres that produces paraesthesia and/or blocks the conduction of nerve fibres to produce an analgesic effect. Different waveforms have different effects. High frequency, low intensity stimulation recruits A-beta fibres, while low frequency, high intensity preferentially recruits A-delta and C fibres. Amplitude can range from 5-80mA current, and applied voltages vary between 3-9volts in square wave patterns measured in microseconds. (See Fig1)¹

Methods

We audited the outcomes of Scrambler Therapy during the first 12months for patients with chronic neuropathic or nociplastic pain, described qualitatively as burning, present for at least 3 months, refractory to conventional medical and interventional pain management.

Results

39 patients with reported pain duration of up to 30 years, had 56 treatment episodes. 12 of the 39 initial treatments were reported beneficial. 6 patients obtained 6-12 months sustained relief from the target pain from a single treatment episode consisting of up to 10 scrambler treatment sessions. Another 5 patients reporting benefit, have required 2-4 monthly "booster" treatments of 1-3 scrambler therapy sessions. Another patient was pain free at 6 weeks.

These patients reported remission of the target pain to "0/10", with improved function, sleep, overall quality of life with minimal or no use of analgesics.

Adverse Reactions:

- There were no serious side effects.
- One patient experienced increased anxiety while also receiving counselling for childhood trauma. The scrambler was stopped and pain resolved with trauma counselling.
- 2 patients reported transient pain flares: one had increased anxiety; the other had an unchanged clinical presentation.
- A diabetic patient had an exacerbation of pre-existing dyspepsia and nausea for 1wk between treatments 8 and 9.

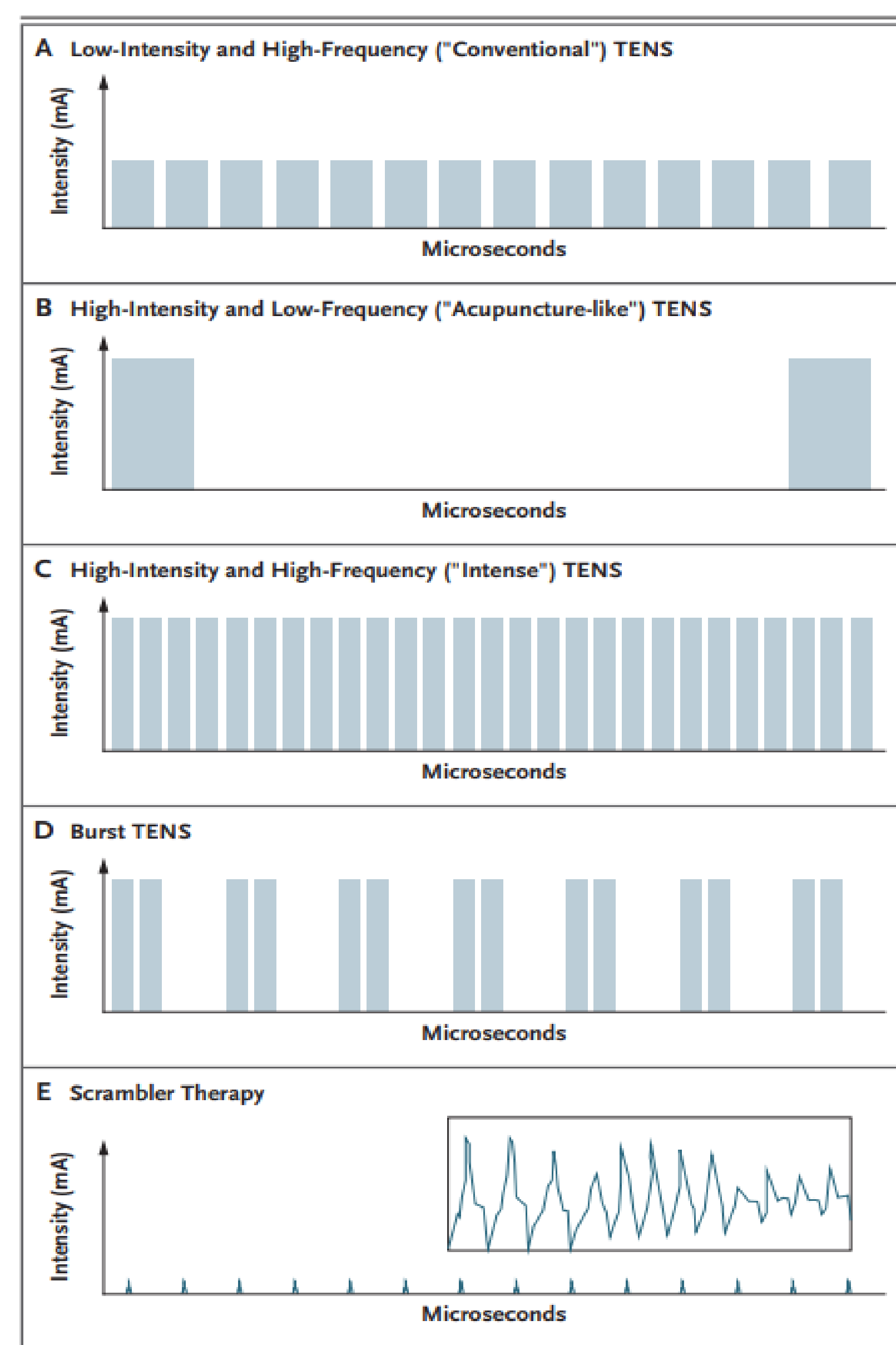


Fig 1 – TENS and Scrambler Waveforms ¹

Case 1. A 19M, with CRPS affecting both legs after an 'innocuous bump', spent 9 years in wheelchair and missed all rest of school. He complained of cold burning pain, rated 8/10, that prevented walking and standing, was aggravated by cold, wind, air conditioners and pressure waves. He was receiving psychological and psychiatric care for comorbid major depression. He had attended 2 other MD pain clinics, had sympathetic blocks, ketamine and lidocaine infusions and an epidural anaesthetic before trying scrambler therapy. He reported a stepwise daily reduction of 1/10 from the 3rd session such that he was able to stand independently after the 8th treatment and hug his mother for the first time in 9 years when his reported pain was 1/10. The wheelchair was not needed despite osteoporotic stress fractures in his feet complicating recovery. There has been no recurrence of cold burning pain or CRPS. He has not required any booster at writeup.³

Case 2. A 29F with a 10-year story of MVA related cervicogenic headache involving the occipito-atlanto, atlanto-axial and C2/3 facet joints. She obtained good short term pain relief with distressingly slow recurrence from several cervical radiofrequencies that lasted 4-7m. She obtained complete pain relief for 7 months from 10 treatment sessions using 4 electrode pair. She has ongoing pain relief from 3 booster treatment sessions. She no longer needs the propranolol, rizatriptan and topiramate prescribed elsewhere for her headaches.



Fig 2 A Scrambler Therapy Session
Photo courtesy Thomas Strouse & The New Daily

Case 3. 55F with 18-year story of type 2 diabetes on insulin for the last 10 years and smoking cigarettes for over 30 years. She presented with painful diabetic neuropathy from her lower chest to her feet with paraesthesia, burning pain and allodynia in the affected areas. She reported no benefit from trials of spinal cord stimulation, ketamine infusions, physiotherapy and chiropractic. While taking low dose naltrexone (3mg), she had 10 scrambler sessions over 3 weeks that relieved all her pain and shrank the altered sensation and hypersensitivity back to her toes, allowing her to wear normal shoes instead of sandals. She too has not required any booster treatments.

Discussion

Increasing duration of pain does not predict success or failure of scrambler therapy. Even patients reporting pain duration of 10-30 years still responded well to scrambler.

In this case series we successfully treated patients with complex regional pain syndrome, painful diabetic neuropathy, post herpetic neuralgia, occipital neuralgia, cervicogenic headache, axial back pain and post vaccination neuropathic arm pain.

Other conditions including CIPN, cancer, abdominal, erythromelalgia, radicular and pudendal neuralgia pains have been reported to respond in published literature

Conclusion

Scrambler therapy is safe, non-toxic treatment with no side effects, effective for refractory neuropathic pain in chronic cancer and non-cancer pain.

Approximately 1:3 patients in this 12m series obtained good pain relief from this simple and safe treatment.

This is a number to treat (NTT) of 3.

Treat 3 people, to get 1 one person very much better.

References

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