A small prospective case series to look at the effectiveness of Percutaneous Electrical Nerve Stimulation (PENS) therapy in reducing allodynia in chronic neuropathic pain

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INTRODUCTION

Allodynia is a phenomena in which normally non-painful stimulus are perceived as painful. PENS is a peripheral electrical stimulation device which is minimally invasive and non destructive. When tested on capsacin-induced pain and hyperalgesia it had an analgesic effect. It has been used in acute and chronic pain, and has been found to be effective in the management of different pain conditions such as cancer pain associated with bony metastases. It is less invasive than radiofrequency denervation or dorsal column stimulation. Before purchasing a new device our pain department wanted to look at potential benefit to patients with allodynia neuropathic pain.

AIMS

To assess the analgesic benefits of PENS therapy in patients with neuropathic pain and allodynia using validated pain assessment tools.

METHODS

5 patients with neuropathic pain and allodynia were recruited from the pain clinic. All were on neuropathic pain medication. They were all assessed with a short McGill questionnaire, which includes a visual analogue score (VAS) on a 100mm scale, and a score for sensory and affective aspects of pain, to allow a quantitative measure of pain. Dynamic mechanical brush allodynia was scored using a 10x10cm gauze brush to lightly brush the allodynia skin area 10 times over 5 seconds. Static mechanical allodynia was measured using a blunt needle applying a light pressure 3 times for 1 second to the allodynia area. The degree of pain on stimulation was measured using a 100mm VAS after the stimulus. The patients all received PENS therapy to the allodynia area in the day surgery unit under local anaesthesia. The probe was place

RESULTS

Mean pain scores pre-procedure using the McGill short questionnaire were high, sensory symptoms 23/33(range 10-33), affective symptoms 7.2/12(range 3-12) and 100mm VAS = 84/100(range 60-100).
Dynamic brush allodynia mean score was 77/100 and static pressure allodynia mean scores were 76/100.
1 hour post procedure, dynamic brush allodynia mean scores were 36/100 and static pressure 48/100, a 41mm and 28mm reduction respectively. At 2 weeks and 6 weeks the scores were for brush 54/100 and 58/100 respectively and for pressure were 67/100 and 69/100 respectively. The analgesic effect was still present at 2 and 6 weeks, more so to dynamic brush than static pressure allodynia. There was also a mean fall in overall VAS score at 2 and 6 weeks of 28mm and 24mm respectively, with an overall reduction in sensory and affective symptoms.

TABLE 1

	VAS SCORE	DYNAMIC BRUSH ALLODYNIA VAS	STATIC PRESSURE ALLODYNIA VAS
PRE PENS	84	77	76
IMMEDIATE POST PENS	32	36	48
2 WEEKS POST PENS	56	54	67
6 WEEKS POST PENS	52	58	69

DISCUSSION

Allodynia is a distressing and difficult to treat pain condition. The neuropathic pain medications are often not well tolerated and topical treatments may not be effective. Three of the patients had long standing post surgical allodynia pain, which had not responded well to other treatments. They had high scores for pain but also compounding factors affecting lifestyle and quality of life, most finding the pain cruel and punishing. The PENS therapy we found simple to use and minimally invasive, so it was well tolerated by our patients and would be easily repeatable to provide repeated analgesic benefit.

CONCLUSIONS

This very small case series has helped us to demonstrate the analgesic benefit of PENS treatment in allodynia pain and is a useful tool for us in planning which pain procedures can be offered by our pain department in the current financial climate.

REFERENCES

1. **Yokoyama M**, Sun X, Oku S. et al. Comparison of percutaneous electrical nerve stimulation with transcutaneous electrical nerve stimulation for long term pain relief in patients with chronic low back pain. Anesthesia and Analgesia 2004;98(6):1552-6
2. **Ghoname EA**, Craig WF, White PF et al. Percutanous electrical nerve stimulation for low back pain: a randomised crossover study. JAMA 1999;281(9):818-23