

The use of laser acupuncture for the treatment of neurogenic pruritus in a child – a case history

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Abstract

This report describes the successful treatment using laser acupuncture of a six year old girl with neurogenic pruritus of the abdomen. It is the first case report of neurogenic pruritus treated by laser acupuncture. The main advantage of using low energy laser, as opposed to acupuncture needles, to stimulate points, is that low energy laser causes little or no sensation, which is particularly useful when treating children.

Keywords

Laser acupuncture, neurogenic pruritis, child, case report.

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Description of the case

A six year old girl presented with itching of her abdomen, which had been present for eight weeks. The itching had become progressively worse during the two weeks immediately before her attendance, to such an extent that she was disturbed at night and was waking her parents complaining of her symptoms. Itching was also present during the day and this was becoming more troublesome. She had no history of recent drug ingestion, and no known allergies.

Clinical examination revealed no rash or other abnormalities, though slight excoriation of the skin was present at the site of itching (T9 to T12 dermatomes). Slight tightness and tenderness of the paravertebral muscles was observed alongside the thoracic spine bilaterally in the T9 to T12 segments.

On investigation, the urine was negative to the Dipstick test for glucose. There was no clinical evidence of abnormal thyroid or liver function, so blood tests were not performed. The itching was deemed to be of neurogenic origin.

Treatment consisted of laser therapy to the paravertebral points at 1cm intervals alongside T9 to T12, bilaterally. A 300mW laser probe (Excel Laser System, Omega Laser Systems, Crawley, UK.) emitting 820nm wavelength was used. Each point was irradiated for 15 seconds, giving an energy density at the surface of 40 J/cm². This was

repeated on two further occasions, one week and three weeks after the initial treatment.

To assess the outcome of treatment, the patient was asked to score the severity of itch on a 100 point visual analogue scale (VAS). The baseline score was 92. After one week the VAS score was 33, after three weeks it was 2, and nine weeks later (six weeks after treatment) the score was zero.

As the patient's symptoms resolved, the palpable tightness of the paravertebral muscles disappeared. The patient has remained symptom-free 16 weeks post-treatment. She has slept through the night and has not complained of itching during the day.

Literature Review

Several studies using traditional Chinese acupuncture or auriculotherapy have shown acupuncture to be beneficial in patients with pruritus due to skin conditions such as eczema, dermatitis, lichen planus and pruritus vulvae.^{1,2} Only one case series is reported showing acupuncture to be effective in patients with pruritus of neurogenic origin: the effectiveness of acupuncture treatment was shown by complete resolution of symptoms in 75% of patients.³

Discussion

Neurogenic pruritus is defined as localised itching in the absence of a rash and other known systemic

diseases that cause pruritus. This itching tends to have a segmental distribution and is believed to be a sensory neuropathy.^{4,9} In *notalgia paraesthetica* the segmental distribution is T2 to T6, and in *brachioradial pruritus* the pruritus affects the outer aspects of the arms. More recently a case series was reported of localised segmental pruritus affecting different segments of the body and not falling into either of these two diagnostic categories: the term 'neurogenic pruritus' was used for these cases.³ The reason for believing this type of pruritus to be a neuropathy lies in the fact that the itch sensation is transmitted via unmyelinated C fibres, which are also known to transmit pain. Mild stimulation of these fibres results in an itch sensation, but strong stimulation results in the perception of pain.¹⁰

Several authors believe that impingement of local musculoskeletal structures on spinal nerves may produce the sensation of itch.^{4,5} The posterior branches of the cutaneous nerves of the dorsal rami from T2 to T6 vertebrae cross the transverse spinal muscles, namely the rhomboid, trapezius, serratus anterior and latissimus dorsi muscles, at acute angles in relation to muscle fibre direction, and are therefore amenable to injury from minor trauma.^{4,5} The dorsal rami are located close to the vertebrae and can easily be compressed by them.^{4,5} Recently, electrophysiological studies of patients with *brachioradial pruritus* have shown responses suggestive of cervical radiculopathy and sensory neuropathy.¹¹ Studies have shown a high incidence of degenerative spinal disease, scoliosis or some other vertebral abnormality in patients presenting with this type of segmental pruritus.^{3,5}

Numerous treatments have been described for this condition, including capsaicin, anticonvulsants, physiotherapy and acupuncture.^{3,12-14} Laser therapy is increasingly being used as an alternative to acupuncture to avoid the unpleasantness of needle insertion in the skin, especially in those patients with needle phobia or when treating young children.

This case report describes the use of laser therapy in a child with neurogenic pruritus which appeared to respond to this type of acupuncture treatment. Although this is a single case report and the condition might have resolved naturally, the relation in time between treatment and resolution,

suggests that the laser acupuncture contributed to its resolution. Expectation may also have played a role. This report is the first known published description of the use of laser acupuncture for the treatment of neurogenic pruritus. Laser acupuncture may also be of value in adults with this condition.

This case is unusual in that the majority of patients with neurogenic pruritus are aged over 50 years and have underlying degenerative spinal disease or scoliosis that predisposes them to this symptom. Why this child developed pruritus is unclear although there was slight tightness of the paravertebral muscles in the area affected. This could have been the result of some musculoskeletal injury, resulting in mild neural irritation of the spinal nerve fibres as they cross the paravertebral muscle groups on their way to the periphery.

The dose of laser stimulation given would provide sufficient energy to stimulate acupuncture or trigger points in the skin and underlying tissues.¹⁵ This may have relaxed these muscles, allowing the irritative stimulation of the spinal nerves to subside. Another mechanism is that laser stimulation has a piezo-electric effect on the tissues which is conducted by afferent nerves to the dorsal horn, causing the inhibition of the propagation of the itch sensation.¹⁶

The use of laser therapy allowed this patient to be treated effectively but without the need for acupuncture needles. It is doubtful whether a child of this age would have attended for multiple treatments using standard acupuncture needles.

Conclusion

Laser acupuncture appears to have been an effective treatment of neurogenic pruritus in this case. It may be especially useful for children with this condition as it avoids the use of needles. Laser therapy warrants further evaluation in adults with this condition.

Reference list

1. Lun Xu, Rong Li. Twentyfive cases of intractable cutaneous pruritus treated by auricular acupuncture. *J Trad Chin Med* 2000;20(4):287-8.
2. Hiang WY, Guo ZR, Yu J, Hu XL. 56 cases of chronic pruritus vulvae treated with acupuncture. *J Trad Chin Med* 1987;7(1):1-3.

3. Stellon, AJ. Neurogenic pruritus : An unrecognized problem? A retrospective case series of treatment by acupuncture. *Acupunct Med* 2002;20(4):186-90.
4. Savk E, Savk SO, Bolukbasi O, Culhaci N, Dikicioglu E, Karaman G et al. Notalgia paraesthetica: a study on pathogenesis. *Int J Dermatol* 2000;39(10):754-9.
5. Raison-Peyron N, Meunier L, Acevedo M, Meynadier J. Notalgia paraesthetica: clinical, physiopathological and therapeutic aspects. A study of 12 cases. *J Eur Acad Dermatol Venereol* 1999;12(3):215-21.
6. Massey EW, Pleet AB. Localised pruritus-notalgia paraesthetica. *Arch Dermatol* 1979;115(8):982-3.
7. Walcyk PJ, Elpern DJ. Brachioradial pruritus: a tropical dermatopathy. *Br J Dermatol* 1986;115(2):177-80.
8. Massey EW, Massey JM. Forearm neuropathy and pruritus. *South Med J* 1986;79(10):1259-60.
9. Heyl T. Brachioradial pruritus. *Arch Dermatol* 1983; 119(2):115-6.
10. Leung CS. Pruritus. In: Kuen-Kong L, Chong Lai-yin, Tang Yukming, editors. *Handbook of Dermatology and Venereology. Social Hygiene Handbook*. 2nd ed. Hong Kong: Social Hygiene Service, Department of Health; 1997.
11. Cohne, A, Masalha R, Medredovsky E, Vardy DA. Brachioradial pruritus & symptoms of neuropathy. *J Am Acad Dermatol* 2003;48(6):825-28.
12. Wallengren J, Klinker M. Successful treatment of notalgia paraesthetica with topical capsaicin: vehicle-controlled, double-blind, crossover study. *J Am Acad Dermatol* 1995;32(2 Pt 1):287-9.
13. Savk E, Bolukbasi O, Akyol A, Karaman G. Open pilot study on oxcarbazepine for the treatment of notalgia paraesthetica. *J Am Acad Dermatol* 2001;45(4):630-2.
14. Goulden V, Toomey PJ, Highet AS. Successful treatment of notalgia paraesthetica with a paravertebral local anesthetic block. *J Am Acad Dermatol* 1998;38(1):114-6.
15. Omega Laser System Excel Laser System Manual. 1998.
16. Bowsher D. Mechanisms of acupuncture. In: Filshie J, White A, editors. *Medical Acupuncture - A Western Scientific Approach*. Edinburgh: Churchill Livingstone; 1998. p. 69-82.