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Case report: Electric dry needling for treatment of low back pain

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Abstract

From thousands of years, electricity used for treatment of pain such as Ancient Egyptians and later the Greeks and Romans recognized that electrical fishes are capable of generating electric shocks for relief of pain. The modern era of neuromodulation began in the early 1960s, first with deep brain stimulation which was soon followed (in 1967) by spinal cord stimulation, both for otherwise intractable pain. Dry needling is one of the common intervention used for low back pain of different origin. Electric current can be used in addition to dry needling in treatment of neuropathic and nociceptive type of pain by using percutaneous needles. Sixty years old female patient came with complaint of severe low back pain since two years on and off, which became persistent since last 1 month with increased pain intensity. Pain was diffuse, aching, stabbing type with numerical rating scale (NRS) score of 8/10 and score on pain detect tool was 18. Low back pain used to aggravate on prolonged sitting, standing in one place, and repetitive lifting and bending activities. MRI lumbar spine suggestive of L5-S1 disc prolapsed posterocentral non compressing nerve roots with normal lumbar canal. Based on these findings our provisional diagnosis L5-S1 disc prolapsed posterocentral with myofascial trigger points over gluteal region. For that tablet baclofen and etodolac for 2 weeks was prescribed but there was no significant relief i.e. patient reported NRS score 7/10 on follow up after 2 weeks. Subsequently intervention was planned. Dry needling with electric stimulation done for 60 minutes on bilateral gluteal region. On follow up visit after one month patient reported excellent pain relief with NRS score of 1/10. Patient had good pain relief by the followup of nine months. Dry needling with electric stimulation increases duration of pain relief and cause some neuromodulation effect in low back pain.

Keywords: Dry needling, Neuromodulation, Electric stimulation, Myofascial trigger points

Introduction

A long-standing and commonly accepted model used to understand mechanisms of pain transmission and perception has been the gate control theory^[1]. Despite the time elapsed since its introduction in 1965, this theory still remains relevant today. However, it has been revised and updated and some aspects of the theory have been redefined^[2,3].

In a nutshell, the gate control theory addresses the activity of the nervous system in terms of “quantitative” electric impulses. However, the qualitative element is that these electric impulses are the basic information code by which the nervous system can be interpreted in a cybernetic model. In this broader context, pain can be interpreted analytically in terms of pure information^[4] and chronic pain as a plastic modification of the pain system governed by information^[5].

Dry needling (DN) is a unique treatment option for chronic low back pain. DN is a procedure in which filiform needles - needles commonly used in acupuncture—are used to deactivate myofascial trigger points (MTrPs). These trigger points are discrete, focal, hyperirritable spots located in a taut band of skeletal muscle. The spots are painful on compression, and they can produce referred pain, referred tenderness, motor dysfunction, and autonomic phenomena^[6].

The underlying mechanism of action in DN is still not well understood. However, it appears to allow the sarcomere to resume its resting length^[7] and activate inhibitory dorsal horn interneurons. This implies that DN causes opioid-mediated pain suppression and also blocks any incoming noxious stimulus into the dorsal horn by activating the serotonergic and noradrenergic descending inhibitory systems^[8]. In addition, the levels of two biochemicals drop significantly following DN. There is a decrease in local concentrations of substance P and calcitonin gene-related peptide; this development may correlate with the systematic

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reduction of pain following deep DN [9].

Electric dry needling is the combination of dry needling with electric stimulation needle which is shown to be an

effective method for the relief of pain associated with various conditions such as chronic low back pain [10].



Fig 1: Patient getting electro dry needling on his back

Case

Sixty years old female patient came with complaint of severe low back pain since two years on and off, which become persistent since last 1 month with increased pain intensity. Pain was diffuse, aching, stabbing type with numerical rating scale (NRS) score of 8/10 and score on pain detect tool was 18. No diurnal variation of pain was reported by patient. The pain lead to disturbed sleep. Low back pain used to aggravate on prolonged sitting, standing in one place, and repetitive lifting and bending activities. On examination patient had normal skin with black scar after boil ten years ago and no redness of overlying skin. On palpation patient had tenderness over gluteal region and also had cover gluteal region. Systemic examination was normal. MRI lumbar spine suggestive of L5-S1 disc prolapsed posterocentral non compressing nerve roots with normal lumbar canal. Based on these findings our provisional diagnosis L5-S1 disc prolapsed posterocentral with myofascial trigger points over gluteal region. For that tablet baclofen and etodolac for 2 weeks was prescribed but there was no significant relief i.e. patient reported NRS score 7/10 on follow up after 2 weeks.

Subsequently intervention was planned. Basic investigation and coagulation studies were done, which were within normal limit. Dry needling with electric stimulation done for 60 minutes on bilateral gluteal region. Baclofen was continued for next 15 days. On follow up visit after one month patient reported excellent pain relief with NRS score of 1/10. Patient had good pain relief by the followup of nine months.

Discussion

In electric dry needling, we combined dry needling with electric stimulation. Electric stimulation unit connected with cables that experience twitching, contraction numbness or tingling in the area that is being treated. The frequency and intensity are constantly being monitored to avoid pain and discomfort. Electric stimulation with dry needling often prolongs the pain relief effect by blocking the nerve pathways and preventing pain signals travelling from the brain.

Conclusion

Dry needling with electric stimulation increases duration of pain relief and cause some neuromodulation effect in low

back pain. It helps to improve pain of neuropathic as well as nociceptive pain. Future studies should examine the effectiveness of different types and dosages of electrical dry needling and include a long-term follow-up.

Conflict of Interest

Not available

Financial Support

Not available

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