Using Pulsed Radiofrequency for Chronic Pain

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ARTICLE INFO

Article type:
Editorial

Article history:
Received: 27 Dec 2011
Revised: 28 Dec 2011
Accepted: 30 Dec 2011

Keywords:
Pulsed Radiofrequency Treatment
Chronic Pain
Amputation

Radiofrequency thermocoagulation (RFTC) is a minimally invasive and target-selective modality procedure that has been used for over three decades. This has been demonstrated to be successful for reducing pain in the treatment of various chronic pain syndromes. Currently case reports and retrospective analysis of patient series suggest that pulsed radiofrequency (PRF) may be considered for the management of shoulder pain, glossopharyngeal neuralgia, head and facial pain, groin pain, meralgia paresthesia, and various types of neuropathic pain (1).

PRF is a non- or minimally neuroablative approach for various chronic pain conditions and thus is a less painful technique, it serves as an alternative to conventional RF treatment. It is used with the advantages of safe, easy application, and less adverse effects, compared to conventional RF therapy (2). The use of PRF promises to be a non-invasive and non-destructive approach for various chronic pain syndromes. The exact mechanism of its effect is not completely understood, but it is thought to be a neuromodulatory effect resulting from a pulsed electric field that might interfere with sensory neuron-specific gene expression and the molecules involved in the sensitization and development of neuropathic pain (3). The direct effect of the electrical field on the dorsal root ganglia (DRG) is a plausible explanation for inducing changes in the dorsal horn neurons.

Another theory postulates that the electrical fields reversibly disrupt the transmission of impulses across small un-myelinated neurons without damaging them completely, while the larger neurons remain protected by the myelin sheath and are thus unaffected (4-6).

Furthermore, since PRF does not produce a high enough temperature to damage the neural structures around the probe or the tissue, there is no risk of deafferentation pain after PRF application (7).

Degenerative cervical facet joint pain is, however, an important population condition commonly seen in the pain clinic. Radicular pain presumably originates in the DRG. In parallel with the positive findings of PRF adjacent to the cervical DRG for the management of radicular pain, well-designed random controlled trials (RCT) should shed light on the effect of PRF adjacent to the lumbar DRG for the management of lumbar radicular pain. Studies should concentrate on the effects of PRF...
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Financial Disclosure
None declared.

References