



Radiofrequency Ablation as an Alternative to Cervicogenic Headache Treatment: a Literature Review

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Introduction

Cervicogenic headache (CHA) is a type of secondary headache. It is characterized by being a unilateral pain, due to dysfunction of the cervical spine and its anatomical characteristics, mainly innervated by spinal nerves C1, C2 and C3. CHA is difficult to diagnose and treat, as there is still a lack of tests and diagnostic criteria available for application and also due to the significant overlap with migraine. The etiology of CHA is related to the convergence of nociceptive afferents from the three trigeminal and superior cervical nerves to second-order neurons in the trigeminocervical nucleus in the superior cervical spinal cord (C1-C3). Thus, it is clear that the origin of CHA is implicated in all cervical components innervated by the joints, muscles, nerves, ligaments and dura mater. Due to its complex etiology, a multidisciplinary approach must be used in treatment. Accordingly, in refractory cases of CHA or when other therapeutic methods fail, radiofrequency ablation (RFA) can be used, a technique in which radiofrequency waves destroy the nerve fibers responsible for transmitting painful signals to the brain.

Objective

To analyze the latest studies regarding the effectiveness of RFA treatment in patients with cervicogenic headache, including indications, pain outcome measures, secondary outcomes, and complications.

Methods

This constitutes a retrospective study with a literature review based on publications indexed in the following databases: PubMed, CAPES Periodicals Portal, and Science Direct. The search was conducted using the descriptors: 'Radiofrequency Ablation', 'Cervicogenic Headache,' and 'Treatment'. Inclusion criteria considered were: articles published between 2018 and 2023, in English, Spanish, or Portuguese languages, with full-text availability and literature reviews. After reviewing the titles and abstracts of initially identified 19 potential works and excluding those that did not meet the proposed criteria, four scientific articles were selected for full reading and summary compilation.

Results

In older studies, the effect of radiofrequency ablation (RFA) on reducing cervicogenic headache demonstrated limited benefits in patients' pain. However, in all selected article, this therapeutic modality improved the duration and the intensity of this type of pain in more than 50% of cases, mainly measured by the visual analog scale. There is ongoing discussion about the extent to which RFA can be effective, considering that in some studies, it showed improvement at the beginning of treatment but did not provide significant long-term results compared to other therapeutic techniques. A considerable rate of complications has been reported, between 12% and 13%, but this can be reduced with the help of imaging techniques that guide ablation. Further studies are still needed regarding the use of RFA to better characterize its therapeutic variables and know its effects on larger-scale clinical trials.

Conclusion

Several studies point to the benefits of RFA in the treatment of cervicogenic headache, especially when pharmacological options prove to be insufficient, but broader research into the effectiveness of the technique is still needed. Technological advances are essential for the development of alternative treatments for different groups of neurological disorders, such as headaches, which are so present in clinical practice.

Keywords: cervicogenic headache; radiofrequency ablation; secondary headache disorders; neck pain; pain management.