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Occipital Nerve Stimulation for the Treatment of Intractable Chronic Unilateral Occipital Headache

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Abstract

Background & Case: Occipital nerve stimulation (ONS) have been described as a potential treatment option for medically intractable and chronic occipital headache. We present a case of a 49-year-old female patient with unilateral and paroxysmal occipital headache who was not responding to the 4-year pharmacological treatment, including an anesthetic block. The patient presented with normal neurological exam and no evidence of lesions on an occipital MRI scan.

A quadripolar electrode was implanted in the ipsilateral occipital nerve. The stimulation parameters used were: 70 Hz frequency, pulse width=60 microseconds, bipolar shape 0 (-) and 3 (+) and amplitude 2.5 V. Therapeutic trial for 4 days was performed previously to the electrode definitive implantation.

Results: The patient became pain-free in the postoperative period with no medication use. She remains pain-free, totalizing 6 years of follow-up. No side effects have been reported. Four years after procedure, the pulse generator (implanted in the infraclavicular region) batteries needed to be replaced.

Conclusion: Our experience obtained a satisfactory result in a long-term follow-up. ONS appears to offer an effective and safe treatment option with significant improvements sustained. More cases studies and longer follow-up are necessary to prove efficacy of this method. This procedure should be administered when other non-invasive methods fail to treat chronic occipital headaches.

Keywords

Occipital nerve stimulation; Occipital neuralgia; Occipital headache

Background

Some studie have demonstrated the efficacy and safety of invasive methods to treat chronic conditions that causes facial and/or headache pain[1,2]. Occipital nerve stimulation (ONS) has been described as a potential treatment option for medically intractable and chronic occipital headache [1]. Occipital nerve stimulation refers to the electric stimulation of the distal branches of greater and lesser occipital nerves [3-5]. Occipital neuralgia (ON) or Occipital Headache (OH) is a rare condition and a primary type of headache. It has been described as chronic disorder and the cause of ON has not yet been well described. There is no consensus about his origins, but some hypotheses have been raised such as irritation of the two greater occipital nerves by inflammation and/or tumor compression [3,6,7]. Some studies suggest that ONS can be effective in a long term outcomes for occipital headache. We present a case of a female patient with occipital headache which was treated using occipital nerve stimulation.

Case

We present a case of a 49-year-old female patient with left side, unilateral and paroxysmal occipital headache who was not responding to the 4-year pharmacological treatment. The patient presented with normal neurological exam and no evidence of lesions on an occipital MRI scan. During the follow up we have tried an occipital nerve block (ONB), a less invasive technique. However, this attempt has failed and the patient remained with the chronic pain. A quadripolar electrode was implanted in the ipsilateral occipital nerve. The stimulation parameters used were: 70 Hz frequency, pulse width=60 microseconds, bipolar shape 0 (-) and 3 (+) and amplitude 2.5 V. Therapeutic trial for 4 days was performed previously to the electrode definitive implantation. The patient became pain-free in the postoperative period with no medication use. She remains pain-free, totalizing 6 years of follow-up. No side effects have been reported. Four years after procedure, the pulse generator (implanted in the infraclavicular region) batteries needed to be replaced.

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Discussion and Conclusion

Besides to occipital nerve block be a less invasive technique, we tried this option prior to occipital nerve stimulation, because some studies have reported that a positive response to occipital nerve block (ONB) administered prior to ONS may predicts a positive response to ONS [8]. The pulse generator revision that was required four years after surgical procedure is a common event and it has been described in others studies [9,10]. In addition, surgical revisions may be commonly required during the follow-up [9,10]. A prospective study [11] has tried to establish a phenotype, including triggers factors and clinical presentation, to understand which patients may have a good response to ONS. Even tough, the main question of this study has not been answered; the study suggested that further prospective studies are needed.Our experience obtained a satisfactory result in a long-term follow-up. ONS appears to offer an effective and safe treatment option with significant improvements sustained. More cases studies and longer follow-up are necessary to prove efficacy of this method. This procedure should be administered when other non-invasive methods fail to treat chronic occipital headaches. Occipital nerve stimulation may be effective in some patients with intractable headache.

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