

The Treatment of Chronic Cluster Headache with Deep Brain Stimulation of the Posterior Hypothalamus

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Introduction

Studies using functional MRI showed the ipsilateral posterior hypothalamus activation during the

cluster headache (CH) episodes. The deep brain stimulation of the posterior hypothalamic (DBS-PH) area was

introduced in 2000 in order to treat drug-resistant chronic cluster headache (CCH).

Methods

Systematic Research (SR) using databases including Pubmed, Medline and Cochrane were searched from inception to September 2017. Keywords "Chronic Cluster Headache", "Deep Brain Stimulation" and "Hypothalamic Stimulation" were used. Plus, we contacted the authors of the included articles to provide unpublished data and to update the follow-up data. Data extraction was performed independently by two reviews. We followed the PRISMA checklist for SR.

Results

98 CCH cases have been treated with DBS-PH. Median follow-up time was 21.2 months. The study with

the largest number of patients (n = 19) has the highest follow-up time, totalizing 104 months. Only one patient had

the follow-up time lower than 1 year (8.4 months). Out of 98 cases, 28 patients reported pain-free and 38 patients

obtained 50% reduction of headache intensity/frequency. Unsatisfactory results were shown in approximately

one-third cases. In the group of 19 patients and the highest follow-up time (n=19), 2/3 had satisfactory results: 6

patients were pain-free and 6 patients had at least 50% reduction in headache intensity/frequency.

Adverse

effects such as increased appetite, insomnia, infection and dizziness were reported. One fatal case was reported

due to cerebrovascular accident.

Conclusions

Most patients (2/3) achieved a satisfactory and long-lasting pain reduction. Side effects were

minor, transient and it could be easily managed. This treatment modality give hope for improvements to the

therapy of cluster headache, although it should be administered when other non-invasive methods fail to treat

CCH. Limits in our results are due to incomplete information in the case descriptions.

Learning Objectives

To provide the current number of CCH patients treated with DBS-PH and the efficacy of treatment.