

Demographic, Clinical and Surgical Predictors of Response to Thalamic Stimulation for Tremor Disorders

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Introduction

Ventralis intermedius thalamic deep brain stimulation (Vim DBS) for medication-refractory tremors has been shown to significantly improve severity of limb tremor in several case series although a significant variability in the outcome has been found as well as a decline in benefit over time (secondary failures). No study has investigated the predictors of the outcome.

Methods

In this retrospective single center study, we collected the demographic, clinical (diagnosis, response to medications, tremor rating scores, familiarity) and surgical (side, microlesional effect, active contact(s) coordinates, stimulation parameters) features of all the tremor patients who underwent Vim DBS in the period 1994-2014.

Results

We collected 65 cases (45.6% Essential tremor,11.8% multiple sclerosis, 13.2% parkinsonian, 11.8% other etiologies). Mean age at time of surgery is 60.6 years±13.5, 38% are females and 44% are males, mean follow-up duration after surgery is 43.7months ± 47.8, the mean tremor score was 20.75± 5 at baseline, 10.57±6.85 at 1 year and 14.04±8.26 at last follow up.At 1 years, comparing the group with a good response (defined as 50% reduction in tremor) to the group will poor outcome, there was no statistically significant difference in gender, diagnosis, response to alcohol, duration of disease or pre-operative tremor scoresHowever, at last follow up, the group with good outcome has more essential tremor cases and good response to alcohol with p values of (0.005 and 0.035 respectively).

In the whole group 13.2% of patients had a failure of response at 1 year compared to 32.4% at the last follow up

Conclusions

The outcome of tremor reduction after Vim DBS is highly variable, major factors explaining such variability in diagnosis and response to alcohol. These features should be taken into account during the pre-

Learning Objectives

there is variable treatment response to deep brain stimulation in patients with tremor, there are many factors that should be considered pre operatively as predictors of good response.

References