Deep brain stimulation in the medial forebrain bundle for treatment resistant depression, an open-label, long-term study

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INTRODUCTION

Major Depressive Disorder (MDD) is one of the leading causes of disability in adults. It is estimated that at least 50% do not achieve and sustain remission following multiple antidepressant treatments. (1) Electroconvulsive therapy (ECT) has proven to be effective in treatment resistant depression (TRD). Approximately 70% to 90% of patients with TRD responded to ECT, although post ECT relapse is a significant problem. (2) Alternative therapies have been introduced in recent years. A comparison between low-frequency rTMS applied to the right dorsolateral prefrontal cortex with ECT was performed in a randomized trial, the rate of partial remission was higher by 26% in the ECT group. However, patients receiving ECT had more cognitive side effects compared with those receiving rTMS. (3)

Deep brain stimulation (DBS) has emerged as a potential intervention that could provide therapeutic benefit to this patient population. (4) In this study we investigated the frequency of treatment response and remission, as well as the mean change in depressive symptoms, at one- and two-years follow-up of 11 (6 females, 5 males; 34-64 years old) patients with treatment resistant depression (TRD) who underwent DBS with the electrodes placed in the medial forebrain bundle (MFB).

METHODS

The diagnosis of MDD, was determined using the Structured Clinical Interview for the DSM-IV Axis I Disorders (SCID-I). TRD was defined as no response to adequate trials of primary antidepressants from at least 3 different classes, using at least 2 different augmenting/combination agents, more than 6 bilateral treatments of electroconvulsive therapy (ECT) or inability to tolerate ECT and 20 or more sessions of individual psychotherapy. Response was defined as 50% or more decrease in Montgomery-Asberg Depression Rating Scale (MADRS) compared to baseline. Remission was defined as a score of 10 or less on MADRS. Missing evaluations were reported as non-responders and non-remission A dependent-samples sign-test was conducted to compare median MADRS scores from baseline to 1 year and from baseline to 2 years.

RESULTS

11 participants had the surgical intervention. 10 completed the follow-up evaluation at 1 year and 8 at 2 years. 50% achieved response and 45% achieved remission at 1-year follow-up. At evaluation performed at 2-year follow-up, 62.5% of participants achieved response and 27% achieved remission. There was a significant decrease in the median MADRS scores at 1 year (-21.50, 95% CI [-33.73, -7.65]) and at 2 years (-19.50, 95% CI [-35.65, -4.88]).

CONCLUSION

DBS for TRD in the MFB showed early promising results regarding treatment response and remission at 1 and 2 years. The participants included in this trial were reported non-responders to multiple antidepressants, psychotherapy and ECT. It is important to take into account the wide range of therapeutic interventions that our study population had been previously exposed to without success, when critically analyzing our response and remission rates at 1 year and 2 years after the DBS intervention. Further publications with a larger patient group are required to adequately assess the safety and efficacy of this target. Another important point to be clarified is the potential long-lasting effect of chronic DBS stimulation.

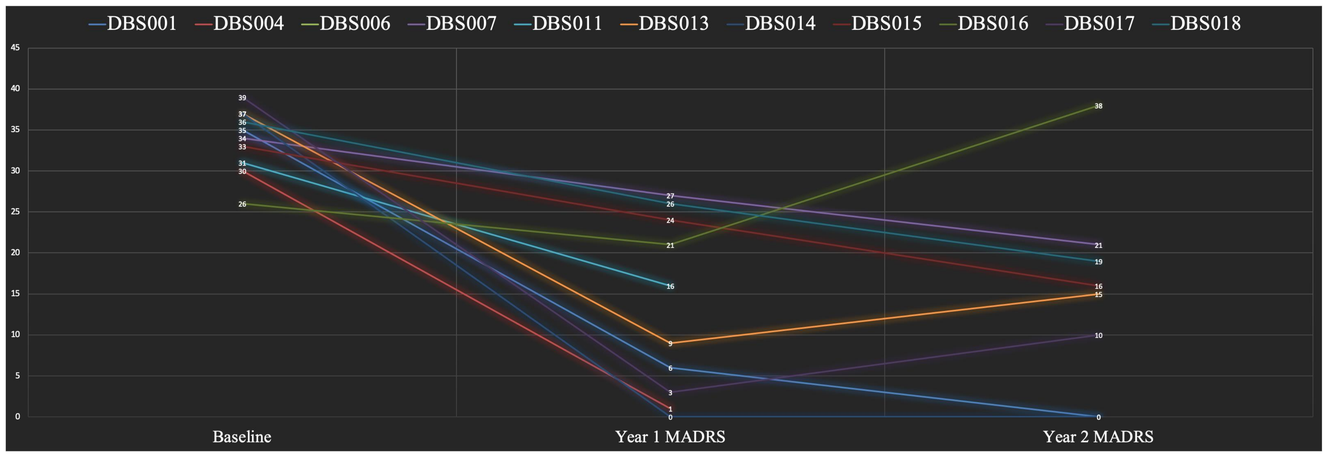
Table 1. Sociodemographic characteristics

Variables	Total
Gender (%)	
Female	55%
Male	45%
Age (mean)	34-64 (50)
Race n (%)	
Non-Hispanic White or Caucasian	81%
Hispanic or Latino	18%

Table 2. Mean MADRS decrease at 95% CI

	Median MADRS decrease	95% CI
1 year	-21.50	[-33.73, -7.65]
2 year	-19.50	[-35.65, -4.88]

Graph 1. MADRS score from baseline, year 1 and year 2 timepoints.



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