Role of Deep Brain Stimulation in Treatment-Resistant Depression: A Way Forward

Sir,

Depression is a mood disorder which is characterised by a continuous feeling of sadness and a general loss of interest. It has far-fetching effects with an approximate prevalence of 3.8% in the general population, with adults accounting for 5% of this figure (4% in men and 6% in women). Tragically, over 700,000 lives are claimed by suicide as a result of depression each year, making it the most common cause of death mainly among individuals aged 15-29 years.[1]

Depression has been managed medically with the help of antidepressants since the 1960s. Different medical scales such as the Hamilton Depression Rating Scale (HAM-D), Clinical Global Impression scale (CGI), the diagnostic and statistical manual of mental disorders, 4th edition (DSM-IV), and the Montgomery-Asberg Depression Rating Scale (MADRS) have been developed to check the efficacy of anti-depressants along with their side effects.[2] Depression can be classified as treatment-resistant depression (TRD) and treatment-responsive depression. TRD is defined as the failure to reduce symptom severity by at least 50% or achieve significant clinical improvement, despite using at least two anti-depressants at proper doses for an adequate duration with confirmed patient compliance. TRD has been estimated to be present in 20-40% of patients suffering from depression. It is associated with twice the hospitalisation rates, 36% longer hospital stays, and a seven-fold increase in suicide incidents compared to treatment-responsive depression. TRD also has a 29-35% higher all-cause mortality rate.[3]

In deep brain stimulation (DBS), electrodes connected to a pulse generator are placed next to deep brain areas to control electrical impulses. DBS, which has successfully managed neurological conditions such as Parkinson's disease, has also shown potential in treating TRD. Studies demonstrate that DBS has a significant response rate (>50% clinical improvement) of 56% and a remission rate (scores back to baseline similar to non-depressed individuals) of 32%, with a low recurrence rate of 14% in patients with TRD. Furthermore, the response rates of DBS were found to be optimised in studies with long-term follow-up (>1 year) as well as those with short-term follow-up (40 to 75% *vs*. 20 to 91%) with similar remission rates in both cases (20 to 60%) indicating the efficacy of this modality in both short- and long-term.[4]

The burden of TRD has social, cultural, and economic implications. DBS has been used for decades to treat neurological conditions and is being increasingly used in managing neuropsychological disorders such as depression. Ongoing global studies aim to establish guidelines on targets, stimulation models, and assessments of both efficacy and side effects. The numerous clinical trials highlight the potential future role of DBS in treating TRD.[5]

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