Safety and Efficacy of Electroconvulsive Therapy for Depression in the Presence of Deep Brain Stimulation in Obsessive-Compulsive Disorder

To the Editor: In an important recent article, Fontenelle et al[1] reviewed published reports of electroconvulsive therapy (ECT) in patients with obsessive-compulsive disorder (OCD), finding inconclusive evidence for efficacy of ECT in OCD despite clinical improvement in about 60% of published cases. ECT remains the most effective treatment for severe depression and can be lifesaving.[2] Because OCD is often comorbid with severe depression, ECT remains an important treatment consideration in this patient population. Here we report the case of a patient with treatment-resistant OCD and depression, both of which improved with ECT in the presence of bilateral deep brain stimulation (DBS).

Case report. Mr A, a 47-year-old single man, had been diagnosed at intake with OCD (according to *DSM-IV* criteria) with onset in his teenage years. His illness was severe and disabling and had resulted in multiple hospitalizations, extensive exposure and response prevention therapy, multiple antidepressant and

other psychotropic drug trials, and a trial of repetitive transcranial magnetic stimulation. The patient presented to our clinic severely depressed and had a course of ECT with good antidepressant response and some improvement in his OCD. Because his OCD symptoms recurred about 2 years later, DBS was recommended. Mr A underwent ventral capsule/ventral striatum (VC/VS) DBS implantation in May 2013 under the auspices of the Food and Drug Administration's Human Device Exemption.[3]

Deep brain stimulation resulted in a reduction in his Yale-Brown Obsessive Compulsive Scale[4] (Y-BOCS) score from the extreme to moderate/severe range (Y-BOCS = 33 at baseline, 24 at 6 weeks post activation). His obsessive-compulsive symptoms remained stable over the following 2 years (Y-BOCS = 23 at 22 months); however, 2 years following DBS activation, the patient reported worsening depression (confirmed according to *DSM-IV* criteria) and suicidal ideation.

After failing to respond to both medication and DBS adjustments, the patient underwent 3 inpatient ECT treatments with bitemporal electrode placement over 1 week. Deep brain stimulation was turned off and, additionally, voltage was set to 0 as a safeguard against inadvertent DBS reactivation.[5,6] The treatments were well tolerated. Electroconvulsive therapy reduced depressive symptoms from severe to mild (Hamilton Depression Rating Scale[7] [HDRS] = 24 at baseline, 7 at discharge) and reduced OCD symptoms from severe to moderate (Y-BOCS = 26 at baseline, 16 at discharge). Mr A underwent 2 more ambulatory ECT treatments over the following 2 weeks, during which time his obsessive-compulsive and depressive symptoms fluctuated. One week later, DBS was reactivated. Presently, he remains stable (HDRS = 12, Y-BOCS = 24 at 1 month post reactivation).

Despite theoretical risks,[8,9] 9 cases of ECT in the presence of DBS have been reported without adverse outcomes. DBS was implanted in these cases to treat Parkinson's disease (subthalamic nucleus[5,10–12] and ventral intermediate nucleus[13] targets), essential tremor (ventral intermediate nucleus target[6,14]), depression (subcallosal cingulum target[15]), and cervical dystonia (globus pallidus target[16]), respectively. This is the first report of ECT in the presence of DBS for OCD. We report this case both to add to the evidence base for the safety of ECT with implanted DBS and to highlight the importance of ECT as a treatment for severe depression in patients with comorbid OCD.

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