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Left Anterior-Right Temporal Electroconvulsive Therapy for Catatonia After Epilepsy Surgery: A Case Report.

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To the Editor:

The authors describe a case of catatonia following left temporal lobectomy successfully treated with electroconvulsive therapy (ECT) and review all reported cases of ECT after epilepsy surgery.

CASE REPORT

Ms J. is a 48-year-old woman with medically intractable complex partial epilepsy since the age of 3 years, who underwent presurgical workup in 2008. Magnetic resonance imaging demonstrated left hippocampal atrophy, increased T2 intensity, and findings consistent with left mesial temporal sclerosis. Electroencephalography (EEG) demonstrated recurring focal spike and slow wave discharges from the left midtemporal region. Psychiatrically, she had experienced intermittent depression with prior suicide attempts but at presurgical workup was stable with sertraline and counseling. In 2009, she received a left anterior temporal lobectomy with no recurrence of seizures or depression for 17 months.

Over 2011–2013, she began having auditory hallucinations, paranoia, and delusions and was admitted for recurrent seizures and interictal psychosis. She stabilized with antipsychotic, antidepressant, and antiepileptic medication but experienced difficulty adhering with outpatient treatment. From 2013 to 2014, she had 6 psychiatric hospitalizations despite increasing outpatient support via group home and assertive community treatment intensive case management.

In April 2015, Ms J. was found wandering in the community, mute and negativistic. During medical hospitalization, her catatonia worsened to complete refusal of examinations, food, water, and medications. Because of severity of her negativism, EEG could not be obtained. Lorazepam resulted in only partial improvement. She did not have decisional capacity for procedural consent at this time. A court-appointed surrogate decision maker consented for ECT. The first right unilateral treatment determined seizure threshold with a Thymatron System IV (Somatics, LLC, Lake Bluff, Ill). The next 3 treatments were performed with right unilateral electrode placement (0.25-millisecond pulse width, 900-mA amplitude, 50–90 Hz, 6.72- to 7.46-second duration, 151- to 302-mC charge, 83-second average seizure

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duration). Because of minimal improvement, electrode placement was changed at this time to left anterior-right temporal electrode placement (1-millisecond pulse width, 900-mA amplitude, 2.4-second duration, 302.4 mC, 70 Hz, 54-second average seizure duration). Left anterior-right temporal placement was utilized to avoid a postsurgical skull defect seen on computed tomographic scan that would have interfered with bitemporal electrode placement. After electrode placement switch, she started demonstrating significant improvement using complete sentences, laughing appropriately, and taking medications. By session 11, she was stable for discharge to bimonthly maintenance ECT.

DISCUSSION

Psychiatric Symptoms in Epilepsy Surgery

Surgical effects on psychiatric symptoms were thought to be beneficial as epilepsy was considered the main contributor to psychopathology. Researchers now recognize that a minority of patients may develop worsening mental disorders after surgery. Foong and Flugel¹ reviewed studies of psychiatric outcomes following epilepsy surgery from 1972 to 2005, concluding that while premorbid depression/ psychosis and postoperative seizures predict postoperative psychiatric symptoms, the majority experience behavioral improvement. Trimble² reviewed several case series describing psychiatric outcomes after temporal lobectomy for epilepsy concluding that postoperative psychotic and mood disorders arise de novo after surgery in approximately 10% of patients. In a cohort of 248 epilepsy surgery patients followed up for 12 months postoperatively, 27% developed depression. Risk factors included lifetime occurrence of depression, age at surgery, and use of levetiracetam.³

ECT After Epilepsy Surgery

A systematic review according to the recommendations of the Cochrane group and to PRISMA (Preferred Reporting Items for Systematic Review and Meta-analysis) guidelines was conducted. Two authors (D.L. and D.K.Q.) performed independent reviews using the MEDLINE database with the following key words: (1) ECT, (2) neuromodulation, (3) epilepsy surgery. Eight cases of ECT used for psychiatric symptoms in patients following temporal lobectomy for seizure disorders were identified.

Two patients showed cessation of psychiatric symptoms:

- Ruppert et al. resolved post-operative psychosis using 6 bilateral ECT treatments (380mC charge) on a 46-year-old man who had a left temporal lobectomy for epilepsy from a hypothalamic hamartoma.⁴ Marchetti et al. achieved full remission of post-operative psychosis and depression using 18 bilateral ECT with citalopram in a 36-year-old man who had a right temporal lobectomy for intractable complex partial seizures from right mesial temporal sclerosis.⁵

Five patients showed partial improvement of psychiatric symptoms:

- Krahn et al⁶ used 6 bilateral ECT treatments on a 25-year-old woman improving postoperative depression after left anterior temporal lobectomy. Kaufman et al⁷ used 15 ECT treatments (no. 2–4 right unilateral, no. 5–15 bilateral) on a 26-

year-old woman improving severe postoperative depression after right amygdalohippo-campectomy. Aksoy-Poyraz et al⁸ improved postoperative bipolar symptoms after left amygdalohippocampectomy and left temporal lobectomy using 5to6 bilateral ECT treatments on 2 patients. Maixner et al⁹ improved postoperative catatonia after left amygdalohippocampectomy using 9 bifrontal ECT treatments on a 38-year-old woman.

One case was halted because of adverse effects and resulted in no benefit:

- Walloch et al¹⁰ used 3 ECT treatments on a 32-year-old woman with intractable depression, mania, and psychosis 6 months after left amygdalohippocampectomy; however, adverse effects of nausea and confusion prevented further ECT.

As these cases illustrate, ECT after epilepsy surgery may be performed safely and is effective against severe psychiatric symptoms. All common electrode configurations may be used, as long as care is taken not to stimulate over patent skull defects. As seen in our case, potential complications of ECT after epilepsy surgery may include prolonged therapeutic seizures and increased postictal confusion. Other theoretic concerns include spontaneous epileptic seizures and antiepileptic medications interfering with ECT efficacy. Before commencing ECT after epilepsy surgery, the differential diagnosis of any psychiatric symptoms should consider postsurgical inflammation or lesion effect, ictus, postictal confusion, postictal psychosis, primary psychiatric disorder, forced normalization (behavioral epileptic equivalents emerging following EEG improvement), medication effects, and an interictal mood or thought disorder.

While there may be hesitation to proceed with ECT shortly after epilepsy surgery out of concern for exacerbating postsurgical inflammation, our literature review does not show evidence for structural changes or cell loss as a result of ECT treatment. The authors' clinical experience suggests that many acute psychiatric symptoms following epilepsy surgery resolve spontaneously over time; thus, a waiting period before commencing ECT is prudent. Nevertheless, given the potential benefit, if a postepilepsy surgery patient manifests life-threatening psychiatric symptoms, ECT should be considered as a viable treatment option.

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