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CLINICAL CONUNDRUM

BIPOLAR DISORDERS WILEY

ECT for a pregnant patient with bipolar disorder in the COVID-19 Era: A clinical conundrum

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1 | CASE PRESENTATION

Shortly after the COVID-19 State of Emergency was declared in Pennsylvania, USA, AB, a 33-year-old female at 28 weeks gestation with a history of Bipolar I Disorder and a previous healthy pregnancy resulting in a live birth, presented to her outpatient psychiatrist via telemental health visit with increased depressive symptoms. She reported sustained low mood with intermittent tearfulness, difficulty sleeping, and feelings of hopelessness for over 2 weeks. The patient further noted new and severe stressors and anxiety related to finances, loss of employment, restricted access to childcare for her toddler, and health risks, all brought on by the pandemic. Prior to this session, the patient had remained euthymic on quetiapine 400 mg/day for eleven months and had previously been stable on quetiapine 300 mg for several years prior, including during her previous healthy, planned pregnancy (see Figure 1).

Given AB's previous response to quetiapine, further titration to 450 mg was attempted but halted due to sedation. As depressed mood worsened with severe anhedonia, insomnia, and suicidal ideation without intent, plan, or act of furtherance, cross-taper and titration with lurasidone was begun at 30 weeks gestation, and by 33 weeks gestation, the patient was receiving lurasidone 90 mg with the evening meal and quetiapine 200 mg at bedtime. Sertraline 50 mg was started at 33 weeks gestation for anxiety and titrated to 100 mg at 35 weeks. Lithium was considered, but the patient was hesitant to initiate during the pandemic due to lab requirements. AB requested initiation of outpatient electroconvulsive therapy (ECT) in lieu of other medication trials as she and her psychiatrist had previously discussed ECT as a safe and effective treatment in pregnancy. She was referred for a telemedicine consultation with an ECT practicing psychiatrist who, after careful evaluation and assessment, recommended bitemporal ECT treatment, three times weekly, at a charge 50% above the patient's seizure threshold. This regimen was established in consideration of AB's illness severity and by shared decision making, taking into account AB's desire to substantially improve before delivery, to avoid additional medication trials during pregnancy, and to minimize hospital exposure during the COVID-19 pandemic through rapid treatment response. Maternal Fetal Medicine (MFM), alternately known as perinatology, was also consulted and reviewed with the patient ECT-related risk of maternal arrhythmia, preterm contractions or labor, and rare risk for fetal bradyarrhythmias that in turn could precipitate the need for emergent delivery by cesarean section.

Since the patient was at 35 weeks gestation, the decision was made for the patient to receive ECT at the maternity hospital in lieu of the psychiatric hospital, requiring considerable hospital to hospital collaboration and communication to accommodate, including emergency credentialing for the ECT providing psychiatrists. Clinical care planning, in accordance with our institution's COVID-19 risk mitigation strategies, was conducted through a multidisciplinary workgroup comprised of ECT psychiatry; AB's outpatient

psychiatrist; maternity hospital-based consultation-liaison (CL), or psychosomatic, psychiatry; obstetric anesthesiology; and MFM. Per our institutional guidelines, COVID-19 nasopharyngeal testing was obtained prior to the first procedure with negative results. The patient was screened for COVID-19 symptoms prior to each procedure but not re-tested. The patient consistently screened negative, so precautions for the asymptomatic patient were taken, including allocation of appropriate and standard personal protective equipment (PPE), including gloves, gowns, and 3-ply surgical masks, to all staff.

AB required intubation and extubation for each ECT treatment, which are aerosol-generating procedures. The anesthesiology team thus donned N95 masks and eye protection in addition to standard PPE, and video laryngoscopy was used to further mitigate aerosolization risks associated with endotracheal intubation. In accordance with our institutional guidelines, non-airway personnel maintained a distance of 6 feet or greater whenever possible from the patient, particularly during intubation and extubation. Left-lateral tilt position was used for the entirety of the procedure and recovery period. Post-procedure, observation for signs and/or symptoms of preterm labor was conducted. Continuous fetal monitoring was conducted prior to and after each procedure. Fetal heart tones were obtained immediately following general anesthesia and intubation and prior to ECT; continuous monitoring during the procedure was deferred. A cesarean delivery consent was obtained and signed prior to each ECT procedure in the event of non-reassuring fetal status necessitating expedited delivery prior to AB's recovery from general anesthesia.

AB received seven total bitemporal ECT treatments at a charge 50% above the patient's seizure threshold using a MECTA SPECTRUM 5000q ECT apparatus. The patient's first treatment parameters were pulse width 1.0 milliisecs (msec), frequency 20 Hertz (Hz), and duration 1.5 seconds (secs) for a charge of 48 millicoulombs (mCs). AB's subsequent treatments, including the final treatment session, were at 1.0 ms/20 Hz/2.25 secs for a charge of 72 mCs, 50% above seizure threshold. These parameters provided tonic-clonic (T-C) seizures ranging from 23 to 184 seconds and EEG seizures from 77 to 229 secs. Bilateral soft bite blocks were placed at both molars to prevent tongue and mouth injury during the seizure.

KEY MESSAGE

Electroconvulsive therapy (ECT) is recommended for pregnant patients with bipolar disorder experiencing severe mania or depression, yet reports suggest underutilization.[1] Aerosolization risk during the COVID-19 pandemic presents additional challenges. Multidisciplinary coordination of care planning among psychiatry, anesthesia, maternal fetal medicine, nursing, and hospital administration is critical.

LEARNING POINTS

- Third-trimester ECT requires an interdisciplinary approach to care that includes input from MFM and OB anesthesiology and clinical adjustments to ECT (i.e., left-lateral tilt position, continuous fetal monitoring, endotracheal airway). Administrative involvement is also needed to ensure patient and clinical team access to appropriate equipment and facilities.
- The COVID-19 pandemic poses a significant clinical conundrum in the administration of ECT for patients with bipolar disorder due to the necessary incorporation of risk mitigation strategies; in pregnancy, the challenges are increased by the need for higher monitoring and clinical consultation.
- Use of ECT in third-trimester pregnancy in treatment-refractory bipolar illness allows for a quicker patient response to treatment (i.e., minimizing exposure in pregnancy to maternal psychiatric illness), and a reduction in medication trials in pregnancy. The potential for remission of symptoms prior to delivery allows for stability of bipolar symptoms in going into a high-risk postpartum period.

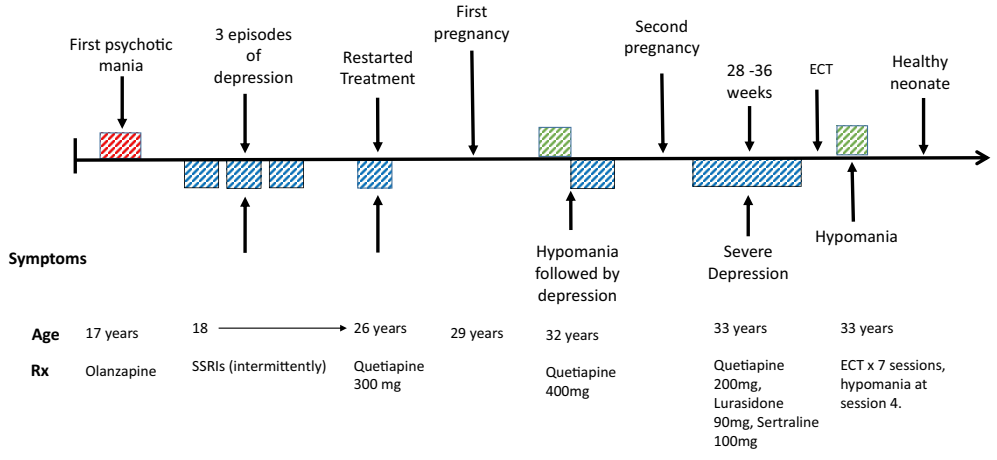

FIGURE 1 Time course of symptoms and treatment

Anesthesia was achieved at each treatment by rapid sequence induction and general endotracheal anesthesia. Medications included glycopyrrolate 0.2 mg intravenous push (IVP), methohexital 1 mg/kg IVP, and succinylcholine 2 mg/kg IVP. Glycopyrrolate was used to prevent severe bradycardia associated with the ECT and to mitigate oropharyngeal secretions. Ondansetron IVP was used after each ECT treatment as the patient experienced severe nausea following the initial treatment, and because it is a common prophylactic agent for post-procedure nausea and vomiting after general anesthesia. It was judged that these short exposures to ondansetron posed low risk for birth deformities in a third-trimester fetus. Lorazepam was administered post-treatment on two occasions for prolonged seizures (>3 mins). The exact cause of seizure prolongation in AB's case remains unknown but is likely multifactorial; potential contributors include pregnancy, hydration and sleep status, and psychotropic medications. Vital sign changes with each procedure were within the range of what would be expected and did not require any additional medication treatments. In addition to nausea, the patient noted mild headaches and experienced urinary retention after her first ECT, which spontaneously resolved. She also had uterine contractions after the first procedure that did not reoccur with subsequent treatments, but nursing staff in recovery observed that the fetus was more active (visibly on inspection and on abdominal exam) post ECT.

Notably, the patient began to experience a slight decreased need for sleep and increase in energy and goal-oriented behavior within 24 hours of treatment 4; sertraline was stopped, lurasidone was increased to 120 mg with evening meal, and ECT was continued. The patient also continued to take 50 mg of quetiapine periodically for difficulty falling sleep. While two additional treatments were planned, the patient had a normal spontaneous vaginal delivery of a healthy female infant at 38 weeks and two days gestation, a little over 48 hours after her 7th ECT treatment. In follow-ups with both a CL psychiatrist and her outpatient psychiatrist, the patient noted mild mood elevation and some increased energy but no longer had symptoms sufficient in number or degree to meet the criteria for hypomania. She reported that she was sleeping well and was not engaging in any potentially disruptive or dangerous behavior. She appeared very attentive to the needs of her baby and eager to parent. ECT was stopped due to patient preference to establish a breastfeeding schedule, and the patient was noted to be euthymic within two weeks of delivery and through the remainder of her first postpartum month.

2 | DISCUSSION

ECT has long been considered as safe and effective in pregnancy for severe mood disorders, especially where rapid response is indicated and desired, but a metareview suggested that many key clinical questions remain incompletely answered.[2] For AB, who expressed a strong preference to minimize medication exposures, and whose illness became severe, escalating to suicidal ideation, ECT was the best treatment choice. As such, it was classified as an essential procedure, in contrast to elective procedures, which were canceled to mitigate the risk of COVID-19 transmission. The clinical severity of the patient's depression during this pregnancy was notable given her euthymic state throughout her first pregnancy and postpartum period. The patient strongly believes that the stress of the pandemic directly precipitated her depressive episode.

This case illustrates the many clinical and administrative considerations around use of ECT in pregnancy in a depressed, bipolar I patient, made even more challenging by the COVID-19 pandemic. Prior to AB, our hospital system, despite serving 220 patients in ECT annually, had not provided ECT to a pregnant patient in over five years. Providing this service requires careful, multidisciplinary clinical planning[1] in addition to significant administrative collaboration, including adherence to institutional COVID-19 guidelines, which should entail patient COVID-19 screening and testing procedures, use of well-ventilated procedure rooms, and appropriate PPE for staff. As fetal monitoring, observation for signs and/or symptoms of preterm labor, and readiness for potential urgent cesarean are necessary, consultation with maternal fetal medicine and obstetric anesthesia is paramount. Provision of ECT within a maternity hospital, or similarly equipped and staffed obstetric facility, facilitates this multidisciplinary approach. As our ECT services are normally provided in a psychiatric hospital about a half mile away from our affiliated maternity hospital, our team of physician leaders, nursing administrators, and staff involved with patient admissions worked together to ensure optimal procedural space and staff accommodation, emergency ECT physician credentialing, and optimal workflows. The ECT machine itself had to be transported and stored in the maternity hospital while psychiatric staff were provided orientation to hospital facilities and workflows. Second, while anesthesia for pregnant women undergoing ECT is generally considered safe, as physiologic and anatomic gastrointestinal system changes during second and third-trimester pregnancy increase the risk for aspiration pneumonitis during general anesthesia, airway protection with an endotracheal tube is necessary.[3] AB thus required intubation during her ECT.

Several positive outcomes to the shared decision-making process are illustrated in this case. AB achieved treatment of her depressive illness using a fast-acting modality of care (i.e., ECT)[4] that quickly extinguished suicidal ideation and greatly improved mood. She did experience a brief episode of hypomania during the course of ECT. Hypomania during ECT has been previously noted in the literature,[5] though no clear consensus has been established on treatment. AB's hypomanic symptoms were addressed with medication adjustments, and ECT was continued. Most importantly to the patient, she achieved remission of depressive symptoms prior to spontaneous labor and delivery and was at her psychiatric baseline by two weeks postpartum, promoting mother-baby bonding and infant attachment. The first month after delivery conveys the highest risk of postpartum psychiatric syndromes. AB's symptom remission thus enabled the promotion of both maternal and

infant health with potential for long-lasting positive impact on the mother-baby dyad.

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DATA AVAILABILITY STATEMENT

Data sharing not applicable.

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