

CASE REPORT

The Successful Use of ECT for the Treatment of Depression During Pregnancy

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CASE PRESENTATION

A 30-year-old gravida 1, para 0, married female with a six-year history of depression presented at 33 weeks gestation. She reported a five-month history of depressed mood, intense feelings of anxiety, loss of appetite, loss of capacity to enjoy normal activities, terminal insomnia, difficulty concentrating, feelings of guilt and diurnal mood variation.

The patient had a history of depressive episodes which had previously responded to venlafaxine. She was free of symptoms on venlafaxine 37.5 mg daily for four years prior to the current pregnancy. Venlafaxine was discontinued when she learned she was pregnant, at approximately five weeks gestation, on the advice of her family doctor. Her doctor was concerned about the possible teratogenicity of venlafaxine, although current evidence suggests this risk is low or non-existent.¹ Approximately four weeks after stopping venlafaxine, she developed the aforementioned depressive symptoms and was hospitalized in a primary care hospital. She was then treated with paroxetine, the dose of which was gradually increased over the next three months to 60 mg daily. Although she responded transiently to paroxetine, she relapsed within a month. She remained ill for about three weeks before being admitted to the acute adult psychiatry unit of a tertiary care general hospital.

The patient had a history of hypothyroidism, but was euthyroid at the time of admission. Her medical history was otherwise unremarkable. Her medications on admission included: levothyroxine 88 µg daily, paroxetine 60 mg daily, alprazolam 0.5 mg tid prn, doxylamine 20 mg plus pyridoxine 20 mg qhs prn, and a multivitamin. Other than her depressive symptoms, the pregnancy was uneventful until the time of admission. Physical examination and routine laboratory indices were within normal limits. Obstetrical assessment on admission revealed a symphysis-fundal height consistent with 33 weeks gestation and good fetal movements. Mental status examination revealed

symptoms consistent with major depressive disorder. There was no suicidal ideation nor psychosis.

MANAGEMENT

Various psychotherapeutic and pharmacological treatment options were discussed with the patient shortly after admission to hospital. She refused these options, however, as she wanted swift relief of her depressive symptoms and was not willing to wait for antidepressant medications to take effect. Electroconvulsive therapy (ECT) was presented as a potential alternative. After explaining the benefits, risks and alternatives to ECT, the patient opted for this treatment and informed consent was obtained. Paroxetine was tapered and then discontinued. At the same time, venlafaxine was started and increased to 112.5 mg daily over the course of one week beginning with the onset of ECT.

The patient underwent six bilateral ECT treatments starting at 33 weeks gestation. Daily 20-minute non-stress tests and twice-weekly biophysical profiles were assessed. Each ECT treatment was performed in the case room with full obstetric monitoring and preparedness for a possible emergency caesarean section. The patient was pre-medicated with sodium citrate and was placed in the left lateral tilt position. Anaesthesia was induced with sodium propofol and succinylcholine, followed by atraumatic rapid sequence intubation with cricoid pressure prior to the administration of ECT.

The patient made substantial improvement during the first six ECT treatments. The first five treatments were uneventful. After the sixth ECT treatment, the fetal heart showed some deceleration. The patient was monitored for approximately three hours in the case room and then returned to the psychiatry unit, but she developed epigastric discomfort shortly afterward. She was returned to the case room where early pre-eclampsia was diagnosed and a decision was made to induce labour. Labour and delivery were uneventful. The infant was healthy and there were no complications.

The patient appeared well for about three days after delivery. After this time, her mood and affect deteriorated rapidly indicating a relapse of her depression. She subsequently underwent eight ECT treatments, during which venlafaxine was gradually increased to 225 mg daily. She had complete resolution of her symptoms, but then developed a mild relapse. This responded to augmentation with lithium carbonate 600 mg daily. Follow-up at six months revealed her to be well on venlafaxine XR 225 mg daily and lithium carbonate 600 mg daily.

TREATMENT OF DEPRESSION IN PREGNANCY

Good mental health while pregnant has been shown to have positive impact on the fetus' emotional, cognitive and physical health post-delivery. Time of delivery, birth weight, fetal brain development, antenatal attachment relationship, and infant sleep patterns have also been correlated with the mother's mental health.² The consequences of poor mental health of the mother during pregnancy include malnutrition, refusal of prenatal care, inability to follow medical recommendations, attempts at premature self-delivery, substance abuse, suicide, violence or neonaticide.³

USE OF ECT IN PREGNANCY

ECT is an effective therapeutic intervention for patients with mental disorders including major depression, delusional depression, bipolar disorder, schizophrenia, malignant catatonia, and neuroleptic malignant syndrome.^{4,5} ECT has also been reported to be safe in special populations including adolescents and children, the elderly, and patients with medical conditions including cardiovascular disorders.⁶ This evidence is not conclusive, however, as the effectiveness of ECT in these populations has only been reported in small case series and case reports.

The first recorded use of ECT on a pregnant woman occurred in 1941 and was inadvertent. The physician mistook a pregnant belly for an abdominal mass.⁷ After treatment, the patient delivered a full-term, developmentally normal male baby. The use of ECT during pregnancy has been documented over the last half-century, comprising about 300 cases from 1941-1991.⁸ A case report of a spontaneous abortion which was attributed to ECT in 1999 led to a request for other practitioners to publish their experiences in order to assess the safety of ECT during pregnancy.²

The use of ECT during pregnancy is controversial, in part because the mechanism is theoretical and poorly understood. ECT is often misperceived by the public, based on erroneous media and literature depictions.^{9,10} Despite proven safety and efficacy, ECT administration during pregnancy has been an area of some debate due to the potential complications.¹¹ When convulsions were induced by saline and metrazol¹² or by insulin,¹³ the method was associated with negative outcomes for the mother and fetus, including miscarriage, stillbirth, premature delivery and anoxia to both mother and

child.^{8,14} Complications associated with the modern use of ECT include fetal cardiac arrhythmia, vaginal bleeding, induction of uterine contractions, placental abruption, premature labor and spontaneous abortion.¹⁵⁻¹⁸ A recent case report also notes a decrease in fetal heart rate associated with maternal ECT.¹⁹ However, there have been subsequent reports of uneventful ECT administration with successful and healthy deliveries,^{14,20-23} including at least one report of the successful use of ECT in a twin pregnancy.²³ A recent literature review found 339 published cases of ECT use in pregnancy from 1941-2007.²¹ Of these cases, there were only 11 obstetrical complications that were directly attributable to the administration of ECT.²¹

The effect of anesthetic agents on fetal morbidity is unclear. The risk of teratogenesis appears low, particularly with succinylcholine as this agent does not cross the placenta.²⁵ Propofol should be used with more caution during pregnancy, especially during early fetal development or if the fetus has cardiovascular compromise, as an associated decrease in fetal heart rate has been reported.²²

AMERICAN PSYCHIATRIC ASSOCIATION GUIDELINES

The American Psychiatric Association (APA) has concluded that ECT may be used in all three trimesters of pregnancy.²⁶ The APA recommends that obstetrical consultation be obtained prior to ECT. They also recommend that non-invasive fetal heart monitoring occur during ECT, and that there should be ready access to means of managing fetal emergencies.²⁶ Other suggested guidelines for ECT during pregnancy include thorough pelvic examination, that an obstetrician be a member of the managing team and that high-risk pregnancy be considered a relative contraindication to ECT.¹⁹ Other contraindications include increased intracranial pressure, epilepsy and severe cardiovascular disease, particularly cardiac pacemakers.⁶ Other authors have advocated the use of endotracheal intubation, nondominant ECT with EEG monitoring, pre- and post-evaluation of arterial blood gases, tocodynamometer recording of uterine tone, and monitoring of the fetal heartbeat.^{20,21}

CONCLUSION

Review of the literature indicates that ECT has been used to safely and effectively treat depression during pregnancy. In the case presented, ECT was used in conjunction with antidepressant medication to treat a patient during and after pregnancy. If it is indicated, clinicians should discuss with their patients the benefits and risks of ECT and pharmacological treatments versus no treatment during pregnancy. In this way, it can be determined if ECT is an appropriate intervention for managing maternal mental health concerns. This case of a pregnant woman who was successfully treated for depression with ECT highlights the anaesthetic, obstetrical and psychiatric implications of this form of treatment.†

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