Stop! Don't Shock! Patient Is Aware! Identifying Signs of Awareness during GA prior to Administration of ECT Shock

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Introduction

We describe how to identify the warning signs of awareness during general anesthesia (GA) for electroconvulsive therapy (ECT) to treat major depression. We here emphasize recommended preventive measures based on our experience in such a case.

Case Description

A 49-year-old female with major depression presented for her 6th ECT procedure under GA. We administered a predetermined dose of methohexital, similar to that given in her prior treatments. After confirming loss of verbal communication, a dose of succinylcholine equivalent to that given in her prior ECTs was administered and the patient was hyperventilated to reduce the seizure threshold. The patient became tachycardic and hypertensive, leading us to suspect awareness. We administered propofol, the patient awoke, and awareness was confirmed. We then resumed ECT, increasing the dose of methohexital and a reducing that of succinylcholine.

Hemodynamic changes during and following ECT

- Parasympathetic response followed by sympathetic stimulation
- Parasympathetic stimulation may result in transient asystole or brief sinus bradycardia
- Sympathetic stimulation may result in sinus tachycardia or (rarely) tachyarrhythmias

Monitoring during ECT at NORA

1. Standard ASA monitoring: EKG, oxygen saturation, noninvasive blood pressure
2. End-tidal CO2 monitoring with audible alarms per ASA recommendations
3. Inspired and expired oxygen monitoring
4. Monitoring with EEG

Measures to improve the success rate of ECT

- Avoid anesthetic agents that reduce seizure duration and threshold
- Methohexital is the drug of choice
- In a patient with motor seizures of less than 20 seconds, use etomidate to increase seizure duration
- Avoid lidocaine as it reduces seizure duration
- Avoid midazolam prior to induction as it reduces seizure threshold
- Do not administer propofol/midazolam for emergent agitation until the seizure is over

Future strategy for preventing awareness during ECT

- Increase the dose of IV induction agent.
- Reduce the dose of succinylcholine.
- Reduce the time duration between induction and administration of ECT shock.
- Administer propofol and midazolam soon after the seizure is over.

Management of awareness during ECT

- Identify the warning signs
- Administer propofol to increase the anesthetic depth
- Administer midazolam for amnesia
- Administer propofol and midazolam soon after the seizure is over.

CONCLUSION

We identified awareness by warning signs such as tachycardia and hypertension prior to administering ECT shock in a paralyzed patient. We administered propofol to adequately anesthetize the patient.

For further ECT treatment in the same setting we increased the dose of methohexital and reduced the dose of succinylcholine; the patient did not have awareness.