



Post Cardioversion Seizure Like Activity

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Introduction

- Intraoperative seizures are rare but can lead to significant morbidity if not promptly recognized and treated
- Intraoperative seizures can be difficult to detect relative to awake patients due to neuromuscular paralysis, patient positioning, and surgical draping
- Etiologies of intraoperative seizures include metabolic disturbances, pharmacologic interactions, local anesthetic systemic toxicity (LAST), pre-existing neurological conditions, and direct surgical stimulation (ex. craniotomies)
- Identification of risk factors, understanding pharmacology, and continued vigilance is essential for early identification, prevention, and management of intraoperative seizures

Case Report

- We report a 63-year-old male with medical history of drug refractory non-valvular paroxysmal atrial fibrillation presenting for a repeat pulmonary vein isolation under GA with endotracheal intubation.
- Other co-morbidities included OSA, not compliant with CPAP, anxiety on Paxil, and asthma.
- The patient was induced with 2mg/kg propofol, 0.5mcg/mL fentanyl, 1mg/kg of lidocaine, and 0.6mg/kg of rocuronium and was maintained with sevoflurane anesthesia.
- Although stable throughout the case, 2 hours into the procedure, the patient developed atrial fibrillation with RVR.
- The patient was cardioverted with 200J and immediately after cardioversion began presenting seizure-like activity described as whole-body shaking, although not tonic-clonic.
- The anesthesia team stabilized the patient with midazolam and meperidine, and the patient was awoken from anesthesia with no post operative complications or neurologic deficits.
- Subsequent neurological work-up that showed no acute intracranial processes on stat CT.

Discussion

Differential Diagnosis:

- *Intraoperative Stroke* – high probability due to history of atrial fibrillation, although patient was compliant on Eliquis and had no intracardiac thrombus, CT head was negative
- *Metabolic derangements*- electrolytes and hypoglycemia WNL
- *Pre-existing neurological condition*-- No history and non-epileptiform presentation
- *Hypoxemia / Hypothermia*– patient remained hemodynamically stable and normothermic intraoperatively
- *LAST* - normal dose of local anesthetic
- *Medication adverse reaction/ interaction/ withdrawal*- recently abruptly discontinued an SSRI raising concern for serotonin discontinuation syndrome which may cause psychomotor agitation, purposeless tonic movements, emotional distress

Recognition & Monitoring

- Clinical signs of intraoperative seizures may be missed due to features of intraoperative anesthesia such as neuromuscular blockade, surgical draping and patient positioning
- Intraoperative seizures present as subtle clinical signs, including focal twitching, unexplained hemodynamic changes, sudden rise in airway pressures, even more so when neuromuscular blockers are used
- EEG can aid in early detection particularly during neurosurgery or when seizures are suspected

Management

- Hemodynamic and airway support
- Terminate seizure with IV benzodiazepine (lorazepam and midazolam), if seizures persist anti-epileptic medications such as levetiracetam, phenytoin, valproate may be used, or an anesthetic agent such as propofol or a barbiturate for burst suppression
- Rule out stroke
- If LAST is suspected, IV benzodiazepines remain first line, then 20% lipid emulsion therapy
- Run POC glucose, ABG, CBC, CMP, and consider emergent EEG

Conclusions

- Intraoperative seizures are rare but can lead to significant morbidity if not promptly recognized and treated.
- Intraoperative seizures are commonly missed due to the subtlety of symptoms and use of intraoperative neuromuscular blockers
- Causes of intraoperative seizures include metabolic derangements, hypothermia, hypoxia, electrolyte derangements, adverse reactions, withdrawal symptoms among others
- In this patient, stroke, metabolic causes, hypoxemia, hypothermia, drug toxicity were reasonable excluded
- SSRI discontinuation syndrome is a rare complication that can occur if SSRIs are abruptly stopped which is a possible etiology in this patient
- Appropriate medication management is crucial prior to surgery
- Continuous EEG remains the gold standard for intraoperative monitoring

References

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