

ANTISEIZURE MEDICATION FOR ANESTHESIA EDUCATION

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Introduction

Roughly two million people in the United States suffer from a seizure disorder and many take anti-seizure medications. It is of paramount importance that anesthesiologists are knowledgeable about the perioperative management of these patients in order to prevent and address any adverse events that may occur.

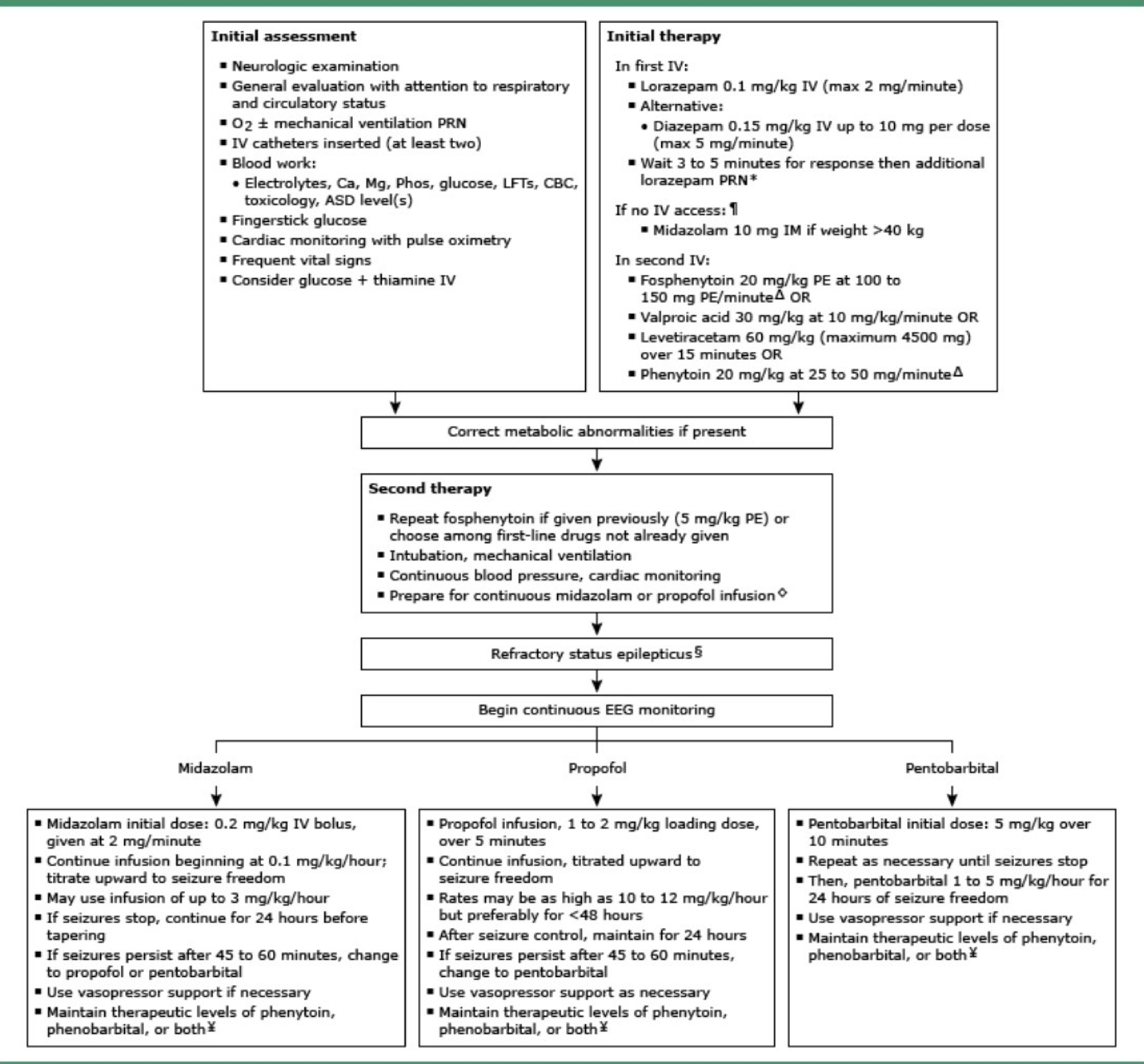
Case Presentation

76-year-old obese male with a past medical history of hypertension, diabetes mellitus type II, hyperlipidemia, peripheral vascular disease and obstructive sleep apnea presented with right-sided pounding headache and left upper extremity weakness. Although CT of the brain showed no evidence of acute hemorrhage or acute large vessel territory infarction, and the CT perfusion scan showed no infarct or penumbra, brain MRI demonstrated multiple foci of acute infarct involving the right basal ganglia and right frontal periventricular white matter with an additional focus in the right parietal cortex. CTA of the head and neck demonstrated a 95% stenosis at the origin of the right internal carotid artery with an ulcerated plaque. Carotid endarterectomy was planned. In the preoperative area the patient’s vital signs were as follows: BP 143/72, HR 110, SpO2 95% (on 2L/min via nasal cannula), RR 23, temperature 36.8°C. Moments after the evaluation the patient suffered a tonic-clonic seizure. This was the patient’s first seizure. He was turned on his side and was provided supplemental oxygen via a nonrebreather mask. The episode lasted approximately one minute and resolved spontaneously, however, a definitive airway was deemed appropriate. The patient was ventilated via an ambu bag while receiving induction with midazolam and propofol. Subsequent endotracheal intubation was uneventful. The procedure was postponed and the patient proceeded to a repeat brain MRI, which demonstrated stable subacute right MCA territory infarctions. Subsequent management included dual therapy with levetiracetam and lacosamide. The critical care team also initiated acyclovir therapy for suspected herpes encephalitis, but this was discontinued after evaluation by the infectious disease specialist as the patient did not meet clinical criteria. An electroencephalogram was performed, which demonstrated a focal epileptogenic focus in the right parieto-temporal area with two captured brief electrographic seizures. Additional findings were consistent with moderate to severe diffuse cerebral dysfunction with a structural abnormality on the right.

The patient had a fever during the EEG and was started on vancomycin and meropenem.

At a later date the patient safely underwent endarterectomy of the right internal carotid artery under general anesthesia without any complications. He did not present any recurrent seizures during this hospital admission.

Treatment of convulsive status epilepticus in adults



Discussion

Patients that have a history of recurrent seizures or epilepsy may be at significant risk for postoperative complications. Stroke was identified as the most significant postoperative complication in patients with epilepsy. Risk factors for postoperative complications range from even sleep deprivation to sub-therapeutic levels of anti-seizure medications. Several anesthetic agents have also been implicated for their pro-convulsant effects, which may be evidenced by myoclonic activity during induction or emergence. Local anesthetic toxicity has also been cited as a risk factor. Most patients with perioperative seizures without a known history have metabolic derangements, such as hyponatremia after transurethral surgery or hypocalcemia following thyroid/parathyroid surgery. Seizures can be a complication following intracranial procedures. Drug and alcohol withdrawal are common causes of seizures. Ischemic or hemorrhagic strokes should be considered as well. Motor seizures occurring during or immediately after a surgical procedure can increase mortality. Management involves the administration anti-seizure medication and the etiology expeditiously sought. Underlying metabolic disturbances should be screened for and treated. Fosphenytoin and levetiracetam are among the most commonly administered agents. Also, incremental doses of propofol are often readily available and commonly used. Intravenous diazepam, lorazepam or midazolam are other options. Sometimes the best management is prevention. Patients on anti-seizure medications generally need to continue their medication perioperatively. Anti-seizure medications are commonly given as prophylaxis during craniotomy even if the patient never had a seizure.

References

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