

# PERIOPERATIVE SEIZURES

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Seizures occurring during the perioperative period may have a variety of causes, including epilepsy, deranged physiology associated with a number of disease states, drugs, and CNS injury or structural lesions.<sup>1</sup> Management involves acute care, diagnosis, and chronic management.

- A. The acute management of a patient during a seizure requires several simultaneous interventions: ensuring an adequate airway; protecting from aspiration and injury; and observing the type, location, and progression of the seizure (particularly noting whether the seizure has focal signs). Attempts to physically restrain the patient or place objects in the mouth may be difficult during a violent seizure, and if forced cause more harm than good. Insert an oral airway (if this can be done easily) and use an Ambu bag with O<sub>2</sub> to assist ventilation. If the seizure is from a local anesthetic overdose, hyperventilation will increase the seizure threshold; otherwise this may lower the threshold. Establish an IV for drug delivery to treat or terminate a prolonged seizure.
- B. Seizures from non-CNS lesions usually terminate with small doses of drugs. Thiopental, midazolam, or diazepam may terminate a seizure. If the cause of the seizure is not readily apparent, give 50 ml of dextrose 50% in water after blood has been drawn for diagnostic studies. If alcohol withdrawal is suspected, give thiamine, 100 mg slowly IV and 100 mg IM (followed by 100 mg IM every day for 3 days). If the seizure does not terminate or there is poor ventilation, intubate the patient (use short-acting neuromuscular block if needed).
- C. Diagnosis involves a search for causative and treatable etiologies. History and family review may indicate epilepsy (0.5–1% of the population).<sup>2</sup> Seizures in a patient with epilepsy may be precipitated by hypoxemia or hypercarbia, especially in children. In these patients, assess compliance with chronic anticonvulsants and their blood level. Fentanyl can evoke seizures in patients with complex partial epilepsy.<sup>3</sup> Focal signs may indicate CNS injury or structural lesions (head injury, brain tumors). Evaluate the patient, the history, and the chart for disease states known to cause seizures: sepsis (blood, urine, CSF cultures), CNS infection (CSF culture), hyperthermia (temperature), diabetes (serum glucose), chronic renal failure (serum BUN, creatinine), hepatic failure (serum ammonia), malignant hyperthermia (temperature, blood gas, ECG), porphyria (urine porphyrins), collagen vascular disease, hypoparathyroidism (serum calcium), thyroid disease,

and eclampsia<sup>4</sup> (pregnancy, hypertension, hyperreflexia, proteinuria). Draw blood for analysis of sodium, magnesium, phosphate, calcium, and glucose, and ABGs for O<sub>2</sub>, CO<sub>2</sub>, and pH.

- D. If the seizure occurs after surgery or anesthetic drug delivery, review the chart for surgical problems and procedures and for anesthetic agents known to cause or promote seizures in susceptible patients. These medications include althesin, amitriptyline, anticholinesterases, antidepressants, antihistamines, enflurane, etomidate, iodinated contrast agents, ketamine, local anesthetics, oxytocin, meperidine, methohexital, propanidid, and propofol.<sup>5,6</sup> Consider the possible presence of toxins (e.g., lead, mercury) and take specimens (urine and blood) if intoxication or withdrawal from addictive drugs is possible (alcohol, barbiturates, narcotics). Give specific treatment in addition to supportive care if the diagnosis is clearly identified.
- E. Consultation with a neurologist or neurosurgeon for further care (e.g., with head injury), diagnostic work-up, or long-term management may be needed, particularly for management of recurrent seizures or the development of status epilepticus.
- F. If appropriate (after consultation with a neurologist or neurosurgeon), consider IV loading of anticonvulsants (phenytoin, 15–18 mg/kg in saline at <50 mg/min; or phenobarbital, 120–240 mg given IV slowly and repeated every 20–30 minutes if needed to a total dose of 400–600 mg).

## References

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