Seizure on Anesthesia Induction in a Three-Year-Old Child

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Introduction

Intravenous lidocaine is often administered upon induction of general anesthesia in order to decrease pain on injection of propofol and to blunt airway reflexes to direct laryngoscopy. This medication is rarely associated with adverse effects such as seizures.

The objective of this case report is to describe a particular circumstance in which lidocaine was associated with seizure activity in a child with no apparent neurological deficits.

Case Report

Patient was a 3-year-old, 13 kg, Caucasian female with no significant past medical history. She presented to the OR after a traumatic fall from monkey bars and developed supracondylar humerus and distal radius fractures.

Parents denied any known head trauma or associated loss of consciousness. On examination, the child was healthy, well-hydrated; however, she was rather sleepy and required no premedication. She was not receiving sedatives or narcotics preoperatively.

In the operating room, after applying routine monitors, general anesthesia was planned to be induced by propofol intravenously. Upon anesthesia induction, 20 mg of lidocaine (1 ml of 2% lidocaine) was injected intravenously to decrease possible pain associated with intravenous administration of propofol.

Immediately, it was noticed that the child developed a grand mal seizure which consisted of generalized tonic-clonic movements lasting about 30 seconds and was associated loss of consciousness. Propofol, 20 mg IV were immediately administered, which resulted in cessation of the seizure activity. There were no significant changes in vital signs. A decision was made to cancel the patient’s surgery. The child was sleepy and required a long time to wake up. CT of the head, EEG, CBC and electrolytes were ordered together with a neurological consult.

A pediatric neurosurgeon diagnosed a small left temporal contusion which did not require surgical intervention. Laboratory results were normal.

Later that afternoon, the child was then taken back to the OR and general anesthesia was induced with propofol and fentanyl. No lidocaine was administered before the administration of intravenous propofol. No seizure activity was noted. Postoperatively, the child received sodium fosphenytoin 15 mg/kg IV, ordered by the pediatric neurology team.

Literature review suggests that lidocaine, an amide local anesthetic, may cause cerebral excitation including seizures activity due to an imbalance between neural structures before the depression state that can occur with high doses of local anesthetics (1).

Conclusion

In conclusion, we believe that the 20 mg of lidocaine which were administered intravenously irritated the left temporal brain contusion which led to the seizure activity. The fact that the child was sleepy pre-operatively without a clear reason, taking a long time to wake up, and that the child only received the lidocaine led us to pursue proper evaluation of her neurological status.

Reference

Nordmark J, Rydqvist B: Local anaesthetics potentiate GABA-mediated Cl-currents by inhibiting GABA uptake. Neuroreport 1997:8,465