Seizure with awake caudal epidural in infants: Is this a problem?

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A 2 month old, 5 kg full-term otherwise healthy female with a diagnosis of bilateral clubfoot presented for bilateral achilles tenotomy and casting. Anesthetic plan was an awake caudal epidural with 3% 2-chloroprocaine. After application of standard ASA monitors, caudal epidural was performed with the patient in prone position using landmark technique with a 20 gauge angiocatheter. Test aspiration was negative for blood or CSF. Six mL of 3% chloroprocaine was then administered in 3 incremental doses of 2 mL over 1.5 minutes with negative aspiration between doses. Bilateral motor block developed over the next 2-3 minutes. Surgical procedure began and patient was tolerating the procedure well. Eight minutes later, she was noted to be having bilateral eyelid twitching and upper extremity shaking which was concerning for seizure activity. Respirations were supported with positive pressure bag mask ventilation with 100% oxygen and intravenous access was obtained . Within 30 seconds, the seizure self-resolved, vital signs remained stable and the infant began to cry. After discussion with family, decision was made to complete the surgery as a motor block had been obtained. Post-operatively, the patient was admitted overnight for additional monitoring and a neurology consultation. Further workup including an EEG, OK, and pseudocholinesterase levels were all unremarkable.

DISCUSSION

Seizures after the use of chloroprocaine are extremely rare. The dosing of local anesthetic used in our patient was supported as safe by current literature. However, in past reports, chloroprocaine was administered under general anesthesia with muscle relaxation which would mask any signs of CNS toxicity. The differential diagnosis for new onset seizure in our patient includes LAST secondary to intravascular injection or high systemic absorption, or less likely, febrile seizure. Due to the delayed presentation of seizures with a negative aspiration, CNS toxicity secondary to high systemic levels of chloroprocaine was the most likely cause. A quantitative pseudocholinesterase level was checked (normal) to rule out impaired clearance of chloroprocaine, but does not rule out the possibility of a qualitative defect. Additionally, caudal epidural route has one of the highest rates of intravascular absorption. While there is a paucity of literature reviewing the use of 3% chloroprocaine in awake caudals, 3% chloroprocaine in caudal epidurals at a bolus dose of 1 - 1.5 mL/kg, followed by an infusion of 1 - 1.5 mL/kg for intra-abdominal procedures under GA in neonates have been previously used successfully and safely. It is conceivable that central seizure activity may have been present in some of those neonates, but was masked by muscle relaxation. At 1.2 mL/kg, our dose was consistent with these reported dosing guidelines. This case study highlights the need for more accurate safe dosing guidelines for 3% chloroprocaine in awake neonates and infants receiving caudal epidurals.

REFERENCES