

Lidocaine Toxicity from Topical Mucosal Application

With a Review of the Clinical Pharmacology of Lidocaine

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A case is reported of an infant who experienced seizures while being treated with a topical lidocaine 2% solution (Xylocaine® 2% Viscous) for teething. The pharmacology of lidocaine is reviewed to alert physicians to the potential dangers of topical mucosal application of these preparations.

LIDOCAINE HYDROCHLORIDE, an aminoacyl amide, is widely used for both topical and local injection anesthesia. It is also used as a cardiac antiarrhythmic agent.

A variety of topical preparations exist, among them a popular 2% solution of lidocaine hydrochloride, marked as Xylocaine® 2% Viscous, indicated for the production of topical anesthesia of irritated or inflamed mucous membranes of the mouth and pharynx.¹ It is not recommended for the relief of teething discomfort by the manufacturer.

Serious adverse systemic reactions to lidocaine have been reported after ingestions of the topical dosage form.²⁻⁴ The authors have encountered an infant who experienced seizures after having lidocaine applied topically on the gums for teething.

Case Report

Our patient was an 11-month-old male infant in good health until the day of admission when his mother heard

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him crying in an unusual manner during an afternoon nap. He was found on his abdomen with his arms, legs, and head shaking; he was unresponsive with staring eyes and head turned to the right side. These symptoms persisted for 20 minutes and, when brought to the Pediatric Emergency Room, the infant had another generalized seizure which responded, after 5 minutes, to 2 mg of intravenous diazepam. There was no history of previous seizures and no family history of convulsions.

The mother brought with her a 100 ml bottle of lidocaine hydrochloride 2% solution (Xylocaine® 2% Viscous) prescribed by a physician for "teething." She had been applying this to the infant's gums with her finger five to six times daily for the past week. There was approximately 20 ml left in the bottle.

Physical examination revealed a lethargic, but easily arousable normal-appearing infant, weighing 9.8 kg. The blood pressure was 118/90 mm Hg, heart rate 148 beats per minute with no dysrhythmia, respirations 40 per minute, and rectal temperature 37 C. A neurologic examination after the seizure terminated revealed no abnormal findings.

The infant was admitted to the Intensive Care Unit. He did not experience any further seizures, and his electrocardiogram was normal.

Laboratory studies showed a hemoglobin of 11.0 g/dl; hematocrit 31.8%; leukocyte count 7800 cu/mm with 51% neutrophils, 7% band cells, 35% lymphocytes, 1% eosinophils, and 6% monocytes. The serum sodium was 134 mEq/l, potassium 3.3 mEq/l, plasma bicarbonate 16.0 mEq/l, chloride 107 mEq/l, glucose 116 mg/dl, BUN 9.0 mg/dl, creatinine 0.4 mg/dl, alkaline phosphatase greater

Lidocaine 2% = 20 mg/ml -- Half 2 mg/ml / 2 hr
20% = 200 mg/ml

LIDOCAINE HYDROCHLORIDE 2% VISCOS (Xylocaine® 2% Viscous) is a registered trademark of Astra Pharmaceutical Products, Inc.

children should be given dosages commensurate with their age and physical condition, also states that the dose can be swallowed.¹ The dosage recommended for symptomatic treatment of irritated or inflamed mucous membranes is (15 ml, 300 mg), i.e. 4.5 mg/kg or 2 mg/lb body weight, undiluted, per dose.¹

When topical anesthetics are applied to the oral mucosa, it would appear important to have the patient expectorate the excess to avoid absorption.¹²

Since children under 7 years of age are unable to expectorate unless taught to do so, these agents pose a special hazard to them.

There is a lack of evidence of safety and efficacy for lidocaine hydrochloride to be used for symptoms attributed to the eruption of deciduous teeth. Xylocaine Viscous is not recommended by the manufacturer for the relief of teething discomfort, and physicians should be warned that such use may be hazardous.

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BOOKSHELF



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