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Case Report

Acute ischemic stroke following lidocaine injection

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• Lidocaine; Infarcts; Seizures; Toxicity; Dental

Abstract

We present a previously normal 15 years old girl with a generalized weakness and coma following convulsive status epilepticus which developed after inferior alveolar nerve blockade through local lidocaine injection by a dentist. The patient was admitted to the pediatric intensive care unit and recovered within several days.

ABBREVIATIONS

PICU: Pediatric Intensive Care Unit; MRI: Magnetic Resonance Image; CNS: Central Nervous System; CPR: Cardiopulmonary resuscitation.

INTRODUCTION

Local anesthesia can lead to lethal complications if injected in a highly vascularized area or if given in an excess dose. This case report describes a girl who developed status epilepticus and stroke after local lidocaine injection for dental procedure.

CASE PRESENTATION

A previously healthy 11 years old girl admitted to Adan hospital with status epilepticus following local lidocaine injection given for a dental procedure. Her status was preceded by fainting, dizziness and persistent vomiting. There was no history of fever, skin rash or trauma. On arrival to emergency room she was afebrile, her Glasgow coma scale was 11/15, heart rate was 112/minute and blood pressure was 90/60. The patient was shifted to PICU and her seizures were managed by intravenous diazepam, phenytoin and then levetiracetam. She was found to have generalized weakness and double hemiparesis. Deep tendon reflexes were exaggerated more on the left side with up-going planter reflex.

Routine laboratory tests including complete blood count, renal and liver function tests were normal. Thrombophilic screen was normal and metabolic work up also was normal. MRI showed multiple cortical infarcts in the fronto-parieto-occipital area on the right side and also on the left frontal area suggesting hypoxic ischemic insult. Both electrocardiogram and echocardiography were normal. Electroencephalography showed encephalopathic picture.

The case was diagnosed as acute ischemic stroke following lidocaine injection. The girl was continued on Levetiracetam for seizures plus physiotherapy with good response. MRI was repeated 2 months later and showed gliosis indicating resolving infarcts. She is currently following up in outpatient and she is almost back to her normal status (Figure 1).

DISCUSSION

This case presentation describes a status epilepticus in a previously healthy young female after probable intra-arterial injection of lidocaine for local intraoral anesthesia before dental procedure. Lidocaine is known to cause a reversible blockade of impulse propagation along nerve fibers by preventing the inward movement of sodium ions through the nerve membrane [1]. Systemic toxicity of local anesthesia can occur after administration of an excess dose, with rapid absorption, or due to accidental intravascular injection [2,3]. Of these, intravascular injection is the most common cause of systemic toxicity and the only one that cannot be prevented even by proper dosage and administration technique [4]. Initial CNS signs and symptoms include agitation, confusion, dizziness, drowsiness, dysphoria, tinnitus, auditory changes, perioral numbness, metallic taste, and dysarthria. Without adequate recognition and treatment, these signs and symptoms can progress to seizures, respiratory arrest, and/or coma. While CNS toxicity often presents with the above initial features, seizures are the most common consequence. Additionally, in the setting of intravascular injection seizures can be the initial presentation [5].

Cardiovascular toxicity manifests by hypotension, atrioventricular heart block, idioventricular rhythms, and life-threatening arrhythmias such as ventricular tachycardia and fibrillation [6]. Central nervous system toxicity usually precedes the cardiovascular effects as it occurs at a lower plasma concentration [5]. Seizures activity ceases rapidly and ultimately is followed by respiratory depression and can proceed to respiratory arrest. Most systemic reactions are short-lived, though permanent injury or even death may follow drug-induced ventricular fibrillation, myocardial infarction or cerebrovascular accidents [1]. Methemoglobinemia secondary to lidocaine exposure can be an associated finding although it is rare [7].

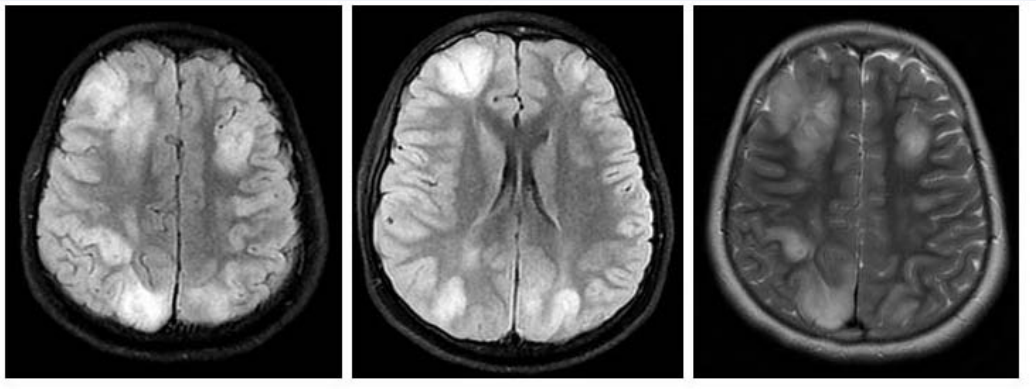

Figure 1 MRI Brain showing multiple cortical infarcts in the fronto-parieto-occipital area on the right side and also on the left frontal area.

CONCLUSION

local anesthesia complications should be in mind during dental procedures to be avoided. proper management must be done promptly if happened.

RECOMMENDATION

Dental professionals should recognize the early signs of CNS toxicity of local anesthetics, including seizures and be prepared to manage them to optimize the patient outcome. Therefore, they should be well trained to do CPR. It is recommended that suitable resuscitation equipment should be available in dentistry clinics.

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