Abstract:
This is the case of a 4-year-old girl who presented to the emergency department with acute development of seizures and respiratory failure. The patient had sustained full thickness burns a few days prior covering 20% total body surface area. She was treated with home topical therapies including a lidocaine containing gel. She had resultant lidocaine toxicity and hyponatremic, hypochloremic dehydration. This case report reviews the differential diagnosis of decreased mental status and seizures. The patient's diagnoses of lidocaine toxicity, full thickness burns, dehydration, and child abuse are discussed. Lidocaine toxicity is reviewed including mechanism of action, signs and symptoms, and treatment.

Keywords:
lidocaine toxicity; seizure; dehydration; child abuse; burns

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Shake It Up! What's Going On?

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Emergency medical services (EMS) were called to the home of a previously healthy 4-year-old girl who was having a seizure described as full body shaking. When EMS arrived, they found the patient unresponsive with burns to the buttocks and both legs. Mother explained that the burns occurred 3 days prior when the patient climbed into a tub of hot water. Mother stated that she heard screaming and went into the bathroom and removed the patient from the bath. She reported that the patient's skin appeared red. Mother and stepfather had since been treating the burns with topical therapies including aloe, bacitracin, and Burn Jel Plus (Water-Jel Technologies, Carlstadt, NJ). The mother stated that the patient had been acting normally when suddenly she began to have full body shaking, so mother called 911. The patient was transported to the emergency department (ED) via EMS.

Upon presentation to the ED, the patient's vital signs included the following: heart rate 160 beats per minute, respiratory rate 4 breaths per minute, and blood pressure 122/77. She weighed 15.5 kg. The child was noted to be unresponsive with fixed and dilated pupils and no gag reflex. Her skin was pale and cool with full thickness burns to her legs and buttocks (Figures 1 and 2). The remainder of her examination showed no abnormalities. Respirations were assisted with bag mask ventilation and 100% oxygen. The patient had vascular access established immediately, and normal saline was administered. Midazolam was administered for suspected continued seizure activity due to her neurologic examination. The patient was then given rocuronium and was intubated. An electrocardiogram was performed and was normal. Ceftriaxone was administered due to concern for infection. A complete blood count revealed a white blood cell count 63 000/μL with 55% bands, 35% segmental neutrophils, hemoglobin level 12 g/dL, hematocrit 37%, and platelets 594 000/μL. A basic metabolic

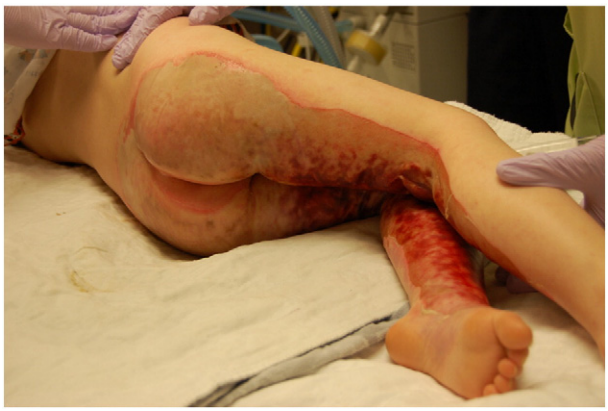

Figure 1. Patient's injuries upon presentation.

panel showed sodium 116 mEq/L, potassium 4.3 mEq/L, chloride 80 mEq/L, carbon dioxide 19 mEq/L, urea nitrogen 20 mg/dL, creatinine 0.3 mg/dL, glucose 178 mg/dL, and calcium 8.8 mg/dL. Blood culture and toxicology screen were sent. The patient was transported to a tertiary care pediatric hospital for pediatric intensive care unit (PICU) admission.

When the patient arrived at the pediatric hospital, a computed tomographic (CT) scan of her head was performed before going to the PICU. No acute pathology was identified by the CT. Once admitted, further history was gathered. The patient was otherwise healthy and took no regular medications. The only medications she had taken in the past several days were 1 dose each of acetaminophen and ibuprofen 2 days before presentation. She had a tick found on her head 1 day prior, which was removed. Her appetite had been decreased for the past 3 days. The review of systems was otherwise negative. The patient was living with her mother, who was pregnant, her stepfather, and 2 younger brothers. She was attending preschool and had been developing normally throughout childhood. Detectives arrived at the hospital and offered information that Child Protective Services was involved because the biological father is a sexual offender and the stepfather has been convicted of sexual battery and corruption of a minor. The patient had no further seizure activity in the PICU but did have depressed mental status upon admission. Although this patient had many diagnoses evident on presentation, the cause of her seizure activity and respiratory depression was unclear.

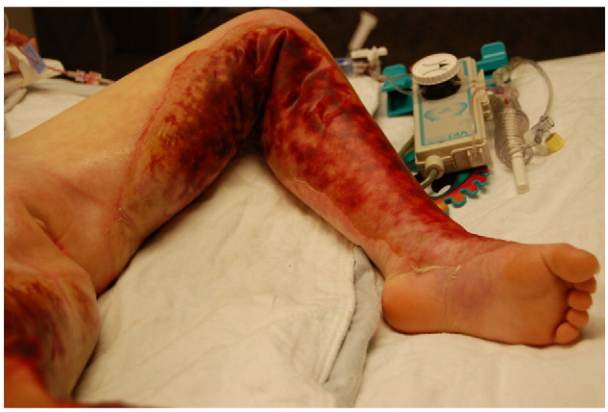

Figure 2. Patient's injuries upon presentation.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis for seizure and change in mental status is extensive (Table 1). A thorough

TABLE 1. Differential diagnosis of acute change in mental status and/or seizure.

Trauma
Closed head injury
Abdominal trauma
Multisystem trauma
Shock
Hypovolemic shock
Cardiogenic shock
Septic shock
Neurologic
New onset seizure disorder
Febrile seizure
Status epilepticus
Encephalitis/meningitis
Tumor
Arteriovenous malformation
Stroke
Congenital brain malformation
Intoxication
Carbon monoxide poisoning
Analgesics
Tricyclic antidepressants
Stimulants
Opiates
Corticosteroids
Anesthetics
Alcohol
Electrolyte disturbance
Hyponatremia
Hypernatremia
Hypoglycemia
Hyperglycemia
Hypocalcemia
Hypomagnesemia
Primary respiratory failure
Intussusception

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