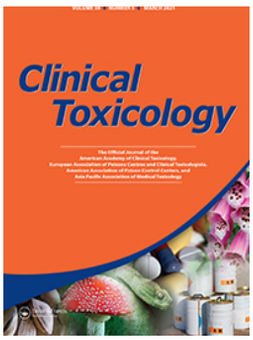

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Fatal ingestion of sodium chlorite used as hand sanitizer during the COVID-19 pandemic

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LETTERS TO THE EDITOR

Fatal ingestion of sodium chlorite used as hand sanitizer during the COVID-19 pandemic

To the Editor,

Recently, President Donald Trump suggested that injecting disinfectants could be useful for treating coronavirus (COVID-19) infections [1], and data from the American Association of Poison Control Centers (AAPCC) has shown an increase in accidental poisonings from cleaning products, such as bleach and disinfectants [2]. Reports of shortages of household cleaners may also drive consumers to seek alternative higher-risk products. Here, we report a fatal ingestion of a sodium chlorite solution, used as a hand sanitizer to prevent coronavirus infection.

An 85-year-old woman presented to the emergency department following an unintentional ingestion of approximately 50 mL of a 28% solution of sodium chlorite. The patient's daughter purchased the product from an online vendor as 80% sodium chlorite powder (Figure 1), diluted it in distilled water, and placed it in an unlabeled container. On examination, the blood pressure was 181/57 mm Hg, heart rate of 70 beats per minute, respiratory rate of 20 breaths per minute, and an oxygen saturation of 77% on room air. She appeared cyanotic and reported a burning sensation in her throat. She had no apparent burns to the oropharynx and was not in respiratory distress. Laboratory evaluation revealed a methemoglobin level of 41%. The patient received a single dose of methylene blue 1 mg/kg within one hour of emergency department arrival with rapid improvement in the methemoglobin level.

Over the course of several hours, the patient developed hypoxemic respiratory failure, acute renal failure, and severe intravascular hemolysis. She underwent multiple sessions of intermittent hemodialysis to manage the metabolic acidosis and to potentially remove unbound chlorite. The hemoglobin nadired at 9.6 gm/dL (baseline 13.6 gm/dL). Peripheral blood smear showed ghost cells and schistocytes. Despite aggressive resuscitation and blood transfusions, she developed disseminated intravascular coagulopathy (INR 6.46, undetectable fibrinogen) and died two days following the ingestion.

Sodium chlorite is a white crystalline substance that acts as a powerful oxidizing agent, leading to the generation of chlorine dioxide. It is used industrially as a detergent, bleaching agent, and in the production of paper and textiles [3]. Recently, sodium chlorite has gained popularity as a natural remedy for a multitude of health conditions, despite a lack of clinical evidence to support its efficacy, prompting the Food and Drug Administration (FDA) to issue multiple safety warnings [4]. Clinically, acute sodium chlorite toxicity is characterized by the rapid development of methemoglobinemia, acute renal failure, and massive intravascular hemolysis [5]. Treatment focuses on aggressive supportive care, methylene blue for methemoglobinemia, dialysis for renal failure, and a combination of blood products or plasma exchange to reduce the burden of red cells affected by chlorite [3].

Online access to highly concentrated formulations of sodium chlorite has increased in recent years due to unsupported claims of efficacy in treating several medical conditions, now including COVID-19 [5]. As people search for cleaning products to protect themselves from COVID-19, unregulated, online access to industrial disinfectants represents a dangerous convenience. Furthermore, it is critical that public messaging stress avoidance of these potentially lethal cleaning products as we continue to manage the COVID-19 pandemic.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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LETTERS TO THE EDITOR

Comment on "Comparison of rates of opioid withdrawal symptoms and reversal of opioid toxicity in patients treated with two naloxone dosing regimens"

To the Editor

We applaud Purssell et al., for their interesting paper entitled "Comparison of Rates of Opioid Withdrawal Symptoms And Reversal of Opioid Toxicity in Patients Treated with Two Naloxone Dosing Regiments: A Retrospective Cohort Study" [1]. [The study confirms what may seem obvious to many: that high dose naloxone (HDN) is more likely to precipitate opioid withdrawal than low dose naloxone (LDN).

As a result of the retrospective study design there are several limitations placed on the interpretation of the findings. For example, the decision to administer naloxone and the specific dose were left to physician discretion, leading to discrepancies in several of the key clinical features between the groups, such as route of naloxone administration and indications when to administer naloxone.

The cut point used to determine HDN versus LDN is 0.15 mg. While this may be considered low to some, many consider an initial starting dose of 0.04 mg to be appropriate with titration to approach reversal without precipitating withdrawal [2]. Please explain the rational of using 0.15 mg naloxone as cut point for low dose. In this study, almost all patients who received LDN received it intravenously, which is not an adequate pharmacological comparator with the less than 40% who received HDN by that route. Do your data suggest whether there are clinically significant differences between LDN intravenously vs HDN intravenously regarding the risk of precipitated withdrawal.

Further, the classical endpoints of a normalized respiratory rate and mental status may not be optimal because we focus on avoiding precipitated withdrawal. Although a GCS of 10 is low in many circumstances, it may be preferred in a patient following an opioid overdose who is arousable and has a normal oxygen saturation (on oxygen perhaps) with an acceptable end-tidal carbon dioxide. GCS focuses on motor, verbal, and ocular response, none of which reflect the severity of opioid poisoning or is prognostic of patient outcome. Since opioid overdose leads to respiratory depression, which is not a component of the GCS, using respiratory rate and depth, oxygen saturation, and end-tidal carbon dioxide is likely a more sensitive method to assess and monitor the response to naloxone among groups. An assessment of global mentation with tools such as the Richmond Agitation Sedation Scale (RASS) or AVPU Plus may be sufficient [3].

Disclosure statement

No potential conflict of interest was reported by the author(s).

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