1ST EDITION 2024

Newsletter

Interview section:

Good day, everyone!

As you know, this is the first edition of the MENATOX newsletter. In this special edition, I would like to welcome a very special person. And I think all of you know who he is!

Before I introduce him, I want to emphasize that Dr. Ziad Kazzi has been a beacon in the field of toxicology. His name was the first to be mentioned during my residency, and he has been a constant source of inspiration for me and many of our residents.

Today, in this special edition, we have the privilege of introducing Dr. Ziad Kazzi and engaging in a thought-provoking conversation with him. This interview promises to be an incredibly enlightening and exciting experience for all of us.

Dr Kazzi is one of the founders of the MENATOX society [is a non-profit organization whose mission is to advance the care of poisoned patients and prevent poisonings through education, clinical care, research, and public health strategies and actions]. He is also a Professor of Emergency Medicine.

Director, International Fellowship in Medical Toxicology, Emory University, Assistant Medical Director, The Georgia Poison Centre, Associate Medical Director, Southern Regional Disaster Response System

Adjunct Professor of Emergency Medicine, American University of Beirut, Vice President, ACMT Immediate Past President, MENATOX, and a key figure in shaping the society's [specific achievements or initiatives].

Case Files from the AUB Clinical Toxicology Service

Potential Health Hazards Associated with Improperly Prepared Lupin Beans (Termos/Turmos)

Duaa Al Lawati, MD (1), Mahdi Hamade, MD (2), Aseel Sarieddine, MD (2), Tharwat El Zahran, MD (2), Ziad Kazzi, MD (1,2)

1. **Emory University, Atlanta, Georgia, USA**
2. **American University of Beirut, Beirut, Lebanon**

Case 1:

A 62-year-old female with no past medical illnesses and not on any medication presented to the Emergency department with a complaint of feeling imbalanced along with numbness and dryness in the mouth six hours after ingesting improperly cooked lupin beans. According to her, she boiled the beans only once. She also complained of lower extremity weakness. On physical examination, her blood pressure was 106/68 mmHg, heart rate was 88 beats/min, respiratory rate was 18 breaths/min, temperature 36.7, and pulse oximeter was 100%. She looked anxious and stressed. Pupils were dilated with sluggish reaction to light, dry mucus membrane with flushed skin more on the hands. However, her systemic exam, including cardiac, respiratory, and neurology, was all intact. Her baseline investigations were within normal limits, including electrocardiogram and complete blood chemistry. She was treated symptomatically, received a dose of midazolam for her anxiety only, and kept for 24-hour observation. After 12 hours of ingestion, her symptoms improved. She was discharged the next day.

Case 2:

Case 2: A 58-year-old female presented to the ED with multiple episodes of vasovagal syncope, accompanied by vomiting, urinary retention, dizziness, and sinus tachycardia. On examination, she had dilated reactive pupils. Upon further history, she reported consuming inadequately soaked lupin that she had prepared herself at home.

Lupin beans, or Termos, are part of the legume family closest to peas[1]. The main species are Lupinus mutabilis, Lupius angustifolius, and Lupinus albus. The latter is commonly eaten as a snack[2]. They are a popular to-go snack in the Middle East and Mediterranean region. They are very nutritional and contain a high amount of protein. While these beans are highly beneficial, they must be adequately cooked[3]. Otherwise, they might cause toxicity.

Lupines are generally classified as either bitter or sweet. Bitter lupines, such as the lupini beans eaten in Europe, contain high alkaloids (primarily sparteine), giving them a bitter taste. These require a debittering process before they can be consumed. In contrast, sweet lupines, like those grown in Western Australia, have low alkaloid levels (mainly lupine).4

Some lupine species are now cultivated for human consumption and have been selectively bred to have lower alkaloid content, making them “sweet” or “semisweet” lupines. Not all lupine species are toxic. For those that are, the toxicity generally depends on the concentration of poisonous alkaloids. Bitter lupine seeds contain quinolizidine and piperidine alkaloids, which can cause significant toxicity. The alkaloids sparteine and lupanine are particularly toxic. Early symptoms of consuming improperly prepared lupine beans or the debittering solution include nausea and vomiting. Severe toxicity depends on the amount of alkaloid ingested 4. If not cooked properly, quinolizidine alkaloids can cause anticholinergic toxicity, impacting the nervous, circulatory, and digestive systems in humans. Symptoms include vital signs disturbances (tachycardia, hypertension, hyperthermia), confusion, anxiety, dizziness, malaise, flushed face, tremors, slurred speech, dry mouth, urinary retention, stomach pain, and constipation.

Reported cases of alkaloid toxicity in humans include three fatalities among children! And four moderately severe acute anticholinergic reactions after the ingestion of lupin beans containing high levels of alkaloids or “debittering” water (in which lupins had been soaked to remove the alkaloids)5. Lahoud et al. reported a similar case of a 50-year-old Lebanese female who presented with bilateral mydriasis, mouth dryness, and anxiety after consuming partially debittered lupini beans; her symptoms improved without therapy after 12 hours of presentation 2. In his discussion, he reviewed seven reported cases with similar toxicity and found that the duration of most of their symptoms varied from 12 to 48 hours.

Before you eat those beans, please cook them properly! Check out how to do so.

Cooking Instructions[2]:

1. First, rinse one pound of dry lupini beans and pick out any broken or cracked ones.
2. Soak them in fresh, cool water for 24 hours, not just overnight.
3. Drain the lupini beans and place them in a deep pot. Cover with several inches of cool water and bring to a boil. Keep at a rolling boil for 60 minutes. They are very sturdy and will not split.
4. Drain the beans and let them cool. Then, please place them in a large bowl and cover with cool water. Drain the beans and cover with fresh, cool water every morning and every night. Do this twice a day for at least four days (or until the beans have no bitter taste left in them, which might take up to seven days, depending on your beans). Soak only in the morning; add one teaspoon of salt to the soaking water.

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3. How to cook lupini beans (Lebanese Termos) Published: Nov 12, 2020, · Modified: May 18, 2022, by Janelle Hama
4. https://www.micromedexsolutions.com/
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Deadliest snakes in the MENA region

Musa S. Alfaifi | MBBS,SBEM
Emergency and medical toxicology consultant
Program director of the Saudi board of EM

Armed Force Hospital Southern Region, MOD |
Abha, Saudi Arabia
Email: Alfaifim@gmail.com
Contact number: +966592224442

The article summarizes the most common deadly snakes in the MENA region. Here is an overview of some of the snakes that you might encounter.

Neurotoxins:

1-Elapid Snakes (Genus Naja): distributed in Yemen, Oman, Saudi Arabia, Egypt, Algeria, Djibouti, Morocco, Sudan, and Tunisia. Venom Type: Dominance of 3-finger toxins (3FTxs), including short-chain (SNTX) and long-chain alpha-neurotoxins (LNTX).

2-Daboia Palestine (Palestine Viper): is distributed in Jordan, Lebanon, the Occupied Palestinian Territory, East Jerusalem, and the Syrian Arab Republic. Its venom Is rich in neurotoxic and hemorrhagic components.

3-Pseudocerastes field (Viper Snake): distributed in Iran, Saudi Arabia, Iraq, Syria, Jordan, and occupied Palestine. Venom Type: Potent neurotoxicity due to specific phospholipase A2s (PLA2s).

Hematotoxins

4-Echis carinatus (Saw-Scaled Viper): The venom contains SVMPs, PLA2s, and CTLs, which cause coagulopathy, disseminated intravascular coagulation (DIC), systemic hemorrhage, renal failure, and thrombotic microangiopathy (TMA).

5-Echis coloratus: The venom: Contains potent snake venom metalloproteinases (SVMPs) and C-type lectins (CTLs).

6-Bitis arietans (Puff Adder): The venom: High concentration of snake venom serine proteases (SVSPs).

7-Cerastes Species: The venom Causes local manifestations and coagulopathy.

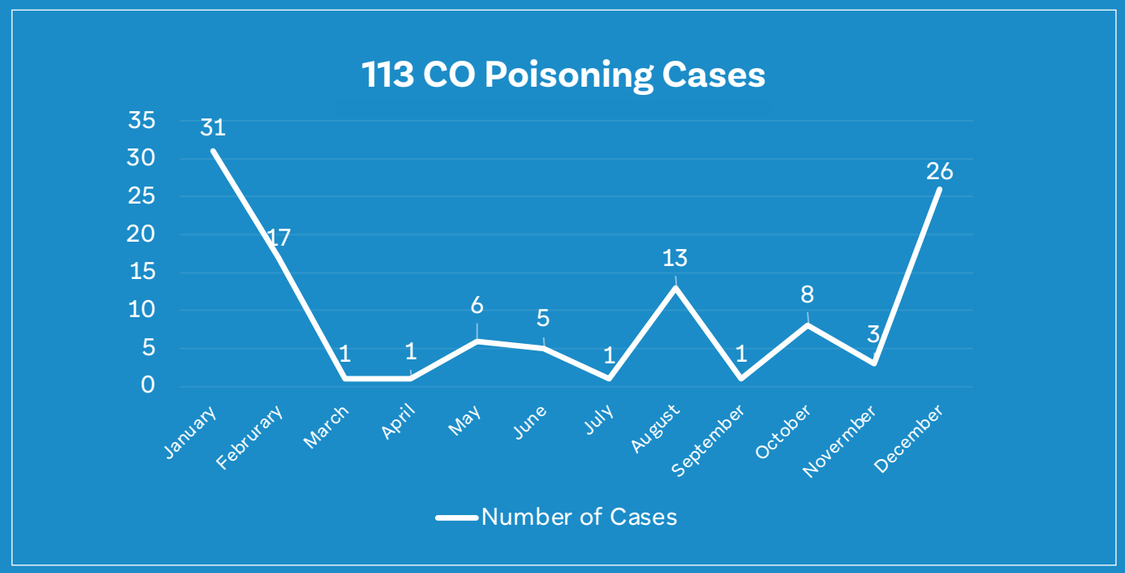
8-Daboia Species: Daboia mauritanica: Distribution: Algeria, Morocco, Tunisia.

9-Macrovipera species, notably Macrovipera lebetina are potent vipers in MENA region countries like Algeria, Iran, Iraq, Jordan, Lebanon, Syria, and Tunisia.

10-Pseudocerastes species have diverse venom compositions, such as Pseudocerastes persicus and Pseudocerastes fieldi. Their distribution includes countries like Iran, Iraq, Oman, UAE, and Saudi Arabia.(SVSPs).

CO Poisoning: The Kuwait Poison Control Center Experience

Director, Kuwait Poison Control Center
Faculty, Kuwait Board of Emergency Medicine
Attending Al-Amiri Emergency Department
Kuwait City, Kuwait



Graph1: Seasonal variation of reported CO poisoning cases in 2023

Carbon monoxide (CO) poisoning is a leading cause of morbidity and mortality worldwide. CO is a non-irritating, odorless, tasteless, and colorless gas produced from the incomplete combustion of any hydrocarbon compound. Due to its characteristics and the non-specific presenting symptoms of toxicity, failure to diagnose CO poisoning is common. In 2022, over 50,000 emergency visits in the US were from non-fire related CO poisoning, with >1,000 deaths annually compared to 13,760 exposure cases reported to the US poison centers. Seasonal cold weather and natural disasters are predictable because CO poisoning increases exposure.

The Kuwait Poison Control Center (KPCC) recorded 113 cases of CO poisoning in its inaugural year, 2023.

Most of these cases occurred during winter, primarily due to charcoal use. A spike in mid-summer was observed, attributed to an increase in closed-space fire victims. This seasonal variation, consistent with previous published Kuwaiti research, underscores the importance of targeted prevention strategies. Our data revealed that 58% of the patients' CO exposure was secondary to charcoal use, 29% from closed-space fires, 9% from gas leaks, and 4% from car exhausts. The prevalence of charcoal exposure in CO poisoning may be a regional variation, where burning charcoal is used for heat while camping or indoors. In contrast, other regions, such as North America, commonly report unvented space heaters using combustible fuel as the primary cause of CO exposure. These specific experiences and findings from the Kuwait Poison Control Center provide a more comprehensive understanding of the CO poisoning situation in our region.

Our management experience:

Removing the patient from the CO source and stabilizing the airway, breathing, and circulation is the management priority, especially in fire victims or comatose patients. High-flow O2 is administered to all patients with CO poisoning until asymptomatic and the COHb is <5%. Co-oximetry allows quantification of COHb with a level of >5%, which is generally considered abnormal. We use the transcutaneous pulse COHb devices as a screening tool for mass causality. Plasma lactate concentration may occur in severe CO poisoning. In patients with lactate > 8 mmol/L with a history of enclosed-space fire exposure, evaluation of cyanide initiation of empirical antidotal therapy is recommended, as CO and cyanide poisoning can occur simultaneously. Electrocardiography (ECG) is used to assess the hypoxia and metabolic effects of Co on the heart. The troponin concentration is frequently elevated in CO poisoning; in our case series, 70% of the patients had elevated high-sensitivity troponin. We recommend measuring the troponin concentration for patients with chest pain, co-morbidities, or ECG changes; creatinine kinase (CK) can demonstrate evidence of rhabdomyolysis. Brain computerized tomography (CT) may reveal changes in the globus pallidus and subcortical white matter or a hypoxic injury pattern. When applicable, a pregnancy test is requested.

Published evidence of Hyperbaric Oxygen Therapy (HBO) efficacy is conflicting and inconsistent. HBOT is recommended by many institutions, including ours, to decrease the delayed neurological sequelae of CO poisoning.

The KPCC identified a multi-chamber HBOT in one of the seven general hospitals in Kuwait. A meeting was set with the HBOT team, and an agreement and a protocol that would allow any patients in Kuwait to be transferred to receive the HBOT if referred by the KPCC were agreed on. This resulted in recommending HBO therapy for 69 patients who presented with at least one of the following indications: syncope, coma, seizures, altered mental status, COHb >25% or >15% in pregnancy, or >24 hours of CO exposure.
Our target is to commence the therapy within 6 hours and up to 24 hours post-exposure. 40.5% of the patients did not receive the HBO therapy due to refusal of treatment (53.5%), incompatible ventilator with the HBOT chamber (25%), and unavailable HBOT staff (17.8%). All 113 patients were discharged with complete recovery.

Tox tales:

A Severe Case of Calcium Channel Blocker Toxicity

Dr. Jenan M Salmeen
Kuwait Board of Emergency Medicine
PGY-4

The case:

A 26-year-old female with no past medical history apart from possible psychiatric illness for which she is taking ashwagandha and eszopiclone, presented to the emergency department with dizziness and vomiting 3 hours after allegedly ingesting 7 tablets of Verapamil 240mg with self-harm intent.

Her vitals were: HR 65 b/m, BP 70/40, Temp 37°C, SpO2 100% on room air, GCS 15/15, and she had pale skin on examination. Her random blood sugar was 7.6 mmol/L, VBG was unremarkable apart from a lactate of 3.04 mmol/L, and the ECG showed a normal sinus rhythm. She was started on IV fluids and then a norepinephrine (NE) infusion for refractory hypotension. Bedside ECHO showed an ejection fraction of 60%. The ICU team admitted the case and contacted the poison center (PC). The PC recommendations were to add calcium gluconate boluses, repeat the ECHO to decide on high-dose insulin (HDI) therapy, inform the ECMO team, and send a paracetamol level.

The patient continued to show evidence of hypoperfusion with bradycardia, for which the ICU added an epinephrine infusion. HDI was then started, but due to recurrent hypoglycemia, the maximum infusion rate reached was 4 u/kg/hr, complicated by fluid overload for which she required dialysis. The PC insisted on ECMO, and it was placed. The patient developed asystole while on ECMO, which resolved with calcium gluconate and titrating the HDI. A single dose of methylene blue was also administered, with a good response in the MAP. The patient was weaned off the treatments over 5 days, and ECMO was discontinued. She was seen by psychiatry and discharged with a full recovery.

Discussion

Calcium channel blocker (CCB) toxicity is associated with significant morbidity and mortality. The management starts by stabilizing the airway, breathing, and circulation. Gastric decontamination with activated charcoal, if not contraindicated, is recommended as well as continuous cardiac monitoring. Blood investigations, including VBG and a basic metabolic profile, should be obtained. Hypotension is treated initially with fluid resuscitation, and a trial of atropine may be used in symptomatic bradycardia but commonly fails. Calcium boluses are recommended, and vasopressors such as NE, epinephrine, and dopamine can be utilized (1).

HDI therapy is the treatment of choice for CCB toxicity if evidence of myocardial dysfunction is present. Nevertheless, HDI is suggested as a rescue treatment if maximum supportive measures fail even in the absence of myocardial dysfunction (2). Early initiation is preferable due to the delayed onset of action of 15-40 minutes (3). The usual starting dose is 1 u/kg of insulin bolus with a 0.5 g/kg dextrose bolus. An infusion of 1 u/kg/hr is followed with titration every 30 minutes up to 10 u/kg/hr with the administration of a dextrose infusion at 0.5 mg/kg/hr, titrating according to blood glucose with the replacement of potassium. Monitoring blood sugar and potassium is imperative (4). Multiple HDI protocols exist; we recommend that each institute discuss and agree on an HDI protocol before the actual need to initiate it. Intravenous lipid emulsion with verapamil toxicity has been reported. Methylene blue in refractory vasoplegic shock can be effective (5).

Suggested protocol for HDI therapy in calcium channel blocker toxicity for adults (6)

Check serum glucose & if <11 mmol/L to give 50 mL of %50 dextrose in water
Administer regular Insulin 1 u/kg IV bolus
Begin regular Insulin infusion at 1 u/kg/hr along with dextrose %10 in water at 200 mL/hr
Titrate Insulin infusion rate every 30 minutes up to 10 u/kg/hr with a hemodynamic goal of HR>50 b/m and SBP>100mmHg
Monitor blood glucose every 20-15 min
Titrate dextrose infusion rate to maintain serum blood glucose between 11 & 6 mmol/L
Once dextrose infusion rate has been stable for 60 min, glucose monitoring maybe decreased to hourly
Monitor K level and start IV K infusion if serum K level is <2.8 mEq/L
Maintain K level between 3.2 & 2.8 mEq/L

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A Long Nap at the Majlis

Author 1:

Name: Khadija Albarazanji
Speciality: Pharmacist, poison information specialist
Country: Qatar, Doha
Contact email: kalbarazanji@sidra.org

Author 2:

Name: Leena Amine
Speciality: Pharmacist, manager of Qatar Poison Center
Country: Qatar, Doha
Contact email: lamine@sidra.org

Case Scenario:

A previously healthy 3-year-old male child presented to the emergency department with a decreased level of consciousness after being left unattended during a family gathering, playing with cousins in their Majlis. He developed drowsiness, lethargy, and intermittent crying with a Glasgow Coma Scale (GCS) score of 12/15. The parents denied any drug exposure.

Initial investigations, including physical examination, laboratory testing, random blood glucose, electrocardiogram (EKG), chest X-ray, lumbar puncture, and brain MRI, were unremarkable.

The Qatar Poison Center (QPC) was consulted and recommended obtaining urine drug screening (UDS) to rule out drug intoxication. Two urine samples were collected, and both were positive for cannabinoids: 420 ng/mL and 401 ng/mL, respectively, with a cutoff of ±50 ng/mL. The patient was admitted to the intensive care unit for observation and received antibiotics, antivirals, propofol, and intravenous fluids. He returned to baseline and recovered within 24 hours.

Discussion

Urine, plasma, and occasionally saliva and sweat samples can be used to identify cannabinoid exposure; however, additional confirmation by alternative methods may be necessary. Immunoassays are widely accessible, with gas chromatography–mass spectrometry (GC-MS) being the gold standard method and considered the most specific assay (1).

Standard urine drug screens are the most commonly used in healthcare settings to detect specific metabolites of cannabis. These tests generally have lower detection limits, which may range from 20 to 100 ng/mL depending on the particular assay (2).

A positive urine test is indicative of a total concentration of all detectable urine metabolites standing at least 20 ng/mL, which is the cutoff concentration value. However, a positive urine test for cannabis only confirms the presence of cannabinoids and does not specify which metabolites are present or what their concentrations are (3,4).

False positives for cannabinoids are uncommon because the chemical structure is unique and the specificity of immunoassays targeting THC metabolites. Nonetheless, historical examples of false positives have been reported, which included substances like dronabinol, efavirenz, proton pump inhibitors, hemp seed oil, and some nonsteroidal anti-inflammatory agents (5,6,7).

The presence of cannabinoids by passive inhalation does not normally lead to detectable urinary levels unless there has been significant exposure (1). Nevertheless, some young children have been reportedly symptomatic following passive exposure to cannabis smoke though they mostly fall below typical assay detection thresholds.8,9 This further highlights the need for future research especially with an increased use of higher THC content products since 2005.

To conclude, while cannabinoid pediatric exposures have been on the rise in North America, these types of exposures are not common in the State of Qatar. This case emphasizes the importance of raising awareness among healthcare providers about cannabinoid exposure in children and the role of the Qatar Poison Center in interpreting results and guiding management of such exposures. Furthermore, favorable patient outcomes and optimal management requires collaboration between the poison center, treating physicians, and the child advocacy and protection services.

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Announcements:

Stay tuned for the upcoming MENATOX conference, Muscat, Sultanate of Oman 23rd to 26th of February

Register now!

MENATOX rounds are still on going, here are the upcoming next sessions.
(date and month)
Next 4 months

(link)
Register now!

Editors:

Our names