CASE REPORT

Eating seeds from the 'be still' tree, yet having lucky nut poisoning: a case of acute yellow oleander poisoning

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SUMMARY

A 25-year-old woman was evaluated and treated for ingestion of *Thevetia peruviana* seeds and flower petals—a natural digoxin cross reacting cardenolide—with intent to cause self-harm. The following case report provides the clinical presentation, treatment and management of acute yellow oleander poisoning.

BACKGROUND

Yellow oleander is a small tree often found in tropical and subtropical areas. Deliberate ingestion of the seeds can lead to fatal arrhythmias resulting from severe cardiac toxicity. Early recognition and identification can allow for life-saving specialised treatment, if given on time.

CASE PRESENTATION

A 25-year-old woman was evaluated after a self-reported intentional ingestion of five flower petals and five small seeds from a local yellow oleander plant, *Thevetia peruviana*. The patient reported that she had researched on the internet information about local tropical poisonous plants weeks prior to the initial evaluation. The patient had no medical history but did have a history of depression for which she was taking risperidone and sertraline; although she had not taken these medications on the day of her presentation. On review of systems the patient denied any symptoms of chest pain, dyspnoea, syncope or palpitations, but did report nausea and vomiting. The patient was initially evaluated within 1 h of the ingestion of the plant components. On examination the blood pressure was 129/91 mm Hg, pulse 50 bpm, respiratory rate 14 and oxygen saturation 99% on ambient air. Heart rate was bradycardic with a regular rhythm and no murmurs were auscultated. Pupils were equally reactive bilaterally and not dilated measuring 3 mm in diameter. The patient had a normal mental status and a depressed affect. ECG revealed a heart rate of 50 bpm with sinus bradycardia. Her initial basic chemistry was normal with an initial serum potassium level of 4 mmol/L and a magnesium level of 2 mg/dL. The initial toxicology screening which consisted of a urine drug screen, serum acetaminophen, ethanol and salicylate levels did not reveal any abnormalities suggestive of other coingestions. A serum digoxin level was also obtained and was measured at less than 0.4 ng/mL. The patient reported a social history of smoking a pack of cigarettes daily and consuming alcohol at social

gatherings. Her family history was negative for any history of hereditary arrhythmias or any other form of congenital heart disease. The patient had no history of prior arrhythmias while on her antidepressant medications based on a review of her outpatient records and visits.

INVESTIGATIONS

The patient's initial basic chemistry was normal with an initial serum potassium level of 4 mmol/L and a magnesium level 2 mg/dL. The initial toxicology screening which consisted of a urine drug screen, serum acetaminophen, ethanol and salicylate levels did not reveal any abnormalities suggestive of other coingestions. A serum digoxin level was also obtained and was measured at less than 0.4 ng/mL. ECG revealed a heart rate of 50 bpm with sinus bradycardia (figure 1).

TREATMENT

The patient was initially placed on telemetry monitoring and given 50 g of activated charcoal in addition to 10 mg of intravenous metoclopramide for symptomatic nausea. She was admitted to our facility for 48 h of continuous telemetry to monitor for arrhythmias. While inpatient she was scheduled for multiple doses of activated charcoal, 50 g every 6 h from the initial dose. In addition the patient had atropine 0.5 mg intravenous available at the bedside in the event of unstable or profound bradycardia. The patient's electrolytes were routinely monitored for any signs of electrolyte imbalances.

OUTCOME AND FOLLOW-UP

The patient was monitored for 48 h without any acute complications. She only received two doses of activated charcoal as she became intolerant due to abdominal pain and nausea. Telemetry monitoring revealed a gradual increase of her sinus bradycardia from 40 bpm to her baseline rate of 70–76 bpm over the course of 48 h. The patient did not receive any doses of atropine, nor did she require antidigoxin Fab antitoxin administration. The risperidone and sertraline were discontinued during hospitalisation to prevent any other cardiogenic toxicity or side effects. She was safely transferred to the inpatient psychiatry ward for further psychiatric monitoring and discharged home within 72 h without any further complications.

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Figure 1 Initial ECG obtained at the time of presentation.

DISCUSSION

In 2011, the US Center for Poison Control reported 1336 single exposures of plant cardiac glycoside poisoning, most of which occurred in children and young adults. Of these cases, only 97 were reported as intentional ingestions and resulted in only one reported death.¹ A majority of patients with acute ingestion present with symptoms such as vomiting, dizziness, diarrhoea, abdominal pain, dilated pupils and drowsiness.² In addition to these symptoms, patients can also present with cardiac arrhythmias ranging from sinus bradycardia to third degree atrioventricular block.^{3,4} These effects are derived from the structural and chemical similarities between the yellow oleander cardenolide-oleandrin and digitalis cardenolides derived from foxglove.⁵ These chemical similarities allow for some cross reactivity and detection by immunoassays utilised for measuring serum digoxin levels, with variable sensitivities.^{6,7} Ingestion of

any part of the plant can result in poisoning with variable pharmacokinetics depending on the cardiac glycoside concentration of the different parts of the plant and the time following ingestion.^{3,5} There are reports of poisonous ingestion ranging from herbal teas to ingestion of a meal containing snail stew from a snail tissue with traces of oleandrin.^{8,9} In addition to advance life support measures for cardiac arrhythmias, effective treatments based on current literature and a few randomised control trials suggest that multiple dose-activated charcoal and antidigoxin Fab antitoxin are reasonable options, although the efficacy and indications for these remain uncertain.¹⁰⁻¹² It is important to note that there is data suggesting that electrolyte abnormalities, particularly hyperkalaemia, is a marker of poor outcomes.⁴

Contributors EF performed the literature review and follow-up of the patient's care while she was hospitalised.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Learning points

- Severe to moderate toxicity can present with nausea, vomiting, diarrhoea, drowsiness and dilated pupils in addition to cardiac arrhythmias.²
- The internet can serve as a medium for information and purchasing poisonous plants for self-harm.¹³
- A bradycardic rate is often encountered during intoxication and can often progress to varying degrees of heart block.^{3,4}
- Activated charcoal can be administered as multiple scheduled doses due to the metabolic enterohepatic recycling of digitalis glycosides.¹¹
- Antidigoxin Fab antitoxin is a treatment for serious cardiac arrhythmias induced by yellow oleander.¹²

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