

Poisoning following Ingestion of *Narcissus Tazetta* Bulbs by Schoolchildren

Amer Hussein MD PhD and Aurica Yassin MD

Department of Emergency Medicine, Ziv Medical Center, affiliated with Bar-Ilan University Faculty of Medicine in the Galilee, Safed, Israel

KEY WORDS: *Narcissus tazetta*, toxic plants, poisoning, bulb

IMAJ 2014; 16: 125–126

The American Association of Poison Control Centers received more than 47,000 reports of poisoning in 2011 due to toxic plant exposure [1]. Of these, 13.2% were due to unknown plants and less than 1% to *Narcissus*. In most cases, the degree of toxicity from plants is low because of the small amounts of material consumed. More severe poisoning occurs in adults who mistakenly believe the plant is edible or holds medicinal properties [2]. There are a few antidotes for toxic plants, and in most cases the treatment is only supportive. We describe an outbreak that occurred in a group of children and their 22 year old guide who suffered from vomiting after ingesting the bulb of the *Narcissus tazetta* plant, also known as the daffodil.

Narcissus tazetta



PATIENT DESCRIPTION

A group of 10 children aged 10–11 years together with their guide presented at the emergency department in February 2010 suffering from vomiting after ingestion of the *Narcissus* bulb, which had been mistakenly identified as the bulb of a garden onion. All the children had been perfectly healthy prior to this incident. Eight of them vomited within half an hour after eating the *Narcissus* bulb. Two children had no complaints at all. Physical examination was normal in all the children. Vital signs including temperature, blood pressure and pulse were normal. No swelling of lips or mouth and no dyspnea or other respiratory manifestations were noted. One child had slight diffuse tenderness in the upper abdomen. Laboratory tests (electrolytes and kidney function) were normal. The eight children were treated with intravenous normal saline and the whole group was kept for 4 hours for observation in the emergency department. The 22 year old guide vomited once and suffered abdominal pain. Her vital signs and laboratory tests were normal. She was treated in the emergency department with intravenous normal saline and metoclopramide hydrochloride. Once their condition improved the whole group was discharged to their homes.

COMMENT

Narcissus tazetta [Figure] is a geophyte, a plant whose secondary parts on the ground die and only a storage organ lives underground. The *Narcissus tazetta* belongs to Amaryllidaceae, a family with a brown bulb [2]. The flowers have a strong smell that attracts insects. It is widely grown

in the Mediterranean region and thrives in two habitats – valleys and mountains. The mountain *Narcissus* grows in rocky mountainous areas and flourishes during November and December. The valley *Narcissus* grows in ponds and swamp margins, flourishing from January to March.

Materials derived from plants of the family Amaryllidaceae are known to have healing properties. For example, oil produced from *Narcissus poeticus* was used in ancient Greece for the treatment of cancer. Components of these plants (such as narciclasine) are presently being investigated for activity against cancer cells. These components derived from the plants are also used in Alzheimer's disease as inhibitors of the enzyme acetyl-choline esterase [3]. They are being investigated for other healing purposes as well.

However, along with the healing ability of *Narcissus*, there is also the danger of poisoning. All parts of this plant are poisonous especially if large amounts are consumed. A review of the literature produced a few reports of poisoning from eating the *Narcissus* bulb, but these referred to other species of *Narcissus* and not *Narcissus tazetta* [4]. In addition to vomiting, previously described reactions were respiratory symptoms and contact dermatitis [5].

Patients may be asymptomatic or present with nausea and severe vomiting, diarrhea, nervous symptoms such as trembling, and convulsions. Death can result from ingestion of the bulb. Irritant dermatitis can also occur when the needle-sharp calcium oxalate crystals, distributed in the outer layers of many *Narcissus* bulbs, pierce the hands of those handling them. The wheals are characteristic of the disorder "bulb fingers," a symptom suggestive of histamine

release. Pre-hospital treatment includes ceasing contact with the plant immediately and strict washing of hands, and eye irrigation in cases where patients rubbed their eyes with contaminated hands.

In the emergency department the treatment for poisoning is primarily symptomatic in nature. Airway, breathing and circulation must be ensured, followed by supportive therapy including removal of any remaining toxin by gastric decontamination. Gastric lavage is unlikely to be effective. Gastrointestinal decontamination by activated charcoal may be beneficial by reducing the absorbed poison dose, only if administered within the first hour. Dosing

for adults is 1 g/kg (30–100 g) per os and 1–2 g/kg (15–30 g) per os for children. This treatment is a general recommendation and is not specific to *Narcissus* poisoning. Administration of activated charcoal is contraindicated in vomiting patients [1,2].

In conclusion, it is necessary to recognize the symptoms of poisoning by *Narcissus*, a common plant in our region, especially since the bulb of this plant strongly resembles the garden onion.

Corresponding author:

Dr. A. Hussein

Head, Dept. of Emergency Medicine, Ziv Medical Center, P.O. Box 1008, Safed 13100, Israel

Fax: (972-4) 692-8746

email: amer.h@ziv.health.gov.il

References

1. Bronstein A, Spyker D, Cantilena L, Green J, Rumack B, Dart R. 2011 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 29th Annual Report. *Clin Toxicol* 2012; 50: 9111-164.
2. Froberg B, Ibrahim D, Furbee RB. Plant poisoning. *Emerg Med Clin North Am* 2007; 25 (2): 375-433.
3. Lopez S, Bastida J, Viladomat F, Codina C. Acetylcholinesterase inhibitory activity of some Amaryllidaceae alkaloids and *Narcissus* extracts. *Life Sci* 2002; 71 (21): 2521-9.
4. Jaspersen-Schib R, Theus L, Guirguis-Oeschger M, Gossweiler B, Meier-Abt PJ. Serious plant poisonings in Switzerland 1966-1994. Case analysis from the Swiss Toxicology Information Center. *Schweiz Med Wochenschr* 1996; 126 (25): 1085-98.
5. Goncalo S, Freitas JD, Sousa I. Contact dermatitis and respiratory symptoms from *Narcissus pseudo-narcissus*. *Contact Dermatitis* 1987; 16 (2): 115-16.

Capsule

'Watch' stops unnecessary heart attack deaths

It looks like a watch but it's a sophisticated blood-oxygen heart rate monitor. About half the people at risk of death from cardiac or pulmonary arrest could gain the chance to live, once Israeli entrepreneur Leon Eisen's new Oxitone device goes to market some time this year. Using two optical sensors and another special high-tech tool, Eisen developed the world's first "watch" that can just about tell when your time may be up. With all the technology out there – personal monitoring devices, crocodile clips for your finger, even those panic buttons –

nothing helps if the user is not able to mobilize these devices in time. And many patients may not be able to read the signs that cardiac arrest is imminent. That's why Eisen developed a wearable watch-like mobile device – synced with Bluetooth, Android or iPhone devices – that takes minute-by-minute readings of heart rate and oxygen levels in the blood. Oxitone was recently chosen from 400 applicants by GE Healthcare's Start-Up Health Academy Entrepreneurship Program.

Israel High-Tech & Investment Report

Capsule

Pan-viral specificity of IFN-induced genes reveals new roles for cGAS in innate immunity

The type I interferon (IFN) response protects cells from viral infection by inducing hundreds of interferon-stimulated genes (ISGs), some of which encode direct antiviral effectors. Recent screening studies have begun to catalogue ISGs with antiviral activity against several RNA and DNA viruses. However, antiviral ISG specificity across multiple distinct classes of viruses remains largely unexplored. Schoggins et al. used an ectopic expression assay to screen a library of more than 350 human ISGs for effects on 14 viruses representing 7 families and 11 genera. The authors show that 47 genes inhibited one or more viruses, and 25 genes enhanced virus infectivity. Comparative analysis revealed that the screened ISGs targeted positive-sense single-stranded RNA viruses more effectively than negative-sense single-stranded RNA

viruses. Gene clustering highlights the cytosolic DNA sensor cyclic GMP-AMP synthase (cGAS, also known as *MB21D1*) as a gene whose expression also broadly inhibits several RNA viruses. *In vitro*, lentiviral delivery of enzymatically active cGAS triggers a STING-dependent, IRF3-mediated antiviral program that functions independently of canonical IFN/STAT1 signaling. *In vivo*, genetic ablation of murine cGAS revealed its requirement in the antiviral response to two DNA viruses, and an unappreciated contribution to the innate control of an RNA virus. These studies uncover new paradigms for the preferential specificity of IFN-mediated antiviral pathways spanning several virus families.

Nature 201; 505: 691

Eitan Israel

"Several excuses are always less convincing than one"

Aldous Huxley (1894-1963), British author, humanist, pacifist and satirist. His best-known book is *Brave New World*