Case study

An Unusual Cause of Upper Airway Obstruction: A Case Report

Comment [U1]: suggested to be more specific according to the topic due to Dieffenbachia plant poisoning

ABSTRACT

Background: Dumb cane, or *Dieffenbachia*, is a tropical decorative house plant belonging to the Araceae family and the Arum class, and its colored leaves are appealing to children.

Objective: The rationale of this report is to notify health workers and the community about the danger of such plant poisoning and increase awareness about its toxic effect on humans.

Case Report: A 14-month-old girl presented to the emergency department complaining of a history of cough, difficult breathing, excessive crying, lip swelling, and drooling of saliva after ingestion of *Dieffenbachia*. Upon arrival, she had mild respiratory distress associated with stridor. Her examination showed lip swelling, tongue sore, and redness with scattered blisters. These symptoms resolved after a few hours of receiving respiratory support with oxygen therapy, intravenous fluids, intravenous Dexamethasone, racemic epinephrine, oral antihistamines, and normal saline rinses.

Conclusion: The community lacks awareness about home plant poisoning. The significance of reporting such cases highlights the need for parents and community awareness to prevent the toxicity of more people, especially youngsters.

Keywords: Child Poisoning; *Dieffenbachia*; Dumb cane; toxic plants

INTRODUCTION

Dumb cane, or *Dieffenbachia*, is a tropical decorative house plant belonging to the Araceae family and the Arum class (**Figure 1**) (1)**.** Because these plants are native to tropical places and are now widely available in the household, they are frequently implicated in accidental exposure and ingestion (2). *Dieffenbachia* pincta and *Dieffenbachia* seguine are the two main species. It is known as the "crying flower" by locals and can be poisonous. The colored leaves, in particular, are appealing to children (3).

Dieffenbachia poisonings can manifest themselves in systemic or local effects in humans and animals. With the chewing of this plant, severe clinical findings such as airway obstruction or respiratory insufficiency might develop, as can milder clinical symptoms such as swelling, burning, and discomfort in the tongue and lips (3). A recent article stated that *Dieffenbachia* poisoning had been documented in seven cases (3 cases aged between 1 and 3 years, 3 cases aged between 7 and 12 years, and 1 case of a 69-year-old adult) (3).

The rationale of this report is to notify health workers and the community about the danger of such plant poisoning and increase awareness about its toxic effect on humans, especially infants and children.

CASE REPORT

A 14-month-old Saudi girl with no chronic disease presented to the emergency department of a tertiary care hospital in the southwest province of Saudi Arabia, with a history of cough, difficult breathing, excessive crying, lip swelling, and drooling of saliva immediately after ingestion of a house plant, commonly called dumb cane (*Dieffenbachia*). Her mother removed the plant leaves from her mouth immediately after chewing. Upon arrival to the emergency department, she was irritable and crying but conscious and alert. She had mild respiratory distress associated with stridor. Her vital signs were as follow: pulse= 123, respiratory rate= 36, temperature= 37 C^{o}, blood pressure= 94/63. Her otolaryngology examination showed lip swelling, tongue sore, and redness with scattered blisters. Other systems were free, apart from transmitted sound in the chest. Her initial laboratory investigation results, including complete blood count, serum electrolyte, renal function test, and liver function test, were all in the normal range. The venous blood gas showed respiratory alkalosis with PH= 7.47, PCO_2= 28, HCO_3= 25. The chest x-ray was unremarkable. Her treatment included respiratory support with oxygen therapy, intravenous (IV) fluids, IV Dexamethasone, racemic epinephrine, oral antihistamines, normal saline rinses, and she was kept under a cardiac monitor. After a few hours, she became quiet, smiling, with no respiratory distress. The mucosal erythema subsided, and mucosal edema completely disappeared, as did the blebs on her tongue. She was given bottle feeding with no sign of pain or vomiting, and she was discharged to home in good condition.

DISCUSSION

Dieffenbachia originated from tropical America, the Amazon forest (3). Tukuna Indians used the stem and roots to make poisonous arrows (3). Besides its attractive appearance, *Dieffenbachia* grows easily and is tolerant to shade (4). Therefore, many people keep it for decoration and ornamental purposes (3,4). *Dieffenbachia's* ingestion is uncommon, but some literature reported manifestations following its ingestion. The most serious presentation is the respiratory failure (1). The sap of the plant usually causes a temporary burning sensation, an increase in secretions, erythema, tongue sore, and oral swelling (3,4). The stem and root extract has a narcotic effect and irritates the gastrointestinal tract (causing vomiting and diarrhea) and the kidney (1,5). On contact with the eye, both result in severe pain, chemosis, blepharospasm, photophobia, lacrimation, corneal abrasion, and kerato-conjunctivitis (1,3,4). The mechanism of toxicity is unidentified. However, researchers found that Raphides (calcium oxalate crystals as the monohydrates, and calcium carbonate as aragonite), oxalic acid, and protease enzyme (in the idioblasts) are the main active substances (3,4). These crystals and proteolytic enzymes cause irritation and inflammation on contact with skin or mucous membrane (1,5). The symptoms usually occur within the first five minutes of contact and resolve with minimal supportive treatment (1). The literature lacks a clear guideline of treatment as the studies of *Dieffenbachia* toxicity are scanty.

In our case, the symptoms appeared immediately after ingestion and disappeared after a few hours of supportive treatment. The supportive treatment included respiratory support in the form of oxygen therapy, intravenous fluids, intravenous anti-inflammatory, oral antihistamines, normal saline rinses, and kept under cardiac monitoring. The gastrointestinal symptoms of *Dieffenbachia* toxicity mimic some other plant and herbal toxicity such as *Abrus precatorius*, *Colchium autumnale*, *Jatropha curcas*, and *Rhododendron simii* (6).

Comment [U2]: Discussion: added references or citations to increase scientific value, related to clinical manifestations of upper airway obstruction and the mechanism of action of drugs in overcoming these conditions to increase scientific value.

Comment [U3]: It is recommended to cite the reference in one paragraph, it is not necessary to write every sentence with the same reference citation.

Comment [U4]: added references or other citations related to the mechanism of action of the drug in overcoming these conditions so as to increase the scientific value.

The community lacks awareness about home plant poisoning. Hence, the significance of reporting such cases highlights the need for parents and community awareness to prevent the toxicity of more people, especially youngsters. We recommend further laboratory and animal studies of house plant toxicity, especially *Dieffenbachia*, being a popular ornamental house plant. We also recommend highlighting house plant toxicity and first aid support in the press by individuals and governments and formulating a clear treatment guideline for such cases.

Highlight

- *Dieffenbachia*, a decorative house plant belongs to Araceae family and Arum class.
- Its poisoning can manifest in systemic or local effects in humans and animals.
- The poisoning symptoms usually occur within the first minutes of contact.
- The community lacks awareness about home plant poisoning.
- House plant toxicity and first aid support should be highlighted in the press.

Clinical Relevance paragraph

The community lacks awareness about home-plant poisoning. The significance of reporting such cases highlights the need for parents and community awareness to prevent the toxicity of more youngsters. We recommend highlighting house-plant toxicity and first aid support in the press by individuals and governments and formulating clear treatment guidelines.

REFERENCES

Comment [U5]: added references related to clinical aspects of upper airway obstruction.

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List of Figure Captions/Figure Legends

Figure 1 shows the dump cane (Dieffenbachia ‘Camille’)