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Solanine Toxicity Suspected in an Indian Women Following Consumption of Turkey Berry-A Case Report

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ABSTRACT
The turkey berry, also known as Solanum torvum, is a small, circular fruit that grows on a shrub-like plant indigenous to tropical Africa. It has earned the name "turkey berry" due to its popularity among turkeys as a food source. These berries provide numerous advantages, including a rich nutritional profile as they are packed with antioxidants, vitamins, and minerals such as vitamin C, iron, and calcium. However, information on the possible toxicity of turkey berries is not readily available. Herewith, we have presented a case of a 47-year-old female who appeared in the emergency department with turkey berry poisoning after repeatedly taking it in the evening and the next morning with complaints of experiencing two sudden episodes of vomiting, 4-5 episodes of loose stools, and blurred vision. The patient did not report any history of consuming food from outside or encountering sick patients. The patient was managed symptomatically with medications that inhibit acetylcholine accumulation and electrolyte replenishers.

Keywords: Solanine Toxicity; Turkey Berry Poisoning; Solanum torvum poisoning; Acetyl-cholinesterases inhibitor.

I. INTRODUCTION

The turkey berry, also known as Solanum torvum, is a small, circular fruit that grows on a shrub-like plant indigenous to tropical Africa. It is also commonly found in Southeast Asia, the Caribbean, and South America. It is also known by several other names, including devil's fig, prickly nightshade, and susumber [1]. The name "turkey berry" derives from the fact that turkeys have a great preference for eating this fruit as part of their diet [2]. There are two types of turkey berries: one with a yellowish stem and the other with a purplish stem [2]. They can be used in a variety of ways, such as in food preparation, horticulture, and medicine [3]. These berries are highly nutritious, containing antioxidants, vitamins, and minerals such as vitamin C, iron, and calcium. It is also believed to possess anti-inflammatory, anti-cancer, anti-diabetic, and anti-cancer characteristics that minimize the negative effects of anti-cancer drugs [1]. However, information on the possible toxicity of turkey berries is not readily available.

II. CASE PRESENTATION

A 47-year-old female patient was presented in the emergency room with complaints of experiencing two sudden episodes of vomiting and 4-5 episodes of loose stools. There were no accompanying symptoms of hematemesis or hematochezia. Additionally, the patient complained of feeling photophobia and slight dizziness. The patient did not have a recent history of travel and did not present with any fever symptoms. After being asked about her food history, the patient confessed to having consumed curry with turkey berries as the primary ingredient both the previous night and that morning. The patient did not report any history of consuming food from outside or coming into contact with sick patients.

Upon conducting a physical examination, her vital signs were all reported to be normal and within range during the general examination (pulse rate: 76 bpm, blood pressure: 140/70 mmHg, respiratory rate: 18 cpm, and temperature: 98.4˚F). On systemic examination, her respiratory, cardiovascular, nervous, and gastrointestinal systems were found to be normal. On eye examination, her pupils were found to be constricted (miosis present). It was observed that the patient had an intact mental status and was fully alert and oriented to time, place, and person. The patient's blood was drawn and sent for a complete blood count (CBC), liver function test (LFT), and renal function test (RFT) to investigate her condition. Additionally, an electrocardiogram (ECG) was performed. All the metrics in the results are within the normal range, although the blood

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uric acid level was borderline high (7.2 mg/dL).The patient was suspected of having solanine poisoning following the consumption of turkey berries.

The patient received treatment consisting of Inj. Ondansetron 8mg IV STAT (Emeset), Inj. Prochlorperazine mesylate 5mg IM STAT (Stemetil), Inj. Pantoprazole 40mg (Pan) STAT, Inj. Ofloxacin 200mg IV (Oflox) BD, Tab. Dimenhydrinate 40mg plus Cinnarizine 20mg (Sturgeon plus) BD, and Cap. Racecadotril 100mg (Redotil) BD. Rehydration was achieved by intravenous infusion (IVF) of Dextrose Normal Saline (DNS) and Ringer Lactate (RL) at a rate of 100 ml/hr.

After her primary treatment in the emergency room, the patient was shifted to the ward. The patient's symptoms were resolved, except for dizziness. As she rapidly regained her health and returned to a normal state, the patient and her attendants requested discharge from the hospital within three hours of admission. Upon request, the patient was discharged at their own risk with a prescription for Cap. Redotil is to be taken twice a day and Tab. Nexpro RD (a combination of domperidone and esomeprazole) for a duration of two days. The patient was in stable condition at the time of discharge.

III. DISCUSSION

Solanum torvum is a plant commonly used in traditional medicine and as a food ingredient in many parts of the world. However, like many plants, it contains natural toxins that can cause adverse effects in humans. The presence of solanaceous steroidal glycoalkaloids like solanine that inhibit acetyl-cholinesterases and indirectly activate cholinergic receptors is considered responsible for toxicity [4, 5]. Turkey berries have a dose-dependent level of toxicity [6].When ingested in excess or processed incorrectly, the symptoms appeared. Typically, these berries are cooked in a curry before being eaten, which can make the glycoalkaloids they contain unstable and susceptible to degradation [4]. However, in this case, even after boiling the berries, it shows toxicity which indicates that the glycoalkaloids may retain their stability under certain circumstances.

Solanum torvum poisoning is a rare form of food poisoning that can cause symptoms in the gastrointestinal, nervous, and musculoskeletal systems.Berries exposed to environmental difficulties such as sudden temperature swings are prone to develop symptoms [4]. It can lead to a range of symptoms from mild to life-threatening which includes nausea, vomiting, loose stools, ataxia,cranial nerve deficits, slurred speech, vertigo, hypertension, blurring of vision, disorientation, paralysis, and respiratory failure [7]. The first reported case of poisoning resulting from the consumption of susumber berries in Jamaica dates back to 1867 [4]. Subsequently, cases of susumber berry poisoning were reported in Toronto in 2003, Florida in 2004, and New York in 2006 [4]. In this case, the patient experienced nausea, vomiting, loose stool, and photophobia. As the toxicity of turkey berries is dose-dependent, it's probable that the patient just ate a modest number of berries. In the case reported by Zulqarnain S et al., the patient developed miosis in addition to high blood pressure, bradycardia, and effects on the respiratory system that necessitated admission to the intensive care unit [7]. The patient in this case presented with miosis but no bradycardia, hypertension, or respiratory failure. The symptoms may be developed by the accumulation of acetylcholine at the neuromuscular junctions and synapses as a result of inhibited acetyl-cholinesterasesand stimulation of cholinergic receptors [8].Therefore, the patient was treated with the antiemetic drug Tab. Dimenhydrinate 40 mg, which inhibits acetylcholine, along with other symptomatic treatments. Rehydration and electrolyte replenishment was achieved by intravenous infusion (IVF) of DNS and RL. Inj. Ondansetron 8mg IV STAT and Inj. Prochlorperazine mesylate 5mg IM STAT is used for nausea and vomiting. To prevent the risk of gastrointestinal irritation, a single dose of Inj. Pantoprazole 40 mg was administered. Cap. Racecadotril 100 mg was prescribed twice a day to alleviate diarrhea.

This case emphasizes the importance of obtaining a complete medical history that includes dietary information is crucial not only for preventing misdiagnosis and ensuring timely treatment but also for preventing the development of complications that may lead to significant morbidity and mortality. It also highlighted the proper care in the selection of food and its quantities especially when consuming berries, as some berries have the potential to interact with medications and cause additive effects [5]. Proper care should be taken to avoid such interactions.

IV. CONCLUSION

In this case report, we describe a case of turkey berry poisoning that was managed

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symptomatically with medications that inhibit acetylcholine accumulation.Identifying and reporting such cases is crucial to researching and developing appropriate management strategies for future reference.

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