



BOTTLE GOURD (LAGENARIA SICERARIA) TOXICITY: A BITTER DIAGNOSTIC DILEMMA.

Dr. Irfan Rasool Bhat *

Consultant Department Of Critical Care Max Superspecialist Hospital Vaishali Ghaziabad *Corresponding Author

Dr. Manish Gupta

Director & Head Department Of Critical Care Max Superspecialist Hospital Vaishali Ghaziabad

Dr. Ankur Malik

Senior Resident Department Of Critical Care Max Superspecialist Hospital Vaishali Ghaziabad

ABSTRACT

Consumption of a glass of bottle gourd juice is thought to work as a health tonic & part of traditional healthy living practices in India.

The juice may in certain circumstances turn bitter with increased levels of the cytotoxic compound called CUCURBITACINS.

If the bitter juice is consumed it causes a toxic reaction in the gut leading to abdominal discomfort/pain, vomiting, hematemesis & hypotension which may be rarely fatal, especially in persons with pre existing illness.

In the absence of clear cut history regarding the consumption of the bitter gourd juice & the initiation of symptoms, the differential diagnosis for the above symptoms will include diseases causing gastrointestinal bleed with hypotension and/or shock.

We report a case of bitter bottle gourd poisoning presenting with abdominal symptoms, hematemesis and shock and with an initial differential diagnosis of septicemia with septic shock & multi organ involvement.

We conduct a literature review & ponder the various differential diagnoses of this clinical scenario.

KEYWORDS :

A 35-years old gentleman was referred to our hospital in a state of shock. He was admitted to a nursing home, a day prior, with history of sudden onset of profuse vomiting, bloody diarrhoea & developed hypotension and oliguria, after a couple of hours. He was treated with intravenous fluids, antibiotics and vasopressors. He did not show much improvement over the day and hence was referred to our hospital.

On evaluation of the symptoms, in detail, he was asymptomatic until 8 am, at which time he consumed a glass of bottle gourd juice as was his daily routine. He noticed the juice to be unusually bitter and developed symptoms after 30 minutes. He had past history of hypertension and was on Tab. Tozaar (Losartan) 25 mg once daily since past 3 months. There was no other significant past history.

On examination, the patient was conscious and oriented to time, place & person. The peripheral pulse was feeble with tachycardia (rate 120 beats/minute). Blood Pressure was 70/40 mmHg, respiratory rate was 33 breaths per minute with oxygen saturation on room air was 97%. There was no edema, cyanosis, clubbing or rash. Ryle's tube was inserted and gastrointestinal aspirate was coffee brown colour.

Systemic examination revealed diffuse abdominal tenderness with no organomegaly and a clear chest. The investigations on admission (table 1) showed impaired liver function and leucocytosis. Urine examination and Ultrasonography of abdomen and pelvis was normal. Electrocardiogram showed sinus tachycardia.

He was resuscitated with intravenous fluids and first dose of broad spectrum antibiotics was injected. Right internal jugular vein was cannulated with ventral venous pressure of 5 cm of H₂O. A provisional diagnosis of GI bleed and cardiac cause of shock was also considered. Once the history of consumption of bitter bottle gourd juice was revealed, toxicity due to this was considered. He was also treated with proton pump inhibitors, hydrocortisone and other supportive measures.

His blood pressure improved to 100/60 mmHg with mean

arterial pressure of 80 mmHg, after he was adequately hydrated and started on an infusion of noradrenaline. His urine output improved to 100 cc per hour over next few hours.

2-D Echocardiogram done showed normal study with LV ejection fraction of 55%. He was treated with supportive medications and antibiotics for next few days. The serial laboratory investigations showed rapid improvement. (table 2) He was off vasopressors the next day. The patient's further course in hospital was uneventful & he was discharged on the third day.

Serial ABG reports.		
	Day 1	Day 2
pH	7.29	7.35
PCO ₂	29	36.4
P0 ₂	90	92.4
HCO ₃	15	27.2
LAC	4	0.7
S0 ₂	95	97.4

DISCUSSION

Drinking of bottle gourd juice (*LAUKEE JUICE IN HINDI) in the morning on empty stomach is considered a remedy for diabetes, heart diseases, hypertriglyceridemia, constipation, liver diseases, urinary problems, depression, etc

In this era of rapid media communications, such practices are increasing, fuelled by increasing use of Ayurvedic, complementary or alternate therapies to treat ailments. However there is lack of standardization in the preparation of such juices and sometimes when the juice is bitter, such medications can become dangerous and life threatening. A handful of cases have been published regarding clinical presentation, endoscopic appearance and treatment of bottle gourd toxicity in humans.

Bottle gourd (*Lagenaria siceraria*) belongs to the cucurbitaceae family which has nearly 100 genera and over 750 species. It includes plants such as cucumber, colocynth, bitter gourd, zucchini, eggplant, squash, pumpkin and water melon.

It is commonly called as Lauki in Hindi and is a common

vegetable grown and eaten all over India and the tropical and subtropical world.

It is the unripe fruit which is commonly utilized after it is cooked. The fruits are believed to have cardioprotective, diuretic and nutritive properties by practitioners of Ayurveda and alternate therapy

As a defense mechanism against insects and herbivore animals, the plant produces Cucurbitacin, a pheromone. Cucurbitacins, which impart the bitter taste, are tetracyclic triterpenoids, hydrophobic derivatives of triterpenes, of various types (B, D, G and H), increased in concentration within the fruits of plants grown under stressful conditions like dehydration, extreme temperatures, poor soil quality.

Cucurbitacins have shown promising pharmacological properties in animals such as anti tumorigenic effects (in vivo, in vitro), cytotoxic effects and increased capillary permeability leading to hypotension and ascites and pleural effusions.(3, 6).

Cucurbitacins are lethal in small doses in mice(1.2 mg cucA/kg)and fruits containing more than 130 ppm will cause symptoms if consumed. About 50 to 300 ml of juice can cause symptoms and the larger the quantity of the juice /fruit ingested the more severe the symptoms.

- Humans who consume the bitter juice of bottle gourd present with abdominal pain (often severe), vomiting and diarrhoea in the majority. Evidence of gastrointestinal bleed in the form of hematemesis, melena, hematochezia, hypotension followed by oliguria and elevated liver enzymes are seen in 50 to 75 % of patients (4, 5). Symptoms usually start within 30 min (range 3 min to 9 h)of the consumption of bitter bottle gourd juice and may continue for 2 to 7 days.

The differential diagnosis we considered were.

1. **Sepsis** with multi organ involvement with septic shock with the focus of infection in the gastro intestinal tract:due to the presence of abdominal symptoms with bleeding , presence of SIRS, leucocytosis, hypotension progressing to shock and associated hepatic abnormalities with metabolic acidosis. But there was no history of fever and urine , stool and blood culture showed no growth. As fever may sometimes be absent in some cases of severe sepsis and also the culture results would be available after three days of incubation, the patient was started on a course of broad spectrum antibiotics.

2. **Food poisoning** or food borne illness due to preformed toxins of staphylococcus aureus or Bacillus cereus:the symptoms start typically 1 to 6 hrs after ingestion of food in infections with staphylococcus aureus and after 10 to 16 h in infections with bacillus cereus. Moreover symptoms will resolve faster. (24 to 48 hrs.)(8)

3. **GI Bleed** (bleeding peptic ulcer, esophageal variceal bleeding, etc)with haemorrhagic shock and organ dysfunction:there was no history of any predisposing factors for GI Bleed and presence of leucocytosis with lactic acidosis indicate some other etiology.

4. **Cardiac cause** for the hypotension /shock: absence of history of chest pain and good ejection fraction on echocardiography.

The possibility of bottle gourd poisoning was considered in our patient because of earlier reports of adverse reactions after consumption of vegetables belonging to Cucurbitacea family. The Naranjo adverse drug reaction probability scale guided us towards a probable diagnosis of bottle gourd toxicity in our patient.

The following points were in favour:

1. Adverse reactions appearing within 30 minutes after

- consumption of the bottle gourd juice which was bitter in taste.
2. Improvement in symptoms after discontinuation of the juice and
3. Response to treatment with intravenous fluids, vasopressors and other supportive therapy.

Re-Challenge was not practical, so it was not done.

Cytotoxic effects may have been responsible for renal, myocardial and hepatic dysfunction.

CONCLUSION

- Toxicity with bottle gourd which is bitter tasting, can occur in some as it is a commonly consumed vegetable and it may be actually more common than reported in literature.
- It presents with abdominal discomfort, haematemesis, hypotension with or without organ dysfunction which starts within 30 min after consumption of the bottle gourd or its juice.
- It may be easily confused with other illnesses like GI sepsis which have similar presentation .
- Increasing public awareness about the dangerous effects of consumption of "bitter" bottle gourd will prevent further cases.