Bitter bottle gourd poisoning: A case report and review of literature

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Abstract

Bottle gourd juice is considered a panacea in traditional Indian medicine and used in various chronic diseases. Increased levels of Cucurbitacin can turn it bitter causing toxic effects in gastrointestinal system. We report the case of an elderly female who presented with shock in few hours after consumption of bitter bottle gourd juice. After proper evaluation we considered the possibility of bottle gourd poisoning as a probable diagnosis due to the Naranjo adverse drug reactions probability scale. Since there is no specific antidote available, management is mostly supportive with intravenous fluids, control of bleeding and management of shock.

Keywords: Altered Sensorium, bitter bottle gourd, cucurbitacins, gastrointestinal tract

Introduction

Bottle gourd juice is considered as a health tonic in traditional Indian medicine. It is used as home remedy for hypertriglyceridemia, diabetes mellitus, constipation, urinary tract infections, liver disease, cardiovascular disease and cerebrovascular accidents.[1] Bitter bottle gourd juice contains increased levels of cucurbitacins. Few case of bottle gourd juice toxicity and its effects on gastrointestinal tract have been reported.[2] There is lack of awareness among physicians regarding the harmful effects of bitter bottle gourd juice, which may lead to these cases being missed. It is imperative to consider this as a differential diagnosis in patients presented with gastrointestinal haemorrhage.

We report a case of an elderly female who presented with gastrointestinal symptoms and shock following consumption of bitter bottle gourd juice.

Case Report

A 64-year-old female was referred to our hospital in a state of shock. She was earlier admitted to a private clinic with a history of multiple episodes of vomiting and two episodes of hematemesis following which she collapsed losing her consciousness. Symptoms developed within 30 minutes after consumption of bottle gourd juice as part of her daily morning routine. She was given primary care but in view of worsening condition she was referred to us with an altered sensorium and hypotension.

On inquiry it was reported that she was completely asymptomatic before consumption of a glass of bottle gourd juice as her daily routine. She encountered bitter taste of the bottle gourd juice after which she developed the symptoms. There were no complaints of diarrhoea, and fever. She did not have any significant past history of any medical, surgical or family history or history of similar episodes.

On examination, the patient was conscious but confused with pale, cold and clammy skin in her extremities. Her pulse was weak with a rate of 128 beats per minute, blood pressure was 80/50 mmHg and a respiratory rate was 32 breaths per minute...
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with a reduced oxygen saturation of 85% at room air. There was no rash, oedema, clubbing or cyanosis. Nasogastric tube aspirate was dark brown. Systemic examination revealed abdominal tenderness with no organomegaly.

The investigations on admission [Table 1] showed deranged renal and liver functions, with leucocytosis and hyperkalaemia. Arterial blood gas analysis was done on every alternate day [Table 2]. Routine and microscopic examinations of the urine sample were normal. Ultrasonography of abdomen and pelvis revealed borderline hepatomegaly (15.7 cm). Electrocardiogram showed sinus tachycardia.

She was resuscitated with intravenous fluids along with broad spectrum antibiotics and other supportive treatment. As the history of bitter bottle gourd juice was revealed, bottle gourd juice poisoning was considered. A provisional diagnosis of gastrointestinal haemorrhage with multiorgan failure was made.

Her condition gradually improved and vitals stabilised. Her laboratory reports also improved progressively and she was discharged after a week. On a follow up after two weeks no abnormalities were detected.

**Discussion**

In India, bottle gourd (Lagenaria siceraria) juice is commonly consumed as a home remedy for diabetes, hypertension, hypertriglyceridemia, liver disease, etc., The emergence of corona virus disease 2019 pandemic has led more people to prophylactically resort to alternative dietary practices like consumption of kadha, natural herbs, vegetable juices, etc., like bottle gourd juice.

The bottle gourd plant contains pheromone cucurbitacin which provides a defence mechanism against insects. Under conditions like extreme temperatures, dehydration, low pH, as well as improper storage of vegetables, high levels of cucurbitacins are found causing accounting for its bitter taste. It was found that cucurbitacin inhibits the binding of cortisol to glucocorticoid receptors in HeLa cells at 37°C and have cytotoxic effects. Cucurbitacin D increases capillary permeability leading to a fall in blood pressure, ascites and pleural effusion. About 50–300 ml of juice having a level greater than 130 ppm can lead to clinical manifestations and the severity is dose dependent. Most patients present within one hour of consumption with abdominal pain, vomiting, diarrhoea, hypotension and haematemesis or melena.

We considered the following differential diagnosis for this case:

Gastrointestinal tract infection leading to sepsis and septic shock with multiorgan dysfunction. Our patient exhibited gastrointestinal symptoms like abdominal pain, vomiting, haematemesis along with hypotension, leucocytosis, systemic inflammatory response syndrome (SIRS), hepatorenal abnormalities and metabolic acidosis. No history of fever and sterile blood, stool and urine culture rules out foci of infection.

Food poisoning by preformed toxins from *Staphylococcus aureus* or *Bacillus Cereus* show acute presentation. Clinical features include vomiting, diarrhoea and a positive history of outside food consumption within 2–5 hours. But in our patient there was no history of outside food consumption, diarrhoea, community outbreak or any family members having similar symptoms ruling out gastroenteritis.

### Table 1: Blood investigations

| Test                        | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Hemoglobin (gm%)            | 9.6   | 9.5   | 10    | 10.5  | 10.9  | 11.4  | 12    |
| Red blood cell count (in million/cumm) | 3.68  | 3.95  | 4.12  | 4.36  | 4.57  | 5.03  | 5.44  |
| White blood cell count (in thousands/cumm) | 28.8  | 24.5  | 20.4  | 19.1  | 17.3  | 11.4  | 10    |
| Neutrophils %               | 78    | 72    |       |       |       |       | 64    |
| Eosinophils %               | 01    | 02    |       |       |       |       | 03    |
| Lymphocytes %               | 17    | 19    |       |       |       |       | 28    |
| Monocytes %                 | 04    | 07    |       |       |       |       | 05    |
| Platelets (Lakhs/cumm)      | 346   | 307   | 232   | 180   | 238   | 260   | 284   |
| Blood sugar mg/dL           | 214   | 116   | 97    | 98    | 67    | 77    | 92    |
| Serum creatinine mg/dL      | 2.44  | 1.88  | 1.96  | 1.81  | 1.45  | 1.48  | 1.18  |
| Serum bilirubin mg/dl       | 0.58  | 1.55  |       |       |       |       | 0.78  |
| SGOT IU/L                   | 882   | 261   |       |       |       |       | 98    |
| SGPT IU/L                   | 633   | 197   |       |       |       |       | 92    |
| Alkaline phosphatase IU/L    | 99    | 111   |       |       |       |       | 137   |
| Serum total protein gm/dL   | 6.30  | 5.46  |       |       |       |       | 5.93  |
| Serum albumin gm/dL         | 2.9   | 1.9   |       |       |       |       | 2.3   |
| Albumin: Globulin ratio     | 0.85  | 0.53  |       |       |       |       | 0.63  |
| Serum sodium meq/L          | 136   | 139   |       |       |       |       | 125   |
| Serum potassium meq/L       | 6.4   | 5.4   |       |       |       |       | 4.0   |
| Serum chloride meq/L        | 112   | 105   |       |       |       |       | 108   |
GI bleed due to most common causes include chronic liver disease leading to variceal bleeding and peptic ulcer disease in elderly patients. Patient presented with hematemesis and deranged liver functions. However, there was no history of a similar episode, melena, alcohol consumption, addiction or comorbidities. Patient had hepatomegaly and abdominal tenderness without distension, dilated veins around the umbilicus or constipation making these diagnoses unlikely.

As patient presented with shock, cardiac cause was considered initially but there was no history of chest pain, previous ischemic episode. Echocardiogram findings were normal suggestive of good left ventricular function ruling out cardiac cause.

After ruling out other conditions we consider the possibility of bottle gourd poisoning as a probable diagnosis as per the Naranjo adverse drug reactions probability scale.[12]

Since there is no specific antidote for this toxicity, management is mostly supportive with intravenous fluids, antacids, proton pump inhibitors and control of bleeding.

**Conclusion**

The consumption of bottle gourd juice is widely prevalent in community as a remedial measure. However, bitter juice can lead to life threatening gastrointestinal toxicity.

It is important to raise awareness regarding the adverse events of bottle gourd juice consumption among the community as well as healthcare providers.

It is imperative to consider this as a differential diagnosis so as to initiate early diagnosis and management of such cases.

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**Conflicts of interest**

There are no conflicts of interest.

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