



Bottle Gourd Poisoning

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In 21st Century, people are becoming more aware about their health. With the change in lifestyle, they are following various alternative therapies like ayurvedic therapy, naturopathy, yoga therapy etc. Drinking one or two glasses of fresh bottle gourd juice in the morning on an empty stomach is one such practice particularly in India. However, sometimes, such practice can become dangerous and life threatening. We report a rare case of bottle gourd poisoning seen by us at the Himalayan Institute Hospital, Dehradun.

A 59 years- old previously healthy male who had habit of taking a glass of fresh bottle gourd juice daily, developed complaints of profuse bloody diarrhea, vomiting mixed with blood and oliguria within half an hour of consuming a glass of freshly prepared bottle gourd juice which however, was very bitter in taste. He was given symptomatic treatment in the district hospital, Dehradun but despite receiving four liters of intravenous fluids and supportive treatment, he did not improve and was referred to us in a state of peripheral circulatory failure.

On examination, the patient was fully conscious, oriented in time, place and person. The peripheral pulses were not palpable, the extremities were cold and clammy. Hydration was adequate, blood pressure - 60 mm of Hg systolic, respiratory rate -20 / minute, heart rate - 110 / minute. Systemic examination was normal except for mild generalized abdominal tenderness. Ryle's tube aspirate was bloody and there was no urinary output after catheterization.

Investigations showed hemoglobin- 16.6 g/dl, total erythrocyte count 6.73 millions /cu. mm, packed cell volume- 61%, mean corpuscular volume-91.5 FL, mean corpuscular hemoglobin concentration- 35%, total

leucocyte count-17, 630/cu.mm, differential leucocyte count- neutrophils-84%, lymphocytes-16%, platelet count-100, 000/ cu. mm, prothrombin time-23 sec, INR (International normalized ratio)-1.4, bleeding time-2.05 min, clotting time 6.30 min, urine analysis-normal, blood urea nitrogen-12 mg/dl, serum creatinine-1.5 mg/dl, random plasma sugar-170 mg/dl, serum sodium -163 mmol/l, serum potassium - 4.2 mmol/l, serum calcium - 9.1 mg/dl, total serum bilirubin-1.1 mg/dl, indirect bilirubin - 0.7 mg/dl, AST-798 U/L, ALT-756 U/L, ALP-79 U/L, serum amylase - 447 U/L, serum lipase -330 U/L, CPK MB -10 U/L, troponin I - negative, stool examination-RBCs ++, stool culture- sterile, upper GI endoscopy, sigmoidoscopy and ultrasonography of abdomen- normal, electrocardiogram - low voltage complexes with ST, T wave changes, X-ray Chest-normal and SpO₂ 97%. Patient was shifted to ICU with oxygen support and central line, CVP was 4 cm of H₂O. A provisional diagnosis of probable bottle gourd poisoning with multi-organ involvement was made as per Naranjo adverse drug reaction probability scale (1). Possibilities of septicemia and other causes of gastrointestinal bleed were also considered. The patient was given intravenous fluids, inj. hydrocortisone-200mg intravenously 4 hourly, inj. ranitidine and other supportive treatment. After about 6 hours of therapy, his blood pressure rose to 90/60 mm of Hg and he started passing adequate amount of urine. By the next day, his general condition improved and frequency of bloody stools reduced. Hydrocortisone was tapered gradually. Biochemical parameters showed signs of improvement viz., hemoglobin- 17g/dl, serum creatinine - 1.3mg/dl, serum sodium -132 mmol/l, serum potassium - 4.7 mmol/l, AST-380 U/L, ALT-350 U/L, serum amylase-206 U/L and serum alkaline phosphatase 69 U/L. However, total

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serum bilirubin -3 mg/dl, Indirect bilirubin -2.3 mg/dl and serum lipase-350 U/L increased initially but by fifth day returned to baseline. The course of events from second to fifth day was uneventful and the patient was discharged on 5th day.

Vegetables and fruits are considered as nutritious and healthy food. However, such food can become dangerous and toxic like mushroom which is rich in protein but can some time be dangerously toxic and lethal. So is the case with bottle gourd which belongs to Cucurbitaceae family.

Cucurbitacins are complex compounds found in plants belonging to the cucumber family (Cucurbitaceae). The tetracyclic triterpenoid Cucurbitacins compounds are responsible for the bitterness in vegetables like cucumber, squash, eggplants, melon, pumpkin and gourds and are highly toxic to mammals. Intraperitoneal lethal dose value for pure cucurbitaceae (cucurbitacins) in mouse is 1.2 mg cucA/kg (2). Though toxic to animals, the bitter taste prevents poisoning in humans. Higher levels of these chemicals cucurbitacins are triggered by environmental stress, like wide temperature swings, low pH, high temperature, too little water, low soil fertility and improperly stored or over-matured vegetables (3).

In 1981 - 1982, in Australia in Alabama and in 1984 in California, 202 cases of human poisoning by bitter zucchini, belonging to Cucurbitaceae family were reported (4). In 2003, in a Dodge county, Nebraska, a gardener had severe stomach cramps and diarrhea for several days following ingestion of extremely bitter zucchini squash (3). In 1994, an outbreak of gastrointestinal illness among school children was attributed to psychogenic illness but investigations revealed that it was due to toxic chemical present in cucumber served at lunch (5). Cucurbitacins are known to have cytotoxic and carcinostatic properties (6).

Earlier reports of adverse reactions after consumption of vegetables belonging to Cucurbitaceae family, adverse reaction appearing shortly after the consumption of the bottle gourd juice bitter in taste, improvement in adverse reaction after discontinuation of the juice and a prompt response to the treatment with intravenous fluids, steroids

and other supportive therapy suggested the diagnosis of probable bottle gourd poisoning as per Naranjo adverse drug reaction probability scale (1). Re-challenge would have been the only way to prove the diagnosis but was considered unethical, hence not attempted. The probability of bottle gourd poisoning is also confirmed by applying WHO-UMC causality assessment criteria (7). Cytotoxic effect might have been responsible for hepatic and pancreatic dysfunction. Possibility of septicemia was ruled out by blood, stool and urine cultures.

Occasional release of such extremely bitter vegetable in the market is unavoidable but poisoning has been prevented by its extremely bitter taste. Severe toxicity occurred accidentally in our patient who regularly consumed large quantity of fresh bottle gourd juice as health drink as advised by a naturopath.

Therefore, bottle gourd juice, particularly if bitter, can result in serious poisoning and should not be consumed. The physicians should be aware of this toxicity for the successful management of such cases.

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