



A Fatal Case of Gloriosa Superba Poisoning

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Date of Submission: 10-07-2024

Date of Acceptance: 20-07-2024

I. INTRODUCTION

Gloriosa superba is a flowering plant that belongs to the Colchicaceae family. This plant contains several active principles, including alkaloids such as colchicine, glorisine, superbine, chelidonic acid, and salicylic acid. Among the above alkaloids, colchicine and glorisine are the primary cause of the plant's poisonous effects. These alkaloids have an anti-mitotic impact, which can arrest the cell cycle in metaphase. It is important to note that the whole plant is highly toxic, particularly the tuber. A lethal dose of approximately 6mg/kg body weight can be fatal within 12 to 72 hours. This plant exhibits specific effects on cells with a high metabolic rate, such as the intestinal epithelium, hair follicles, and bone marrow. It is essential to exercise caution and avoid contact with this plant to prevent any adverse health effects.

II. CASE PRESENTATION

A male patient of 41 years of age, who was previously healthy, was reported to have consumed a tuber of plant "GLORIOSA SUPERBA" along with alcohol. After 12 hours of consumption, he presented to the Emergency Medical Department (EMD) with 10 episodes of vomiting and 4 episodes of loose stools. At the time of presentation, the patient's blood pressure was 100/60 mmHg, with a regular pulse rate of 104 beats per minute. Other system examinations were within normal limits. Preliminary investigations indicated that the patient had a Hemoglobin level of 18.2 g/dl, with a total count of 14300 (neutrophil predominant) and a platelet count of 2.16 lakh per microlitre. Additionally, the patient's serum creatinine level was 1.2 mg/dl, and Blood urea level was 36 mg/dl. The serum electrolyte and coagulation profile results were within the normal range. ECG, 2D ECHO, and Ultrasound abdomen showed no significant abnormalities. The initial fluid resuscitation was done.

The patient had been experiencing severe diarrhea for 6 hours. He was drowsy and had complained about oral ulcers and throat pain. During the examination, the blood pressure was

found to be 80/60 mmHg with fluids and pulse rate was 124 bpm. Other systemic examinations were normal. The investigations showed a Haemoglobin level of 20.2 gm/dl; a total count of 21,700 cells per microlitre (neutrophil predominant), platelets of 1.47 lakhs per microlitre; serum creatinine 1.6 mg/dl, and blood urea of 42 mg/dl. PT -30seconds; aPTT- 41.6 seconds; INR – 2.4. Serum electrolytes and liver function tests were within the normal range. ECG showed no significant abnormality except for sinus tachycardia. The patient was started on fluid resuscitation therapy and inotropes were added.

After 12 hours, the patient still had severe diarrhea. The patient was stuporous and was responsive to painful stimuli. Upon examination, the blood pressure was noted to be 70/50 mmHg with inotropes, and the pulse rate was 130 bpm. The cardiovascular and respiratory system examination was normal. However, there was tenderness in the right hypochondriac area. The central nervous system examination showed no deficits except for impaired consciousness. The results of the investigations reveal a hemoglobin level of 17.7 mg/dL, a total count of 22,500 per microlitre, 81000 platelets per microlitre, a serum creatinine level of 2.4 mg/dL, and a blood urea level of 90 mg/dL. The serum electrolytes and liver function tests were within normal limits. The PT was 36 seconds, the INR was 2.5, and the APTT was 44.8 seconds. ECG showed sinus tachycardia. Inotropes and fluid therapy were continued, and other supportive management was done. Despite receiving inotropes, the patient went into shock after 24 hours of admission. Unfortunately, the patient's condition deteriorated rapidly, leading to circulatory collapse, and ultimately, the patient expired. This occurred 28 hours after the patient's presentation to the hospital and 40 hours after the consumption of the tuber.

III. DISCUSSION

Gloriosa superba, a plant known for its high toxicity, is commonly found in the southern regions of India and Sri Lanka. Its medicinal use in Ayurveda and Unani practices is well-known in the



medical community for its effectiveness in treating inflammatory conditions. Colchicine, a major component of the plant, is responsible for its toxic effects. Gastroenteritis is the most common and consistent presentation of *gloriosa superba* poisoning leading to hypotension which is seen in our case.

Colchicine's mechanism of action involves the inhibition of cell division by binding to tubulin, thus inhibiting the polymerization of microtubules. In addition to its antimitotic activity, it also impedes the motility of neutrophils. However, its depressant action on the bone marrow can lead to thrombocytopenia, leukopenia, and anemia. Our case showed a transient increase in leukocytes and a decrease in platelets. Acute fluid loss can result in pre-renal failure, as was the case here. Other symptoms that may manifest within 1 to 3 days

include delirium, loss of consciousness, convulsions, and muscle weakness. Alopecia, a late manifestation, typically occurs after one to two weeks.

There is no specific antidote available for this poisoning. Gastric lavage should be done immediately. In our case, gastric lavage was not due to the late presentation of

the patient. Early fluid resuscitation and inotropes should be started to correct hypotension. Continuous cardiac monitoring is useful. Monitor renal function and electrolytes and correct any electrolyte imbalances. Respiratory failure due to paralysis of intercostal muscles is not uncommon so frequent monitoring is needed. Initially forced diuresis is beneficial as it enhances elimination of colchicines. So it should be performed once dehydration and shock are corrected.



IV. CONCLUSION

It is crucial to be aware of the highly poisonous plant *Gloriosa superba*, which can cause various adverse health effects such as oral ulcers, acute gastroenteritis leading to hypotension, prerenal failure, coagulation abnormalities, and bone marrow suppression. Preventing accidental poisoning necessitates community awareness of such local toxic plants. Medical professionals must possess knowledge and awareness of these plants'

toxic effects and management for timely intervention.

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