



CLINICAL PROFILE AND OUTCOME OF GLORIOSA SUPERBA POISONING

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ABSTRACT

Aim and objective: To determine the clinical profile and outcome of the *Gloriosa Superba* poisoning in RMMCH. **Methods and materials:** A retrospective study, aimed to study the clinical features, course and outcome among patients with *Gloriosa Superba* poisoning admitted to the hospital during 6 years period (2010-2016). After patient selection, a detailed clinical history with examination is collected in a specially designed proforma. Data was analyzed for age, sex, ingestion of poison, days of hospitalization, other risk factors, and outcome. **Result:** During the period four cases were reviewed. Out of 4 cases, 3 were females and 1 was male. The mortality rate due to poisoning during study period was 100%. **Conclusion:** In our study, retrospective analysis of data of 4 patients admitted with *Gloriosa Superba* poisoning revealed 100% mortality with GI complications and bleeding as the common presentation.

KEYWORDS

Gloriosa Superba poisoning (seeds & tubers), blood transfusion, poisoning pattern, mortality rate.

INTRODUCTION

Gloriosa Superba Linn is an important medicinal plant (liliaceae). It is a semi-woody herbaceous branched climber reaching approximately 5 meters height, with brilliant wavy-edged yellow and red flowers. Being native form India especially southern India it is known as glory lily and climbing lily-in English and in India it is called Karthigaipoo in Tamil language. It is the state flower of Tamil Nadu and is also the national flower of Zimbabwe. In Tamil Nadu, *Gloriosa* cultivation is promoted by government subsidy schemes and several hundred acres are grown as a cash crop. In the world market, glory lily considered as rich source of colchicines and gloriosine. All parts of the plant are poisonous because of the high content of colchicines, which is a medicinal alkaloid, and the seeds are used to extract colchicines. Accidental poisoning and suicidal misuse of tubers are well known in areas where the plant grows⁽¹⁾. In addition to colchicines, the plant also contains other compounds such as 3- desmethyl colchicines, beta -limicolchicine, N- formyl-desacetyl colchicines, 2- desmethyl colchicines, chelidonic acid, and salicylic acid⁽²⁾. The lethal dose of colchicines in humans is about 0.8 mg/kg^(3,4). Generally, the colchicines content is higher in cultivated plants than in naturally grown plants, and the seed contains more colchicine than the tubers⁽⁵⁾. Colchicines can be extracted from the plant part in boiling waters, and extracting the seed can give a high concentration of colchicines in the boiled water⁽⁶⁾. Colchicines are rapidly absorbed from the intestine and undergoes significant first -pass hepatic metabolism. The metabolites undergo enterohepatic circulation and are subsequently excreted in feces, leading to extended exposure of the intestine to the toxic effects. Renal clearance accounts for about 10-20% of colchicines excretion⁽⁷⁾. Colchicines inhibit the polymerization of microtubules and formation of mitotic spindle in cell division. Therefore, the rapidly dividing cells of the intestinal mucosa are severely affected. Colchicines can cause severe gastroenteritis, shock, multiple organ failure, electrolyte imbalance, metabolic acidosis, pancytopenia, hypotension, rhabdomyolysis, hypocalcaemia, and adult respiratory distress syndrome, ascending polyneuropathy. Alopecia and dermatitis are the late manifestations that develop about one to two weeks after poisoning⁽⁸⁾.

After ingestion of tubers, initial symptoms develop within two to six hours. Intense vomiting, numbness and tingling around the mouth, burning, and rawness of the throat, nausea, abdominal pain and bloody diarrhea leading to dehydration, etc. are some of the primary symptoms that develop initially in the victim. As we have less knowledge about clinical profile and complication of G.S in our study, our aim is to determine the different clinical profile, complication and outcome of G.S in our hospital which serves the south arcot district where the plant is commonly cultivated.

IMAGES OF GLORIOSA SUPERBA POISONING



Figure1: Plant Sources: [www.KumbulaNursery .co.za](http://www.KumbulaNursery.co.za)



Figure 2: Flower Sources: www.kew.org



Figure 3: Seed Sources: www.xporersindia.com



Figure 4: Tubers Sources: www.growsonyou.com

METHODS AND MATERIALS

A retrospective study, aimed to study the clinical features, course and outcome among patients with *Gloriosa Superba* poisoning admitted to the hospital during 6 years period (2010-2016) was reviewed in Rajah Muthiah Medical College Hospital, which is a 1200 bedded multi-specialty hospital serving the rural population. Patients with age more than 15 years both gender, with history of *Gloriosa Superba* poisoning were included in the study. After patient selection, a detailed clinical history with examination is collected in a specially designed proforma. Data was analyzed for age, sex, ingesting of poison, days of hospitalization, other risk factors, and outcome. Mixed poisoning, compound not clearly defined were excluded from the study.

RESULTS

TABLE – 1 CLINICAL OUTCOME OF GLORIOSA SUPERBA POISONING

S.NO	Patient details	Age	sex	Co-morbid condition	Reason for ingestion	Part of plant	First aid	Day 1		Day 2		Day 3		Day 4		outcome
								S	T	S	T	S	T	S	T	
1	Case I	21	F	-	Family conflicts	Seed	given	BLS	+	ABD.P	+	FE-VER	+	B.V	+	Death
2	Case II	23	F	-	Family conflicts	Seed	given	BPV	+	ABD.P	+	FE-VER	+	B.V	+	Death
3	Case III	35	F	-	Family conflicts	Tubers	given	ABD.P	+	FEVER	+	GID	+	B.V	+	Death
4	Case IV	67	M	-	Family conflicts	Seed	given	ABD.P	+	FEVER	+	GID	+	B.V	+	Death

- ABD.P-Abdominal pain
- FEVER- Fever>109°F
- GID- Giddiness
- B.V- Blood in Vomit
- BLS- Bloody loose stool
- BPV – Bleeding per vagina (notes - H/O consumption of *Gloriosa Superba* seed 4 days back treated and elsewhere referred her as H/O bleeding per vagina)
- Antibiotics, antiemetic, NSAID, vitamin supplement, antacid, anticoagulant, antihistamines, iv fluids and inotropes were given to all patients
- All patients had cardiac arrest at the time of death

DISCUSSION

India ranks highest in the world in G.S poisoning and it is estimated that more than 50,000 people die every year from toxic exposure⁽⁹⁾. Suicide in India is more common, as poison can be easily obtained and various poisonous plants have wide distribution of growth, eg, *Datura*, oleanders, aconite, *Nuxvomica*, etc⁽¹⁰⁾. There are more than 4000 species of medical plants growing as herbs, shrubs, and trees in India, many of which are poisonous when administered in large doses⁽¹⁰⁾. The *Gloriosa Superba* has been used for suicidal purposes in India, Burma and Eastern Africa^(11, 12). As we have less data about certain poisoning plants in India, our study was aimed to try analyzing the clinical features and probable complications and outcomes of *Gloriosa Superba*, as its literatures are very limited. Colchicine, the major active alkaloid of *Gloriosa*, is attributed for the poisoning. It has an anti-mitotic activity that arrests mitosis in metaphase. Cells with a high turnover and metabolic rate, like the intestinal epithelium, hair follicles, bone marrow cells, etc, are susceptible. The lethal dose is about 0.8mg/kg in adults and the fatal period is about 12-72 hrs⁽¹³⁾. The entire patients require immediate hospitalization,

followed by gastric lavage. The time duration variably of 4-5 hours was present among patients from ingestion of poisoning to first medical care. There is no specific antidote available for the treatment. Fluids loss may lead to hypovolaemic shock which may require fluid resuscitation and / or inotropic support. The correction of metabolic parameters and fluid balance are important for the management of such patients^(14, 15). The result of our study reviewed a total of 4 patients, where females (75%) predominated over male, all belonging to younger age group. The mean duration of hospital stay is 4 days. In a study, there were four deaths reported as due to *Gloriosa Superba*, in which the symptoms along with abdominal pain, fever, haematemesis, giddiness, bloody loose stools, bleeding per vagina were noticed after its consumption. Coagulation profile was not grossly altered. Blood transfusion was given to 3 out of 4 patients. Mortality rate due to poisoning during our study period was 100 %.

CONCLUSION

In our study, retrospective analysis of data of 4 patients admitted with *Gloriosa Superba* poisoning revealed 100% mortality with GI complications and bleeding as the common presentation. We need to have multicentre prospective study with large case group to aid more information in the *Gloriosa Superba* poisoning.

LIMITATIONS

1. These types of poisoning needs multicentre approach
2. Toxicology analysis was not performed (limitation of source)

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