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Case Report

A case of oduvanthalai poisoning

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ABSTRACT

Cleistanthus collinus or Oduvanthalai or odukanthazhai poisoning though rare, incidences of this poison has been reported now and then. It is a very common plant poison in rural South India, with a poor outcome. Increase in age, underlying chronic diseases of kidneys and heart decides the outcome of the case. Suicidal or accidental ingestion of the plant poison causes hypokalemia, arrhythmias, metabolic acidosis, ARDS and eventually death. Death is mainly due to its alkaloid Cleistanthin A and B and oduvan.

1. Introduction

Cleistanthus collinus, belongs to the family Euphorbiaceae. It is a small plant with elliptical leaves and silky villous inflorescence. It is commonly found in deciduous dry hilly forests of South India, Sri Lanka and Malaysia.[1] It is known by various names in different languages in India like Garari in Hindi, Vadisaaku in Telugu, Oduvanthalai in Tamil and Odaku in Malayalam.[2] All parts of the plant are highly poisonous. The leaves are frequently used as a cattle poison and abortifacient in South India.[3] Cleistanthus collinus is the most common plant poison encountered in rural South India, especially in women; probably due to the easy availability and knowledge of the toxic nature of the plant. The leaves are consumed either by chewing or by making a decoction of the leaves.[4]

2. Case Report

A 23 years old female consumed 100 ml oduvanthalai juice in empty stomach on day 1 at 4 pm. The patient's relatives noticed and admitted her in the district headquarters hospital on day 2 at 6 am (14 hours later after consumption) and for treatment. She complained of diplopia and ECG showed changes, the duty doctor referred the patient to Rajiv Gandhi Government General Hospital, Chennai on day 3 at 7 pm (51 hours later after consumption). Her Blood Pressure and urine output were maintained with inotropes. Since admission her serum potassium was low and creatinine was rising up. Ultrasound of Abdomen showed normal study. She was planned for peritoneal dialysis as creatinine was increasing with decreased urine output in spite of all support. The patient developed bradycardia, which was recurrent and her ABG showed severe acidosis. Patient developed sudden cardiac arrest that could not be revived and was declared dead (90 hours after consumption). Body was sent to the mortuary of Rajiv Gandhi Government General Hospital, Chennai and police was intimated.

2.1. *Postmortem was conducted and findings noted*

External findings were a moderately nourished and moderately built female dead body with bluish discoloration of gums and nail beds of all the fingers (Figure 1). Post

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mortem hypostasis fixed on the back with areas of contact pallor, cornea hazy, pupils dilated and fixed. No external or internal injuries noted anywhere in the body.

Figure 1:

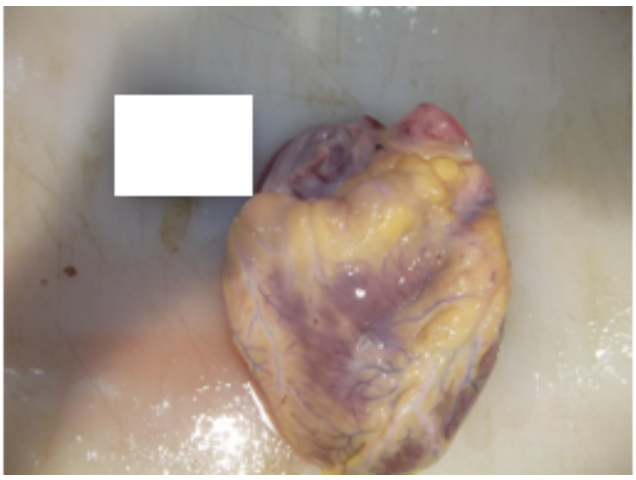


Figure 2:

2.2. *Internal findings of the organs were noted*

The heart was normal in size and weighed 320 grams with few sub epicardial petechial haemorrhages on both the surfaces of the heart; Cut section – All chambers contained fluid and clotted blood; Valves appeared normal with patent Coronary Ostia; Coronaries and Great vessels appeared normal. (Figure 2)

Lungs appeared normal in size; Right lung weighed 460 grams and Left lung weighed 390 grams. Few sub pleural petechial haemorrhages on the interlobar fissure of both the lungs were noted. Cut section of the lungs appeared congested. (Figure 3)

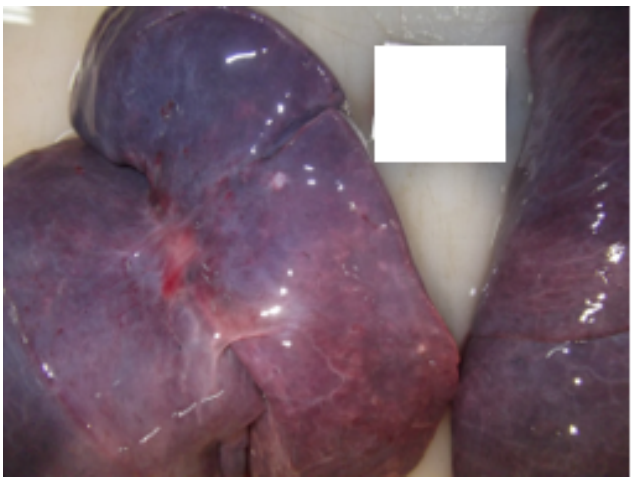


Figure 3:

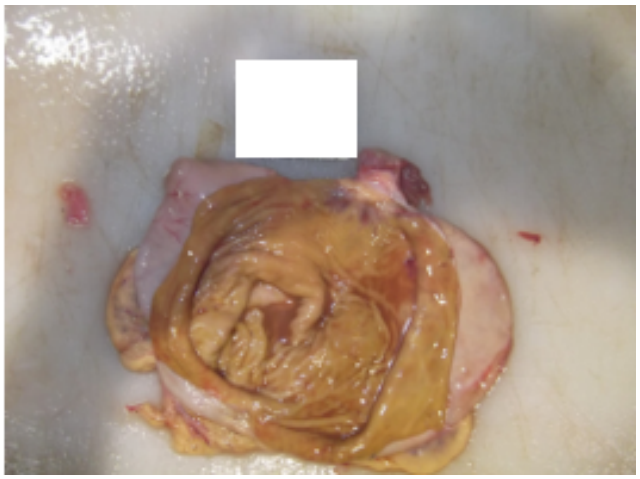
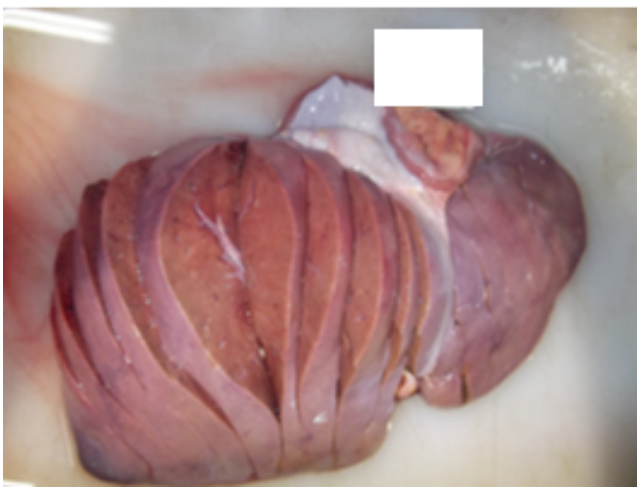


Figure 4:



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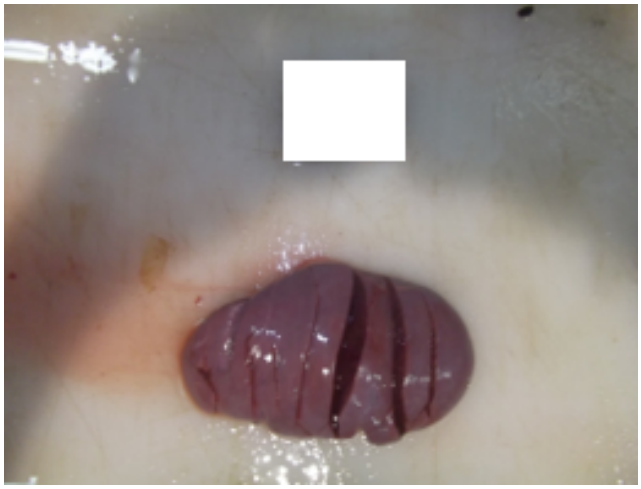

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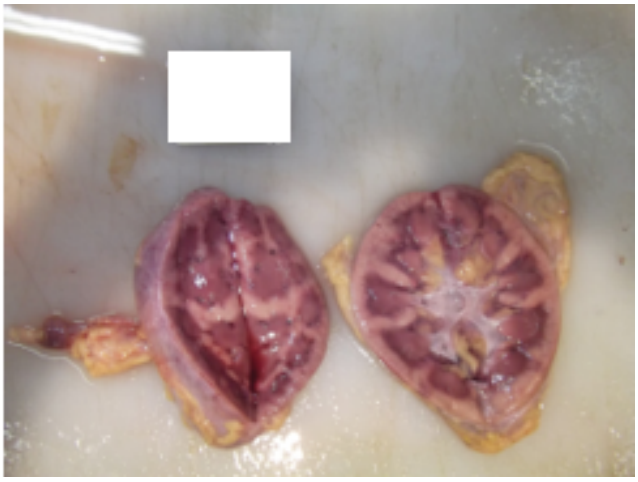

Figure 7:

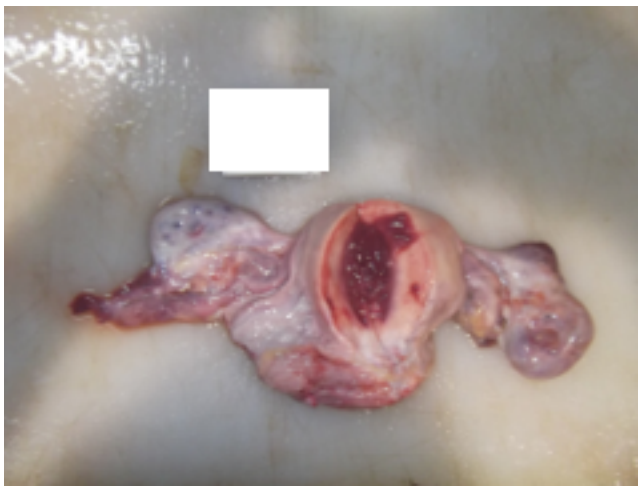

Figure 8:

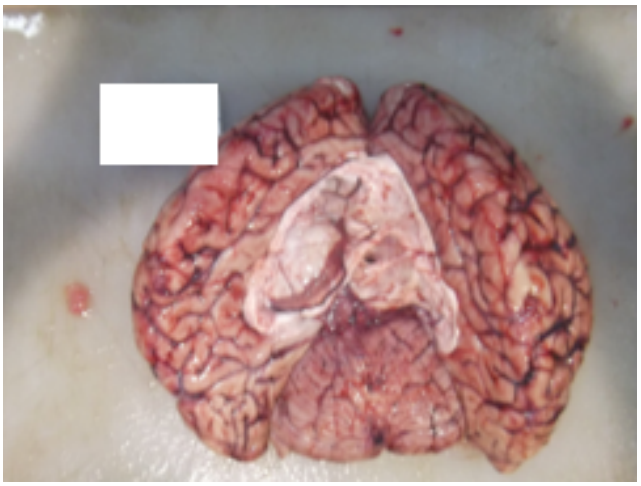

Figure 9: ;

A sealed Card board box containing.
A Plastic container labeled as "[redacted]... "containing,
1. A piece of **Stomach** in brownish turbid liquid
A Plastic container labeled as "[redacted].. "containing
2. A piece of **Intestine** in brownish turbid liquid
A Plastic container labeled as "[redacted]... "containing
3. A pieces of **Liver & Kidney** in brownish turbid liquid
A Plastic container labeled as "[redacted].. "containing
4. A pieces of **Brain** in brownish turbid liquid
A Glass bottle labeled as "[redacted]... "containing
5. Reddish turbid liquid
A Plastic container labeled as "[redacted]... "containing
6. Turbid liquid

REPORT

The above items are analysed and Oduvan a vegetable alkaloidal poisonous substance is found in items 1, 2, 3, 4 and 5 but not in item 6 which is saline received as sample of preservative.

noted and forewarded [redacted]

SCIENTIFIC OFFICER

Figure 10: ;

Figure 11: ;

Pharynx, Larynx and Trachea appeared intact and normal with empty lumen; Hyoid bone and other laryngeal cartilages appeared intact.

Stomach contained 200 ml of brown colour fluid with no definite smell. Mucosa showed patchy areas of congestion. (Figure 4)

The liver, Spleen and Kidneys were normal in size and appeared congested on cut section. (Figures 5, 6 and 7)

Bladder appeared empty and intact.

Uterus was 10 x 7 x 3 cm in size. Cut section showed haemorrhage inside the cavity. (Figure 8)

Scalp, Vault, Duramater and Base of Skull were intact and the brain was normal. (Figure 9)

Ribs, Pelvis and Spinal column were intact.

Viscera preserved and sent for chemical analysis which detected Oduvan a plant alkaloid. (Figure 10)

Arriving at an opinion from the post-mortem findings and chemical analysis of viscera it was inferred that the deceased would appear to have died of oduvan poisoning (plant alkaloid poison (Figure 11).

3. Discussion

Various clinical manifestations of *C. collinus* poisoning in humans are listed in the table given below (Table 1). Mortality ranged from 18% to 43%; the most common causes of death were refractory hypotension, respiratory failure and sudden ventricular arrhythmia.[5–8] Predictors of mortality were lower serum potassium level, older age group, presence of chronic disease and consumption of decoction.

Table 1: Clinicalmanifestations in human beings data source:[6,7,9]

System	Common	Uncommon
GIT	Diarrohea, Vomiting, abdominal-pain, cramps	Constipation, Abdominal-distention, dysphagia, salivation
Excretory	Distal RTA, Kaliureis and hypokalemia	AKI
CNS	Giddiness, abnormal vision, altered sensorium.	Muscle weakness, seizure, head ache, ptosis, myasthenic crisis
CVS	Bradycardia, tachycardia, hypotension and abnormal ECG	Chest pain
RS	Dyspnea and tachypnoea	Hypoxemia, cough, bradypnea, ARDS and respiratory arrest.
Systemic	Fever	-

As listed in the above table, this deceased lady also presented with common classical symptoms of *C. Collinus* viz. abnormal vision, abnormal ECG, electrolytes disorder, decreased urine output, and metabolic acidosis. In addition to this, symptoms like vomiting, abdominal pain with signs of life-threatening conditions like acute respiratory failure, shock, myasthenic crisis like syndrome and altered mental status may also be present. These people may be normal initially, but deteriorate rapidly. Hence they should ideally be admitted to ICU and watch for shock, reduced urine output, dysrhythmias, severe metabolic acidosis, electrolyte abnormalities, and if present should be promptly treated. Patients with hypoxemia refractory to supplemental oxygen, refractory shock, and with obtruded sensorium, the airway should be protected by intubating and initiating mechanical ventilation.

In poisoned patients, evidence to support the beneficial effect of gastric lavage is weak.[10] Due to high mortality, patients with significant poisoning may be considered for gastric lavage with activated charcoal if they present within 1 hour of consumption and without altered sensorium. A study[11] showed that multiple dose-activated charcoal, reduced complications such as hypokalemia, hypocalcemia, and death in patients with *C. collinus* poisoning. There is no specific antidote for *C. collinus* poisoning. Studies[3,12] states N-acetyl cysteine and other thiol containing compounds which act as glutathione precursors promotes antioxidant properties of glutathione, reducing oxidative stress caused by *C. collinus* poisoning. However, the benefits of these compounds are not established.

4. Conclusion

Cleistanthus collinus is a common cause of plant poisoning encountered in rural south India. It is associated with high mortality and there is no definitive antidote. Consumption of the aqueous extract of the plant is associated with high mortality. Further research is required to identify putative toxic molecules in *C. collinus*, and also to identify definitive antidote. In the absence of definitive antidote, at present management of *C. collinu*s poisoning remains symptomatic and supportive.

5. Source of Funding

None.

6. Conflict of Interest

None.

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