

## Cardiac toxicity with nodal bradycardia due to Panama rubber (*Castilla elastica*: *Moraceae*) poisoning

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### Introduction

Plant poisoning is not an uncommon problem in Sri Lanka. A hospital based prospective study showed that *Jatropha curcas*, *Ricinus communis*, *Dieffenbachia*, *Adenia palmata*, *Amanita phalloides* and *Thevetia peruviana* are common poisonous plants implicated in poisoning among children in Sri Lanka. [1]. In the past, deliberate ingestion of yellow oleander seeds (*Thevetia peruviana*) was a common method of self-harm in north central part of Sri Lanka. The case-fatality rate of untreated patients was at least 10%. Seeds of yellow oleander contain cardiac glycosides which cause cardiac dysarrhythmias [2].

We report a patient with panama rubber (*Castilla elastica*) poisoning who presented with severe cardiac toxicity and nodal bradycardia. A literature review did not show previous reports of cases of cardiac toxicity and nodal bradycardia as a result of panama rubber (*Castilla elastica*) poisoning.

### Case report

A 76-years old man presented to the medical ward of Base Hospital Deniyaya, Sri Lanka with dizziness and vomiting after ingestion of two teaspoons of green juice made from crushed leaves of Panama rubber. He had a history of occasional vertigo and hearing impairment of two years duration and allergic rhinitis since childhood. On the day of admission, the patient had developed vertigo in the morning and decided to take herbal medication of juice made from leaves of a wild plant (Panama rubber). This resulted in accidental ingestion of the plant extract of Panama rubber which was misidentified as *thebu* (*Costus speciosus*). *Thebu* is a plant used by villagers as food and as a herbal medication.

Ten minutes after the ingestion of plant extract, he developed severe vomiting with excessive salivation. As there was no improvement in 30 minutes, the patient was admitted to the hospital. No medications were administered at home prior to admission. On admission he was

dehydrated, drowsy and unsteady on his feet. The blood pressure was 80/60 mmHg and pulse rate was 36 beats/mn with irregular rhythm. He did not have fever or any other abnormal cardiovascular or respiratory signs. Neurological examination showed that he was confused but there were no focal neurological signs, reflexes were normal, and plantars were down going.



Figure 1. Leaves of Panama rubber brought by the family members of the patient (a) and fruits of Panama rubber (b).

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The electrocardiogram showed severe bradycardia with heart rate of 40 beats/minute. P waves were absent and QRS complexes and R waves were normal in morphology. QT interval was 8 mm. The ECG finding was compatible with nodal bradycardia. Apart from a sclerosed and calcified aortic valve, the echocardiogram was normal. Blood investigations showed normal full blood count, serum creatinine and liver functions. Urine analysis was normal. Serum potassium was 5.5 mmol/l and serum sodium was 138 mmol/l.

The patient was treated with intravenous atropine and oral salbutamol. Dehydration was corrected with appropriate intravenous fluids. The patient recovered and ECG became normal. However four hours after the admission his pulse rate became 40/minute with nodal bradycardia. The patient was transferred to the nearest teaching hospital for further management and recovered fully after treatment. A temporary pacemaker was not inserted.

Family members brought leaves of the plant used as herbal medication (Figure 1). It was identified as Panama rubber (*Castilla elastica*).

### Discussion

*Castilla elastica* of family Moraceae is commonly known as 'Panama rubber' [3] and 'castilloa rubber' [4]. 'Wal-rubber' and 'Ron-rubber' are two Sinhala vernacular names used for *C. elastica* in two different areas of Sri Lanka; Matale and Deniyaya respectively. This species grows naturally from Mexico through Panama and the coastal region of Western Colombia and Western Ecuador [5]. Panama rubber was introduced to Sri Lanka in 1876 and has naturalized and is found in some parts of the country, especially in Kandy, Matale and Moneragala Districts [5]. The wood is sometimes used as low quality timber in light construction work. *C. elastica* is a deciduous buttressed tree (woody perennial) with white latex (copious) and grows up to 30 m in height. Vegetative branches are wide-spreading with large leaves and stipulated. Fruits are orange-red in colour [3].

William Withering described toxicity of herbal cardiac glycosides in 1785, when he published his classic work of foxglove, *Digitalis purpurea* [6]. *Castilla elastica*

(Panama rubber) is a member of Moraceae family and some species of the plant family have cardiac glycosides [7]. Cardiac glycosides primarily affect cardiovascular, neurologic, and gastrointestinal systems. Any dysrhythmia characterised by both increased automaticity and depressed conduction is suggestive of cardiac glycoside toxicity. Bradydysrhythmias, sinus bradycardia with all types of AV nodal block, junctional rhythms, and sinus arrest are other dysrhythmias often associated with cardiac glycoside toxicity. Cardiac symptoms include palpitations, chest pain or shortness of breath, light headedness, dizziness, and faintness. Hyperkalaemia is a life threatening complication of cardiac glycoside poisoning [8].

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