Case Report
Toxicology International, *Jan-April 2017 / Vol-24 / Issue-1, 125-127*
ISSN (Print) : 0971-6580
ISSN (Online) : 0976-5131
DOI: 10.22506/ti/2017/v24/i1/149046

Ornamental shrubs – A cause of fatal poisoning

Pramod Kumar GN[1], Tanuj Kanchan[2], Alok Atreya[*4], P Prasanna[1] and R Balaraman[3]

Department of Forensic Medicine and Toxicology,
[1]Mahatma Gandhi Medical College & Research Institute, Pillaiyarkuppam, Pondicherry
[2]All India Institute of Medical Sciences, Jodhpur,
[3]Indira Gandhi Government General Hospital & Post Graduate Institute, Pondicherry,
[4]Department of Forensic Medicine, Nepal Medical College Pvt. Ltd., Kathmandu, Nepal
* alokraj67@hotmail.com

Abstract

Yellow oleander is a poisonous plant that grows wildly in most of the South Asia region and all parts of India. These plants are very often planted as ornamental shrubs along the road side and in institutional campuses too. Consumption of seeds of yellow oleander results in significantly morbidity and mortality each year in South Asia including Sri Lanka and India. A case of fatal yellow oleander poisoning is presented along with a review of literature.

Keywords: Poisoning; Suicides; India; Yellow Oleander

Received: 25-07-2016 **Revised:** 18-11-2016 **Accepted:** 29-11-2016

Introduction

The oleander species are referred to as common oleander and yellow oleander based upon the colour of the flowers. Common oleander (*Nerium oleander*) bears white or pink flower whereas yellow oleander (*Thevetia peruviana*) bears yellow funnel shaped flowers **[1]**. Allured by the beauty of the flower this ornamental shrub belonging to the Apocynaceae family is cultivated in tropics and subtropics **[1]**. Oleander species contain a cardiotoxic substance *cardenolide* **[2]** apart from other glycosides namely *cerberin, nerifolin, peruvoside, ruvoside, thevetin A and B* **[3]**. These are distributed throughout the plant, higher concentration of these glycosides is however reportedly present in the seeds and roots. Oleander is designated as a cardiotoxic plant for the presence of glycosides that are toxic to cardiac myocytes and autonomic nervous system **[4]**.

This poisonous plant grows wildly in most of the South Asia region and all parts of India. Although yellow oleander plant is grown throughout the tropics and subtropics, incidents of its consumption especially for committing suicide is often reported from Sri Lanka and Southern India, and only occasionally from the other parts of the world **[1]**.

We report an autopsy case of fatal yellow oleander consumption in one of the Indian territory in the south eastern coastal area along with a review of literature.

Case Report

An adult male aged 32 years was brought dead to the emergency medicine department by his relatives with a history of consumption of yellow oleander. Exact quantity, time and part of the plant consumed was not known to the relatives. An autopsy was conducted to find the exact cause of death. The deceased was a moderately built and moderately nourished male. No external injuries were observed on the body. All the natural body orifices were intact and unremarkable. On internal examination epicardial and subendocardial haemorrhages were seen over the left ventricle of the heart **(Fig 1A)** and gastric mucosa was congested with thick mucus plugs **(Fig 1B)**. Coronaries were intact and patent. All other organs were congested. Entire stomach with contents along with proximal part of small intestine, 500 gm of liver with

* *Author for correspondence*

gall bladder, 50 ml of blood and half of each kidney were subjected to chemical analysis at the RFSL (Regional Forensic Science Laboratory). Analysis was carried out using Killiani Keller Method which tested positive for the presence of cardiotoxic glycosides, probably derived due to ingestion of any one of the toxic plant materials of the type '*Thevetia nerifolia*' (yellow oleander). Viscera also tested positive for the presence of alcohol, blood alcohol concentrations being 0.18 gm%.

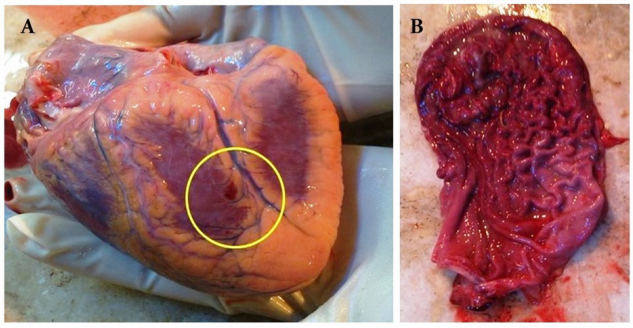


Figure 1. **A**- Epicardial hemorrhages on the posterior surface of left ventricle, **B**- Extensively congested gastric mucosa with mucus plugs.

Discussion

Plant poisoning in humans is either accidental or intentional. Consumption of herbs for treatment purposes is not uncommon. Easy availability and affordability are the reasons behind these herbal remedies preferred over allopathic medications. Oleander was initially used as a medication in traditional Indian medicine to procure abortion and also in treatment of leprosy, ringworm, malaria and indigestion but was later discontinued owing to its high toxicity **[3-5]**. A non-fatal case of oleander poisoning is reported from Iran where a pregnant woman of 24 years consumed oleander decoction to procure abortion **[6].** Ignorance of the poisonous properties and misidentification of a medicinal plant with poisonous herb due to close resemblances are the reasons for accidental poisoning. A 7 year old school boy from Bangladesh consumed yellow oleander fruit along with its seeds thinking it to be a water chestnut **[7]**.

Although, ingestion of oleander is reported from various countries suicidal consumption of yellow oleander seeds is becoming increasingly common in South India and Sri Lanka **[8]**. An elderly female of 83 years, suffering from several chronic illnesses intentionally consumed oleander tea for committing suicide **[9]**. Attempted suicides by yellow oleander are not uncommon among Indian population as suiciders often have knowledge about the toxic nature of the plant.

Saraswat et al **[10]** reviewed 13 cases of poisoning with yellow oleander out of which they found that one patient, who consumed more than 5 seeds arrived after 5 hours of consumption died due to cardiogenic shock with toxic symptoms even with intensive therapy. Bose et al **[11]** observed subendocardial and perivascular haemorrhage with focal myocardial edema in 14 autopsied cases of yellow oleander poisoning. Subendocardiac haemorrhages distributed mainly over anterior surface of right and left ventricles. Stomach revealed punctuate haemorrhagic spots over mucous membrane in all 14 cases. In the present case, stomach mucosa showed reddish pink discoloration with thick mucus secretion. Subendocardial and pericardial haemorrhages were seen over posterior surface left ventricle of the heart.

Survival of the victim depends on time of arrival, number of seeds consumed and treatment availability. When such victims come to Emergency Room, the treating physician has to rely upon the history provided. Lack of sophisticated investigative method in the hospital that could identify the type of poison (plant) consumed further delays the treatment. In all cases of alleged herb ingestion, decontamination by gastric lavage is a valuable tool after which the treatment is symptomatic. Literatures suggest that activated charcoal is of gold standard in treatment of yellow oleander. There is a challenge in administrating antidote either because the poison is not identified or the specific counter-remedy is not known. The physicians are to rely upon empirical methods for managing such cases based upon the signs and symptoms and systemic manifestation caused by the poisonous substance. Digoxin specific Fab antibodies are proved efficacious in the treatment **[1,12-15]**.

These plants grow in the wild are very often planted as ornamental shrubs along the road side and in institutional campuses too. Such easy availability can be a cause for its accidental or suicidal ingestion. The need of the hour is to develop psychiatric or psychological management facilities and educate health care providers so that they are better equipped to deal with emergencies relating to plant poisonings.

Conflict of Interest

None Declared

References

1. Pramod Kumar GN, Atreya A, Kanchan T. Thevetia peruviana. Wilderness Environ Med 2015;26(4):590-1.
2. Botha CJ, Penrith ML. Poisonous plants of veterinary and human importance in southern Africa. J Ethnopharmacology 2008;119:549–58.
3. Veronika B, Weinstein SA, White J, Eddleston M. A review of the natural history, toxinology, diagnosis and clinical management of Nerium oleander (common oleander) and Thevetia peruviana (yellow oleander) poisoning. Toxicon 2010; 56:273–81.
4. Eddleston M, Warrell A. Management of acute yellow oleander poisoning. Q J Med 1999;92:483–5.
5. Saravanapavananthan N, Ganeshamoorthy J. Yellow oleander poisoning – a study of 170 cases. Forensic Sci Int 1988; 26:247-50.
6. Peymani P, Zamiri N, Tahmasbi J. A Case of Non-Fatal Oleander Poisoning. Iran Red Cresent Med J 2011;13(3):219-20.
7. Mollah AH, Ahmed S, Haque N, Shamsuzzaman, Islam AKMN, Rashid A et al. Yellow oleander poisoning: a case report. JNMA 2002; 41:331-4.
8. Puvaneswaralingam, S. Yellow oleander poisoning and suicide in Sri Lanka. Scott Univ Med J. 2012;1:02 (Available from: http://sumj.dundee.ac.uk/data/uploads/epub-article/002-sumj.epub.pdf Accessed August 4, 2015)
9. Driggers DA, Solbrig R, Steiner JF, et al. Acute oleander poisoning-A suicide attempt in a geriatric patient. West J Med 1989;151:660-2.
10. Saraswat DK, Garg PK, Saraswat M. Rare poisoning with Cerebra thevetia(yellow oleander). Review of 13 cases of suicide attempt. J Assoc Physicians India1992;40:628-9.
11. Bose TK, Basu RK, Biswas B, De JN, Majumdar BC, Datta S. Cardiovascular effects of yellow oleander ingestion. J Indian Med Assoc 1999;97(10):407-9.
12. Rajapakse S. Management of yellow oleander poisoning. Clin Toxicol (Phila) 2009;47(3):206-12.
13. Eddleston M, Persson H. Acute Plant Poisoning and Antitoxin Antibodies. J Toxicol Clin Toxicol 2003;41(3):309–15.
14. Camphausen C, Haas NA, Mattke AC. Successful treatment of oleander intoxication (cardiac glycosides) with digoxin-specific Fab antibody fragments in a 7-year-old child: case report and review of literature. Z Kardiol 2005;94(12):817-23.
15. de Silva HA, Fonseka MM, Pathmeswaran A, Alahakone DG, Ratnatilake GA, Gunatilake SB et al. Multiple-dose activated charcoal for treatment of yellow oleander poisoning: a single-blind, randomised, placebo-controlled trial. Lancet 2003;361(9373):1935-8.