Original Research Article

Cardiac manifestations of Yellow Oleander Poisoning: A single center experience from a low middle-income country.

Abstract

Objective The descriptive prospective study was aimed to determine the pattern of cardiac arrhythmias, and outcome of yellow oleander poisoning at a Tertiary Care Hospital, in Northern Sri Lanka.

Results: 23 out of 44 were females. Mean age of patients was 24.84 [SD ± 0.43] years. Most of the patients were symptomatic and presented with classical gastro intestinal symptoms of vomiting, abdominal pain and diarrhea. Of the 42 patients studied, Bradycardia was the most common cardiac dysrhythmia within 24hrs of ingestion of yellow oleander seeds. Sinus bradycardia [75%] was the commonest. All patients were treated with multiple activated charcoals irrespective of the time of presentation. Patients with Brady arrhythmias were treated with intravenous boluses of Atropine. 12[27.2%] patients needed temporary pacing. We found that it was common among young patients and cardiac toxicity develops within 24hrs of ingestion of yellow oleander seeds. Most patients have nonspecific symptoms. AV conduction defects are common.

Key words: yellow oleander, toxicity, arrhythmias, Sri Lanka,

Introduction

Poisoning due to the seeds of yellow oleander results in significant morbidity and mortality in Sri Lanka .It is mostly common throughout the tropics in Northern and Eastern province of Sri Lanka. It contains cardiac glycosides that are very toxic to cardiac muscle [1]. Ingestion of seed causes predominantly cardiovascular effects such as bradycardia, varying degrees of heart blocks, atrial or ventricular ectopics and ventricular tachyarrhythmias. Hyperkalemia is a life-threatening sequalae which is is an indication for treatment with digoxin immune fab [Digibind]. Continuous ECG monitoring is indicated to detect arrhythmias in patients with severe poisoning [2]. The aim of the study is to evaluate manifestations of the yellow oleander poisoning and management out come at teaching hospital Jaffna.

Methods

Study population

Forty-four (44) consecutive patients with yellow oleander poisoning admitted to teaching hospital, Jaffna, Sri Lanka over a period of two years duration were enrolled.

Electrocardiographic monitoring

Twelve lead standard electrocardiography [INNOMED Medical ECG machine] and 2-lead ECG monitoring was performed in all patients during inward stay in the cardiology unit.

Statistical analysis

Data were entered in Microsoft Excel sheet and were analyzed using SPSS [version 21] analytical package. Baseline r esults was presented as counts and percentages and as mean ± SD for continuous variables. A $P < 0.05$ will be considered significant.

Results

44 patients with the history of yellow oleander seed ingestion were included in the study. Mean age group was 24.84[SD ± 0.43] years. 23 out of 44 [52.2%] were females.

The patients have taken other substances [organophosphate - 2.3% , alcohol- 2.3%, jaggary - 34.1%] with the yellow oleanderAlmost all patients experienced gastrointestinal symptoms. Vomiting was the predominant symptom [97.7%]. Abdominal pain was reported in 29.5% and diarrhea in 56.8%. Neurological symptoms were seen in 20.5%. Cardiac arrhythmias were reported in 42 patients with yellow oleander poisoning. The most common arrhythmia reported was sinus brad arrhythmia in 75% [Table 1].

Death was reported after ingestion of few seeds compared with consuming more seeds. This could be due to susceptibility of higher intake of seeds causing severe vomiting leading to less absorption.

Gastric lavage was given in 25% those presented within 2 hours of yellow oleander ingestion and activated charcoal in 54.5%. of patients. Atropine was used among 31.8% of patients with severe bradyarrhythmia and temporary pacing in 27.2% [Table 2]. No complications were observed after temporary pace maker insertion. One patient died due to VT/VF,

Discussion

Self-ingestion of yellow oleander seeds is becoming an increasingly common method of suicide in Northern and Eastern province of Sri Lanka [3], rarely seen elsewhere in the world [4]. All parts of plant are poisonous especially seeds contain several cardiac glycosides similar to digitalis causing cardiac arrhythmias .

The seeds are highly irritant to gastro intestinal tract leading to persistent vomiting and diarrhea in severe cases. The combination of alcohol and seeds, both of which induce vomiting may explain why some intoxicated patients were rarely found to be seriously poisoned [5]. The combination of sugar with seeds, cause seriously poisoning due to rapid absorption.

There was no direct relationship between number of seeds and toxicity of seeds in our [3]. Common cardiac rhythms of patients presented with the yellow oleander poisoning were sinus bradyarrhythmia, sinus pauses, first degree heart block, Wenckebach phenomena, 2:1 and 3:1 block, complete heart block, ventricular tachycardia and ventricular fibrillation [Table 2]. Ventricular tachyarrhythmias were uncommon and associated with exceptionally high mortality [6].

The time course and outcome after eating oleander seedswas quite variable [7]. Sri Lankans usually consume the seeds as whole that can cause reduces the bioavailability of the cardiac glycosides. Tamils in South India consume seeds after crushing the seeds which the cardiac glycosides might be more easily absorbed and causes severe toxicity [8].

The digoxin immune fab is specific antidote for management of YOP . It is shown to be effective in preventing life threatening ventricular arrhythmias. It is not available in Sri Lanka. Gastric lavage and activated charcoal are mainstay of treatment in Sri Lanka. IV Atropine and temporary pacing are used in significant bradyarrythmia. Ventricular tachyarrythmias are extremely difficult to manage and are poorly responsive to cardioversion. We also managed most of patients with activated charcoal and gastric lavage. Intravenous atropine was indicated to manage the bradyarrythmias in our patients.

Conclusion

Yellow oleander poisoning was common among young patients. The cardiac toxicity developed within 24 hours of ingestion of the seeds. The risk of toxicity has no correlation with high ingestion of seeds. Most patients have nonspecific symptoms. AV conducts are common.

Limitations

This study was limited by its small size of sample.

Abbreviations

YOP: Yellow oleander poisoning **SD:** Standard deviation **AV:** Atrioventricular IV: Intravenous ECG: Electrocardiography VT: Ventricular tachycardia **VF:** Ventricular fibrillation

Competing interests

The authors declare that they have no competing interests.

Availability of data and materials

The datasets during the current study available from the corresponding author on reasonable request.

Consent for publication

Not Applicable

Ethics approval and consent to participate

Ethical approval was obtained from Ethical Review Committee, Faculty of Medicine, University of Jaffna, Sri Lanka. The informed written consent was obtained from the participants.

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Table 1: The common patterns of cardiac arrhythmias among yellow oleander poisoning patients,

Cardiac arrhythmias	Nos	Prercentage [%]
Sinus bradyarrhythmia	33	75
Sinus pauses	7	15.9
First degree heart block	7	15.9
Wenkebeck phenomenon	6	13.6
2:1 or 3:1 heart block	7	15.9
Complete heart block	5	11.4
Atrial flutter	1	2.3
Ventricular tachycardia	2	4.5
Ventricular fibrillation	1	2.3

Table 2: The indication of temporary pacing among yellow oleander poisoning patients.

Indication	Nos	Percentage [%]
2:1 Heart block	1	2.3
Atrial flutter 4:1block	1	2.3
Complete heart block	6	13.6
Second degree heart block	2	4.5
Sinus pauses	2	4.5