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## RESEARCH ARTICLE

### A STUDY OF CLINICAL PROFILE OF YELLOW OLEANDER POISONING

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#### ARTICLE INFO

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#### ABSTRACT

Death due to plant poisoning is more come in southern India. Of which oleander seed poisoning is the number cause of plant poisoning. Though the chemical nature and symptomatology of this poison has been well described, there is no defined protocol for managing such a great social issue and it warrants larger studies. This study was done to assess the clinical manifestations in yellow oleander seed poisoning and to study the electrocardiographic changes and biochemical abnormality associated with it and to correlate the number of seeds and its form of consumption with the severity of ECG changes. We have also revealed slightly higher incidence of poisoning in females like in most other previous studies. Severe cardiac manifestations were related to delay in admission, grounded or paste from of consumption, and in those who developed electrolyte imbalance like hyperkalemia. Study revealed ECG abnormalities in about 27% of patients. We have also shown from our study that those who had consumed more than 8 seeds had 100% severe cardiac manifestations. The ECG abnormalities in males exceeded the females by nearly 18%. ECG abnormalities appeared as early as 5 hrs and as late as 10 Hours of poisoning. Sinus bradycardia was the commonest arrhythmia observed in our study.

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#### INTRODUCTION

Death occurs due to various reasons which most of the times are preventable and sometimes curable. Among all reasons for death, the most preventable unnatural cause is suicidal deaths. Suicide is the third leading cause of death among young adults worldwide. Plant poisoning specifically with yellow oleander is common in tropical countries like Srilanka, India and many other south Asian countries (Eddleston, 1999; Al, 2018). The growing figures of oleander poisoning are of major concern to our health care services. Yellow oleander comes under the family Apocyanaceae which is found in abundance in tropical countries. All parts of the plants are poisonous including leaves, flowers and seeds (Watt, 2018). Fatal dose is not well defined some studies shows consumption of crushed seeds of 5 causes significant manifestations and more than 8 being the fatal dose. The toxin of yellow oleander is same as that of cardiac glycosides which Produces autonomic dysfunction as well as damage to cardiac Myocytes (Smith, 1984).The severity of cardiac dysfunction varies from trivial ventricular premature contractions and sinus bradycardia to resistant ventricular fibrillations and completes heart block.

Though the chemical nature and symptomatology of this poison has been well described, there is no defined protocol for managing such a great social issue and it warrants larger studies.

**Aim and objectives:** To study the clinical manifestations in yellow oleander seed poisoning and to study the electrocardiographic changes and biochemical abnormality associated with it. To correlate the number of seeds and its form of consumption with the severity of ECG changes.

#### MATERIAL AND METHODS

Study was conducted in Department of General Medicine, Chengalpattu Medical College, Chengalpattu, for duration of one year. Patient healthy of age group 18-65 yr who consumed yellow oleander in any form are included in the study. Patient with co-morbidities like SHT, DM, CAD/ Arrhythmia/Hyperthyroid and Patients on drugs like digoxin, beta blockers or calcium channel blockers, Patient suffering from any chronic illness and Patient <18 &>65 yrs are excluded in the study. Study design was cross sectional study and the significance of difference among the means was calculated using Duncan's multiple range test (at P less than or equal to 0.05).

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## RESULTS AND OBSERVATIONS

Out of the total 100 cases, the number of patients between the age group of 21 to 30 were 49(49%) and between the age group of 31-40 were 49(49%) and in the age group of 41 and above were 2(2%), Incidence of poisoning is more in age group between 21 and 40 yrs. Male: Female ratio was 1:1.08. In men the common age group was 21-30 years and the number of cases in this age group was 27(56.3%). In females the common age group of poisoning was between 31 and 40 years of age and the number of cases in this age group were 29(55.8%).

Age group	Gender		Total
	Male	Female	
21 to 30	27	22	49
Percentage	56.40%	47.40%	49%
31 to 40	20	29	49
Percentage	41.70%	55.80%	49%
41 and above	1	1	2
Percentage	2.10%	1.90%	2%
Total	48	52	100
Chi square	2.006		
P value	0.367		

Table 1. Comparison of age group with gender (N=100)

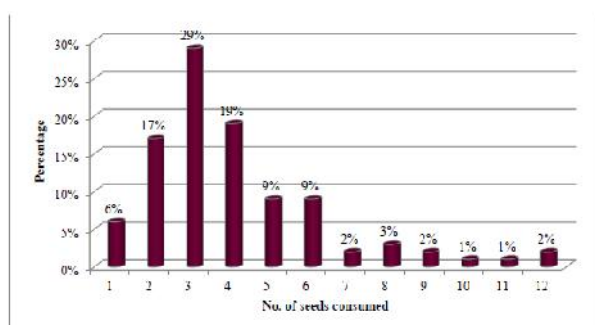


Figure 1. Bar chart of No. of seeds consumed in study population (N=100)

The seeds were taken in many forms but the most common form of consumption was grounded form. Number of patients consumed in grounded form were 42 (42%) and in paste form were 26(26%) and in bitten and chewed form were 21(21%). 11(11%) patients had consumed leaves along with seeds. In grounded and paste form the alkaloid availability is more and hence the electrocardiographic manifestations and mortality were high in this form. Most of the poisons consumed were seeds, poisoning by leaves were less. Number of patients consumed 1 seed were 6(6%), 2 seeds were 17(17%), 3 seeds were 29(29%), 4 seeds were 19(19%), 5 and 6 seeds were 9(9%), 10 and 11 seeds were 1(1%) in each group, 12 seeds were 2(2%). There seems to be a definite abnormality in ECG, even though there is no mortality, if patient had taken even one seed. The ECG changes and mortality had more relationship with the grounded, chewed or paste form of seeds rather than the number of seeds. Out of the total 100 patients, 27 patients had electrocardiographic abnormalities and 73 patients had normal ECGs. Out of the total 49 patients in the age group 21 – 30 years 10(37%) patients had developed ECG abnormalities

Table 2. Comparison of gender with ECG (N=100)

Gender	ECG		Total
	Normal	Abnormal	
Male	37	11	48
Percentage	50.7%	40.7%	48%
Female	36	16	52
Percentage	49.3%	59.3%	52%
Total	73	27	100
Chi square	0.781		
P value	0.377		

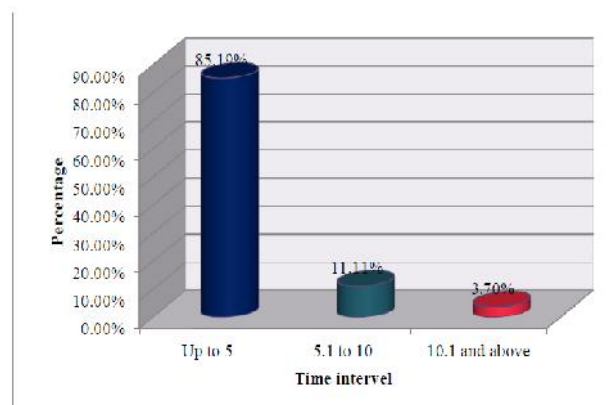


Figure 2. Bar chart of comparison of time interval with ECG abnormalities (N=27)

Impression	Frequency	Percentage
CHB/AV diss	2	7.41%
I AVB	2	7.41%
I dioventric ischaemia	1	3.70%
SBI AVB	1	3.70%
Sinus brady	9	33.33%
ST	2	7.41%
ST II AVB	1	3.70%
ST↓	2	7.41%
T Inversion	2	7.41%
VT	3	11.11%
ECG Abnormal	27	100%

Table 3. Descriptive analysis of ECG abnormal in study population (N=27)

and in the age group of 31 – 40 years 17 patients (63%) had ECG changes. Out of total 48 males, 11(40.7%) males had developed ECG abnormalities and out of 52 females, 16(59.3%) had ECG abnormalities. There is a marginal increase in ECG abnormalities noted in females by 18.6%. Out of the total 27 patients with abnormal ECG findings, almost 23(85.19%) patients developed ECG abnormalities within 5 hours of poisoning. In one (3.7%) patient ECG abnormalities appeared as late as 10 hours after poisoning. In this study ECG abnormalities were noted as early as within 5 hours and as late as 10 hours of poisoning. In this study out of 100 patients 6 patients consumed only one seed. In that only one case 1 (16.7%) had AV block and 5(83.3%) patients had no arrhythmias. ECG abnormalities appear even in one seed. 17 patients had consumed 2 seeds and out of them 12 patients had normal ECG findings. 2 patients (6%) had sinus bradycardia, 1 patient (5.9%) had AV block and 2 patients (6%) had ST depression. Out of 29 patients who had taken 3 seeds, 25 of them had no ECG changes, 3 patients (10.3%) had sinus bradycardia and 1 patient (3.4%) had idioventricular rhythm.

Of the 19 cases consumed 4 seeds, 3(15.7%) patients had sinus bradycardia and 1 patient (5.3%) had T wave inversion. Among those who consumed 5 seeds, 1 patient (11.1%) had ischemic changes and 1 more had sinus tachycardia. Among those who consumed 6 to 8 seeds more than 50% had ECG abnormalities and in those who consumed more than 8 seeds almost all (100%) had abnormal ECG findings. Of the total 100 cases, 20% presented with vomiting, 8% with palpitations, 3% with diarrhea and 3% with syncope. Almost 7% of the study population had hyperkalemia and all those with hyperkalemia had ECG abnormalities.

## DISCUSSION

According to Lippincott Williams and Wilkins<sup>5</sup>, Yellow Oleander poisoning is common under the age group below 30 years with female predominance. The cardiac arrhythmias seen in yellow oleander poisoning are associated with high serum cardiac glycosides level and electrolyte disturbances like hyperkalemia. They have also noted that the mean cardiac glycoside level of 2.88 n mol/ liter presents with AV Block and sinus node dysfunction. Moderate toxic levels of oleander presents with Electrocardiographic changes of prolonged PR interval later proceeding to AV dissociation. Death in patients consuming severe toxic levels of yellow oleander is due to ventricular fibrillation. Eddleston et al in 1999 have noted in their study that the conduction defects affecting sinus node and AV node and a few cases presenting with atrial and ventricular tachyarrhythmia or ventricular ectopic beats in oleander poisoning are typical to that seen in cases of digoxin poisoning<sup>6</sup>. Studies conducted by Bose TK & Basu RK published in 1990 in Calcutta showed that 82% percentage of patients were females in their study, while it is 52% percentage in our study.

The number of seeds varied from half to fifteen in their study, while it is one to twelve seeds in our study. Patients with symptoms of vomiting in our study were 20% which was 30.66% in their study. Palpitation symptoms were present in 8% of our patients, which was 12% in their study. Three patients presented with diarrhea and another 3 patients with syncope in our study. 7% of patients had hyperkalemia in our study. Patients who had good prognosis and better outcome were those who got admitted within 5 hours of poisoning and those who were given early stomach wash, who had early vomiting within few hours after consumption, and those who had taken seeds after food. Patients were discharged with 100% normal ECG in our study. In studies conducted in Sri Lanka<sup>7,8</sup>, on yellow oleander seed poisoning it was shown that the severity of yellow oleander toxicity and hence the death of the patients consuming fatal dose is reduced by about 70% by two important molecules, one is activated charcoal and the other is antidigoxin fab fragments. In their study the elimination of cardiac glycosides from the body is promoted by the usage of either multiple doses of activated charcoal or with antidigoxin fab fragments which has high affinity for glycosides<sup>9,10</sup>.

## Conclusion

The incidence of oleander seed poisoning in our study was common in the age group less than 40 years.

We have also revealed slightly higher incidence of poisoning in females like in most other previous studies. Severe cardiac manifestations were related to delay in admission, grounded or paste form of consumption, and in those who developed electrolyte imbalance like hyperkalemia. Study revealed ECG abnormalities in about 27% of patients. We have also shown from our study that those who had consumed more than 8 seeds had 100% severe cardiac manifestations.

The ECG abnormalities in males exceeded the females by nearly 18%. ECG abnormalities appeared as early as 5 hrs and as late as 10 Hours of poisoning. Sinus bradycardia was the commonest arrhythmia observed in our study. Next to Sinus bradycardia, 1o AV Block and ST-T changes were Noted in this study. Vomiting and palpitation were the other common symptoms of Presentation. Symptoms of syncope and diarrhea were also reported in few patients. Patients given early stomach wash with or without activated Charcoal had good prognosis and outcome. Patients on discharge had 100% normal ECG findings.

## REFERENCES

- Eddleston M, Ariaratnam CA, Meyer WP, Perera G, Kularatne AM, Attapattu S, et al. Epidemic of self-poisoning with seeds of the yellow oleander tree (*Thevetia peruviana*) in northern Sri Lanka. *Trop Med Int Health*. 1999 Apr 1;4(4):266–73.
- Al SL et. Changing epidemiologic patterns of deliberate self poisoning in a rural district of Sri Lanka. - *Pub Med - NCBI* [Internet]. [Cited 2018 Feb 26].
- Watt JM, Breyer-Brandwijk MG. The medicinal and poisonous plants of Southern and Eastern Africa. 1962 [cited 2018 Feb 27];
- Smith TW, Antman EM, Friedman PL, Blatt CM, Marsh JD. Digitalis glycosides: mechanisms and manifestations of toxicity. Part I. *Prog Cardiovascular Dis*. 1984 Apr; 26(5):413–58.
- Richard C.Dart – Medical Toxicology – Lippincott William’s and Wilkins – 30th Edition 2004 – page 1665, 1699, 1700, 1740, 1698, 702, 1146.
- Eddleston.M., Ariaratnam CA, Sjostrum Le et al – Acute yellow oleander poisoning – Cardiac arrhythmias electrolyte disturbances, Serum cardiac glycoside levels on presentation to Hospital – *Heart* 1999; in Press.
- De Silva – HA, Fonseka MM – Multiple dose activated charcoal for the treatment of yellow oleander poisoning a single blind randomized, placebo controlled trial *Lancet* 2003, Jun 7; 36,(9373):1935-8.
- Russell. Manninen.V – Effects of Administration of activated charcoal and fiber on absorption, excretion and steady state blood levels of Digoxin and Digitoxin. – *Alta Med Scand supp* 1982; 668; 88 – 90 (Medline).
- Jasum Payne – James – Forensic Medicine Clinical and Pathological aspects – I Edition 2003 – page 657.
- Davidson’s Principles and Practice of Medicine – 20th Edition 2006 Page 208.