Original Article

CASE SERIES-CARDIAC TOXICITY OF OLEANDER (KANER) SEED POISONING : CASE SERIES

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ABSTRACT-

We present a series of cases of oleander seed poisoning manifested by vomiting, lightheadedness, and heart block. It is interesting that oleander poisoning can be fatal with relatively small amounts ingested. Practicing physicians should understand the potential lethal properties of oleander, its easy availability and well known toxicity that has caused it to be used as self- harm throughout the world.

INTRODUCTION-

Kaner (*Nerium oleander/indicum*) is an ornamental shrub or small, densely branched tree, 1 to 10 metre tall in the Dogbane family Apocynaceae. Leaves are in pairs of three or whorled, very green, leathery, narrowly elliptic to linear .Entire flowers grow in clusters in terminal branches, each 2.5 to 5 cm, funnel-shaped with five lobes, fragrant, various colors from pink to red, white, peach, and yellow.[1] oleander plant whose all parts are poisonous is grown commonly in tropical countries. The plant contains cardiac glycosides that are poisonous to cardiac muscle and produces a picture similar to digoxin toxicity. In India Oleander plant is known since ancient times. It is mentioned in CHARAKA SAMHITA[2]. It had been used in the past as suicidal, homicidal poison and criminal abortifacient[3]. Arrows poisoned with oleander extract has been used by American tribes for hunting. The ubiquitous presence of the plant and knowledge of its toxicity has caused it to be a common source of poison to be used for self-harm [4, 5.]

It's seeds are pale yellow in color and hard like a stone. It has a covering kernel and content of glycosides. 2-5 seeds are present in single nut.[6]

We present a series of 3 cases of oleander seed poisoning manifested by vomiting, lightheadedness, and heart block. It is interesting that oleander poisoning can be fatal with relatively small amounts ingested. Practicing physicians should understand the potential lethal properties of oleander and its availability throughout the world.

Case 1

A 17-year-old female was admitted in the emergency ward with vomiting and lightheadedness 18 hours after ingestion of common oleander seed (3seeds). The patient was a non-smoker and non-alcoholic. She had no drugs allergy and was mentally sound. On initial examination, the blood pressure was 130/80 mmHg with irregular pulse of 55/min. Other general physical parameters were normal. Her chest and lungs were clear to auscultation and percussion. Cardiovascular examination revealed an irregular rhythm with soft S1and normal audible S2 over the cardiac apex.

Electrocardiogram revealed prolonged PR interval , with varying degree AV blocks and normal QRS duration with T wave inversion in lead V2-V6 and T wave flattening in inferior leads. [Figure 1 & 2].

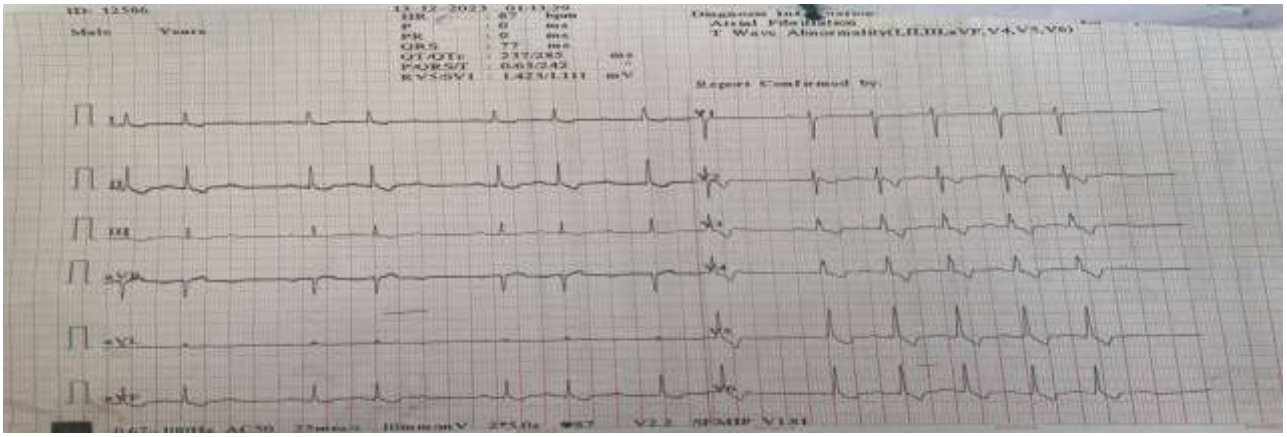

Figure-1

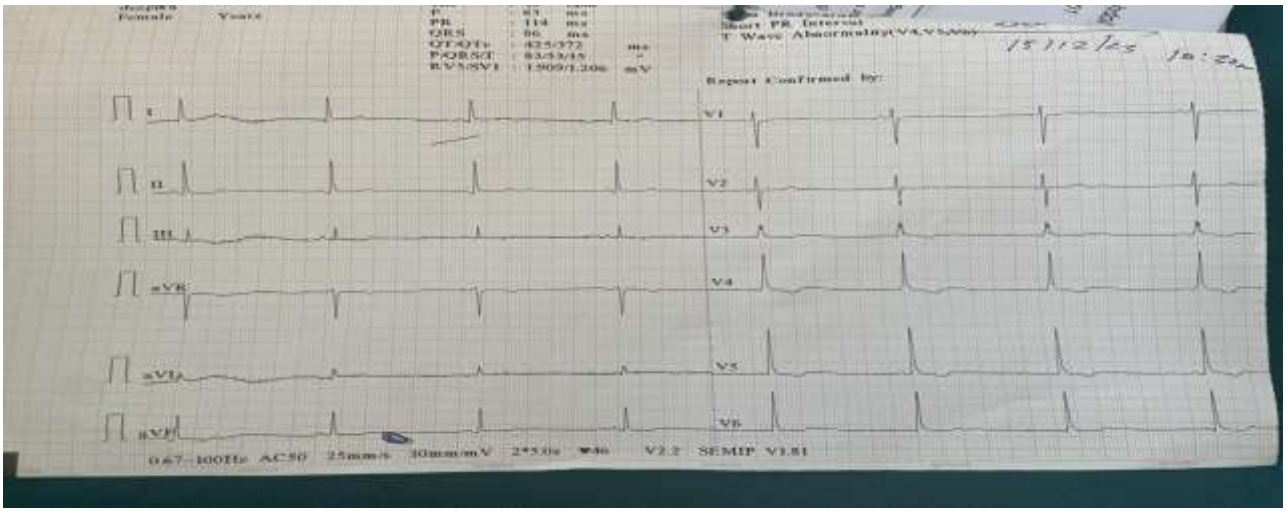

Figure-2

The patient was given 0.6 mg of intravenous atropine sulfate which did not resolve her bradycardia, but other symptoms were improved.

Next day, the patient was given intravenous atropine sulfate0.6 mg twice a day and tablet orciprenaline 10 mg three times a day.

After three days, the patient was discharged on request, with sinus node dysfunction and varying degree AV blocks [Figure 2] but asymptomatic.

Case -2

An 18 year old female referred from local District hospital presented in Emergency ward with history of ingestion of 5 seeds of oleander (kaner). On initial examination pt was conscious oriented to time place and person her pulse rate was 65/min, irregular rhythm,and Blood pressure was 98/58mmhg. Other general physical parameters were normal. Her chest and lungs were clear to auscultation and percussion. Cardiovascular examination revealed an irregular rhythm with soft S1and normal audible S2 over the cardiac apex.

Figure-3

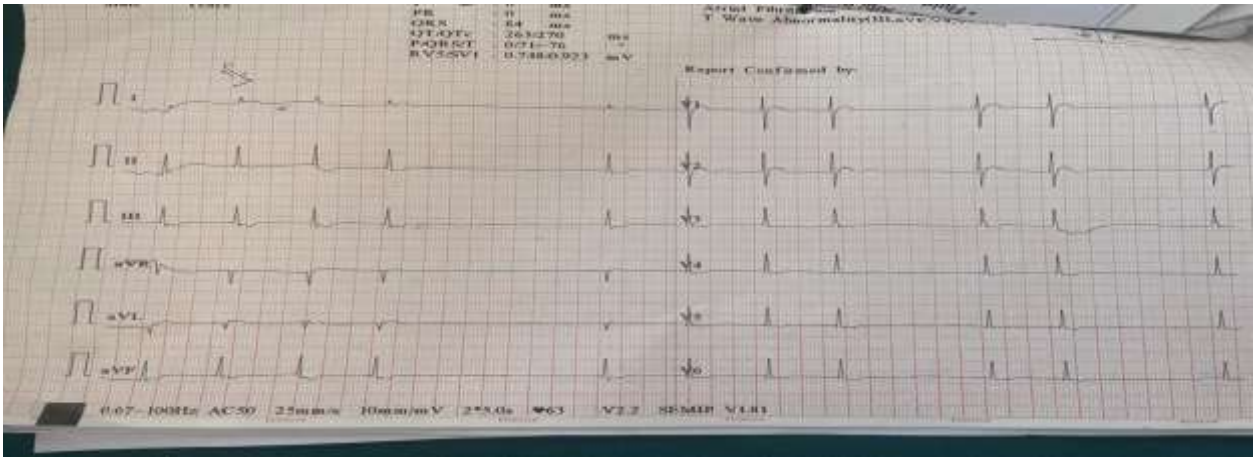

Figure -4

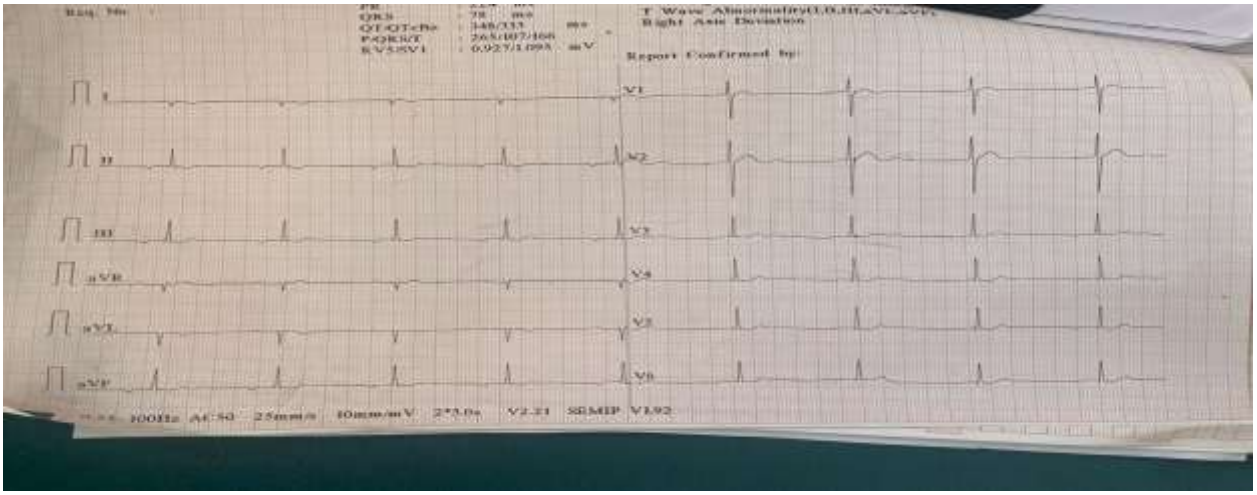

Figure 3 shows prolongation of PR interval with 3:2 AV block, figure 4 shows inverted P wave and T wave flattening in inferior leads with ST- T changes in lead V1and V2.after treatment with atropine and orciprenaline.

This case was also treated with iv atropine sulphate for which patient didn't respond .next day patient was given isoprenaline 10 mg thrice a day along with iv atropine sulphate 0.6 mg twice a day. Patient remains asymptomatic throughout her hospitalization and on Day 3 patient got discharge on request.

Case -3

A 23 year old female patient referred from local district hospital was admitted in emergency ward with history of 3 seeds of oleander ingestion followed by vomiting and headache. At the time of admission she was conscious oriented to time,place and person her pulse 52/min and blood pressure was 120/80 mmHg. There was no history suggestive of smoking and alchohal intake. Other physical parameters and cardiovascular examination were normal.she was also given iv atropine sulphate and isoprenaline.

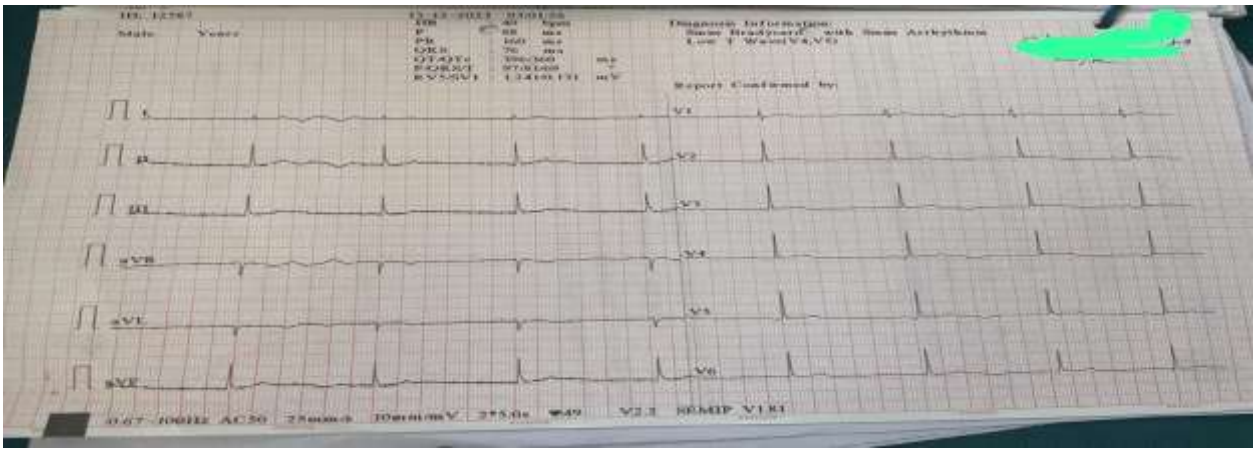

Figure-5

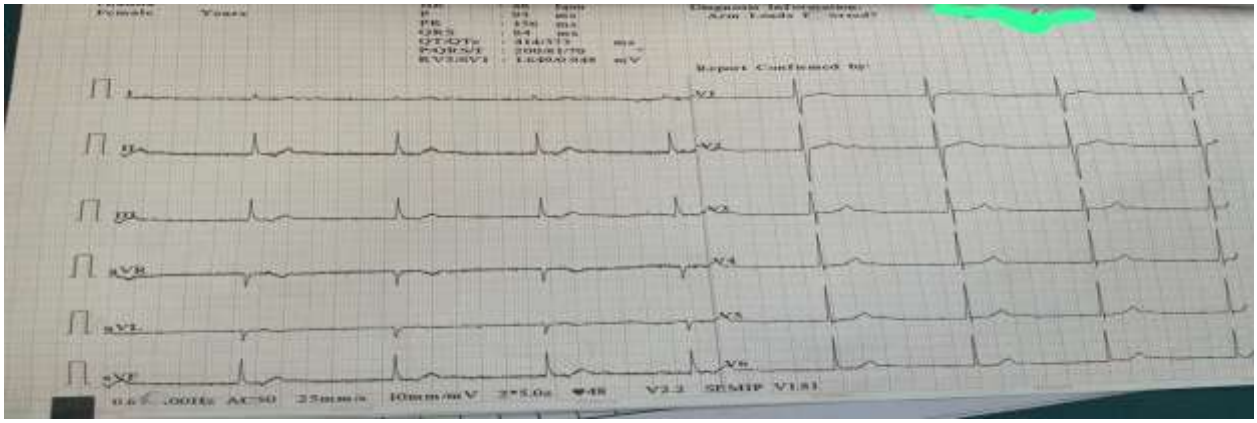

Figure-6

Figure 5 and 6 shows prolonged PR interval with varying degree of AV block with Twave flattening in inferior leads.

DISCUSSION-

We have presented 3 cases of yellw oleander seed ingestion used for self- harm. All three patients were young admitted in medicine ICU with same cardiovascular finding that is bradycardia and their ECG showing varying degree of heart block. All three patient's duration of hospital stay was 3-4 days and they remain asymptomatic during their hospitalization and at the time of discharge as well.

Yellow oleander is a commonly found plant in our geographical area central part of india. All parts of oleander plant are poisonous even smoke from burning the twigs[7] can cause inhalational toxicity and produce ECG changes. Oleander seeds are one of the most toxic parts of the plant. One of the most debated topic of oleander poisoning is the lethal dose of the seeds and how the seeds were ingested –the physical form it is taken and its relation to the severity of symptoms. lethal dose of oleander seeds may be between 4-8. All three cases we presented had taken 3-5 seeds and shown ECG changes. This is consistent with studies by Sreeharan et al[8] (1985) and Saravanapavananthan et al [9] (1988). Yellow oleander is predominantly cardio-toxic. It can also produce gastrointestinal and neurologic manifestations. Cardiac toxicity is the hall mark of oleander seed poisoning. Cardiac glycosides inhibit Na+/K+ ATPase pump which results in increased intracellular Na+ and Ca+ . The intracellular hypercalcemia leads to spontaneous depolarisations and hence increased arrhythmogenicity. The rhythm disturbances varies from simple bradycardia to complex bradyarrhythmias. Morbidity in oleander glycoside toxicity is due to the cardiac effects. Hence those with electrocardiographic changes needed some form of intervention .We used mostly pharmacologic intervention . Drugs used by us are atropine and orciprenaline .We did not use digoxin antibodies because of its unavailability in our hospital and our hospital didn't have facility for cardiac pacing.

Other treatment methods are aimed at removing the toxic substance from the stomach by emesis. Special concern must be given to a patient with bradycardia before emesis is induced because of the possibility of a vagal reaction and worsening of the bradycardia. Unabsorbed glycosides may be bound to some extent, depending on the particular glycoside, by various binding agents in the gut. These agents theoretically should be more effective in absorbing less polar glycosides, such as digitoxin, than the more polar glycosides like digoxin (for example, cholestyramine resin and colestipol). The use of these agents is not thought to have substantial value in the treatment of advanced toxicity, and they were not used in our patient[10]. Activated charcoal has been shown to be useful in preventing further absorption of the cardiac glycosides by interruption of the enterohepatic circulation of the glycoside, but it was not used in our patient because they were all brought after 15 hours of ingestion of the toxin and due to the unknown status about the enterohepatic circulation of oleander's glycosides.[10]

CONCLUSION-

It is interesting that oleander poisoning can be fatal with relatively small amounts ingested. Practicing physicians should understand the potential lethal properties of oleander seeds and its cardiac effects , its easy availability and well known toxicity that is used for self harm throughout the world.

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