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### Add oleander to your list of corrosives

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#### ABSTRACT

**Introduction:** *Nerium oleander* is a toxic ornamental plant which usually grows in the Mediterranean area. In the past it was used to produce cardiotoxic medicine and there are studies on using this plant as an anti-cancer medicine and on its use in alternative medicine for many causes.

**Case Presentation:** Our case was of a 36 years old male who came to the emergency department with sore throat and burning feel in the throat following his curious bite of the oleander leaf. He had no trouble of breathing. The physical examination of the mouth showed burn-like lesions and edema of the uvula, oropharyngeal hyperemia, congestion and on the second day; necrosis. The edema and necrosis were later reduced with the treatment. We discharged the patient after observing for three following days without any complications or side effects.

**Conclusion:** Besides the systemic effects of the oleander plant, this case demonstrates that it could cause serious tissue necrosis when applied locally and corrosive esophagitis when taken by oral way. Patients must be examined and followed also for local toxic effects.

#### 1. Introduction

*Nerium oleander* Linn (common oleander) is an ornamental plant, native to Mediterranean area but cultivated all around the world.<sup>1</sup> In the past, it's used for producing cardiotoxic medicine.<sup>2</sup> Both species are well known for their toxicity, however it's commonly used in the alternative medicine.<sup>3</sup> Nowadays studies are conducted on its use as an anti-cancer medicine.<sup>4</sup> Combustion or respiration of its tissues are also reported to be high toxicity for humans, animals and certain insects because it contains cardiac glycosides.<sup>5,6</sup> There are reports on fatal and non-fatal exposures on humans.<sup>7–10</sup>

Here we report a case of oropharyngeal edema, uvula congestion and mucosal necrosis following bite of the *N. oleander* leaves.

#### 2. Case presentation

A 36-year-old male presented to the emergency department with sore throat and burning feel in the throat after biting a leaf of an oleander plant. He had no allergies, medical or surgical history. Following his bite, he felt burning and numbness in his mouth and spat immediately and washed his mouth with water. He admitted to an emergency department five hours after the contact since his complaints were continued. Examination of his mouth revealed burn-like lesions, edema of the uvula, and hyperemia of the oropharynx. His vital

signs were normal and his electrocardiogram (ECG) revealed normal sinus rhythm.

He was given intravenous (IV) antihistamines, methylprednisolone, Proton Pump Inhibitors (PPI) and mouth wash was ordered. The laryngoscopic examination showed no edema in the larynx. His subsequent examination revealed white membranous structures on the necrotic zone of the uvula and arches. (Fig. 1). He was diagnosed with chemical burns.

His complaints were decreased, unfortunately, the necrosis advanced to the tonsils on the second day. On the third day, necrosis of the tonsils started to regress, edema of the uvula and arches were diminished. We discharged the patient on the 4th day after termination of his complaints.

#### 3. Discussion

The toxicity is caused by “oleandrin” and “digitoxigenin” which are toxic cardiac glycosides.<sup>2,3,7</sup>

Although the toxicity symptoms may be quite similar, current literature bears far higher number of reported cases of *T. peruviana* (yellow oleander) poisoning than the number of *N. oleander* (common oleander) cases reported. It is still not well understood whether if the two plants cause clearly different forms of poisoning.<sup>11</sup>

The mechanism of the systemic intoxication is reversible inhibition

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Fig. 1. White membranous structures on the necrotic zone of the uvula and arches.

of the Na/K ATPase pump of the plasmalemma. With this, the intracellular Na concentration and the extracellular K concentration increases. When the intracellular Na concentration increases the Na/Ca exchange pump inactivates and intracellular Ca concentration increases. In this way the heart rate reduces and contractility increases.<sup>2,3</sup>

N. oleander can cause local or systemic toxicity and the latter is not negligible as literature bears numerous cases in which systemic toxicity resulted the death of patients.<sup>11</sup> Systemic toxicity mechanism is similar to a digital toxicity and patients may suffer from non-specific symptoms such as nausea, vomiting and weakness. Tremor and ataxia can also be seen but reported cases were usually presented with arrhythmias and acute deterioration. The causes of death are generally cardiogenic toxicity and electrolyte imbalances. Arrhythmias, atrioventricular blocks and even ST segment elevated myocardial infarction could be presented. Hypercalcemia is the main electrolyte problem but magnesium and calcium imbalances should come to mind also.<sup>2,7,12–14</sup>

When it is applied to the skin it causes chemical burns and symptoms such as edema, bullae, congestion, hyperemia like contact dermatitis.<sup>10,15</sup> The patients who are exposed to gastrointestinal way define tenderness and hypoesthesia in the lips and oral mucosa.<sup>2,3,7</sup>

In our case, the corrosive effect was observed because of the biting and spitting without swallowing of the leaf of the oleander, and eventually necrosis presented. It is necessary to take into consideration the fact that systemic toxicities and local corrosive findings can be seen when the plant is chewed, swallowed or when it is boiled and drunk.

The supportive treatment includes local therapies for irritation and burns. In case of chewing, swallowing or drinking the water of the plant, oral cavity should be examined. Diagnosis and the treatment should be carried out together for corrosive effect.

#### 4. Conclusion

The number of patients who seek treatment with methods of alternative medicine is steadily increasing. Therefore, to diagnose acute toxicity, it is useful to query any intake of herbal or alternative medicine.

The oleander poisoning should be suspected in patients with gastrointestinal, or cardiac symptoms, and in patients with electrolyte imbalance or burn-like lesions after local exposure. Patients should be observed in the intensive care units for better monitorization and the need of emergency tracheostomy.

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#### Conflict of interest statement

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#### Author contributions statement

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