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Case Report

Severe Ocular Inflammation Due to Euphorbia Tirucalli or Fire Stick Cactus Sap Exposure

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Abstract

This report presents a case of severe ocular injury resulting from exposure to sap of the Fire Stick Cactus (Euphorbia tirucalli), characterized by conjunctival injection, corneal swelling, and anterior chamber reaction. Prompt diagnosis and treatment with topical antibiotic and corticosteroid led to significant improvement. The case emphasizes the need for awareness of the toxic potential of Euphorbia sap and highlights effective management strategies.

Keywords: Euphorbia Tirucalli; Ocular Inflammation; Topical Antibiotic

Introduction

Euphorbia tirucalli, commonly known as the Fire Stick Cactus or Pencil Cactus, is a succulent plant widely grown as an ornamental. It is known for producing a milky sap that contains irritant compounds, particularly diterpene esters, which can cause significant ocular injury, if it comes into contact with the eyes [1-5]. The sap is highly toxic and can induce inflammation, leading to severe conjunctival injection, corneal damage, and anterior chamber reactions. In this report, we describe a case of a patient who accidentally had Euphorbia sap drip into his eye, resulting in a severe ocular reaction that responded well to topical antibiotic and corticosteroid treatment.

Case Presentation

A 67 year-old male presented urgently with complaints of sudden onset eye irritation, redness, and blurred vision in his right eyes following exposure to sap from the fire stick cactus plant. The symptoms had begun after he had been trimming his Fire Stick Cactus at home, during which a droplet of the plant's sap had fallen directly into his eye. Patient had irrigated the eye copiously immediately after exposure.

Initial Examination

Visual Acuity (VA):

- Right eye (OD): 20/70
- Left eye (OS): 20/60

Slit-lamp Examination:

- 3+ Conjunctival injection OD
- Corneal swelling with descent's folds
- Anterior chamber reaction with fibrin

Intraocular Pressure (IOP):

- OD: 17 mmHg
- OS: 16 mmHg

There were no signs of hypopyon or posterior segment involvement. The patient denied any history of eye disease or prior ocular trauma. Diagnosis: A diagnosis of Euphorbia tirucalli sap-induced chemical conjunctivitis, corneal edema, and anterior chamber reaction was made.

Management

Given the severity of the inflammation and potential for further ocular damage, the patient was immediately treated with the following regimen:

Topical antibiotic/ corticosteroid: Maxitrol four times daily, to prevent secondary infection.

Follow-Up

Day 1 Post-Treatment: The patient reported a slight improvement in pain and vision, but complained of a curtain over the eye. His visual acuity was 20/80 in the affected eye.

Slit-Lamp Findings

- Conjunctival injection remained, though reduced in severity
- Corneal edema and descent's folds persisted
- Anterior chamber reaction was significantly reduced with much less fibrin
- Maxitrol was continued, but also added Prednisolone 1% drop at every 2 hour during waking hour interval
- *Day 7 Post-Treatment:* On the third follow-up visit, the patient reported complete resolution of symptoms. Examination confirmed return to normal exam without corneal edema or anterior chamber reaction
- Maxitrol was discontinued. Prednisolone was decreased to twice a day for a week and then discontinued

Discussion

Euphorbiaceae is a large family of flowering plants found on all 5 continents and encompasses over 8,000 species. Species such as Euphorbia tirucalli (fire stick cactus, pencil cactus, or stick of fire cactus), Euphorbia milii (crown of thorns), and Euphorbia pulcherrima (Poinsettia) are commonly used as decorative houseplants and in landscaping. Many Euphorbia species secrete a white, thick, milky sap or latex, that is extremely irritating to skin and mucous membranes, especially the eye.

Euphorbia tirucalli, commonly referred to as the firestick cactus, pencil cactus, milk bush, and firestick plant grows as a shrub or small tree without leaves, has succulent-like branches, and may grow up to 36 feet high. Euphorbia tirucalli sap or latex is very vicious and sticky and if accidentally splashed into eyes can be very difficult to irrigate out completely. Although native to Africa, it is used extensively in the southern United States for ornamental purposes.

Exposure to Euphorbia sap, particularly from Euphorbia tirucalli, can cause a range of ocular injuries due to the sap's highly irritant properties. The active chemical compounds in the sap, such as diterpene esters, are known to cause inflammation of the conjunctiva, cornea, and deeper structures of the eye. Contact with the sap can lead to significant ocular damage, as observed in this case, which presented with toxic inflammation without corneal epithelial defect. The anterior chamber reaction was fulminant with fibrinous reaction even though the patient quickly irrigated the eye upon exposure, affirming the extreme toxicity of the sap.

The presenting symptoms of this patient, including conjunctival injection, corneal swelling, and anterior chamber reaction, are typical of chemical exposure to ocular tissues. Immediate treatment with irrigation to remove the toxin is critical. Prolonged exposure leads to more exuberant reaction. Aggressive topical corticosteroids like prednisolone reduced the inflammatory response. Topical antibiotics prevented secondary infections, which have been reported to lead to permanent visual impairment [6-8]. In most reported cases, prompt treatment resolves the injury to the eye in 5-10 days, usually with full recovery without longterm sequelae. The reported cases of permanent vision loss are due to secondary infections. Public awareness of the toxic potential of Euphorbia sap is crucial, especially for individuals who grow these plants in residential areas. Patients should be educated on proper handling techniques when pruning or working with these plants, such as wearing protective eyewear to prevent accidental sap exposure.

Conclusion

This case highlights the potential for significant ocular injury from Euphorbia tirucalli sap exposure and underscores the importance of early recognition and treatment. The use of prednisolone acetate eye drops was instrumental in controlling the inflammatory response and ensuring complete recovery. Ophthalmologists should be aware of this potential hazard, and patients handling these plants should be advised on proper safety measures to prevent ocular exposure.

Conflict of Interest

Authors declare that they have no conflict of interest.

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