

## CASE REPORT

# Toxic Keratouveitis Secondary to *Euphorbia lactea* Sap: A Case Report

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### ABSTRACT

A 42-year-old gentleman presented with left eye pain after accidental contact with *Euphorbia lactea* sap while gardening. At presentation, left eye best-corrected visual acuity (BCVA) was 20/30. Ocular examination revealed left eye conjunctiva congestion and cornea abrasion. Eye symptoms and BCVA deteriorated over 12 hours. Cornea showed diffuse stromal oedema with presence of anterior uveitis. A diagnosis of toxic keratouveitis was made. He was treated with intensive topical steroids, cycloplegics, lubricants, prophylactic antibiotics and oral non-steroidal anti-inflammatory analgesic. Patient achieved complete resolution two weeks later. We aim to raise awareness among the ophthalmologists to detect and manage these injuries.

**Keywords:** Toxic keratouveitis, *Euphorbia lactea*, Plant sap, Spurge

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### INTRODUCTION

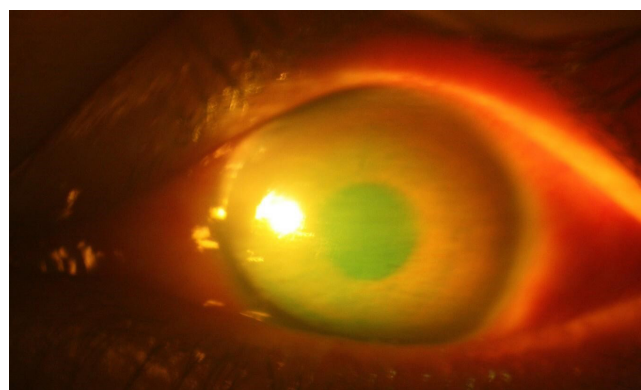
*Euphorbia*, or spurge, is the fourth largest genera of flowering plants with 2000 species worldwide (1). Some species are cultivated as ornamentals due to its aesthetic appearance and low maintenance. *Euphorbia lactea* is one of the species which is native to tropical Asia. It is cultivated primarily as a houseplant in Malaysia. When injured, it exudes abundant milky sap containing toxic compounds which are highly poisonous and irritating to the human skin (2) and eyes (3) upon contact. The toxicity of the sap is dependent on the genera and species. Here, we report a case of toxic keratopathy caused by *Euphorbia lactea* sap with the aim to raise awareness among the local ophthalmologists regarding the detection and management of these injuries.

### CASE REPORT

A 42-year-old Indian gentleman, with no known medical illness complained of left eye pain after gardening and was unsure of any foreign body entering the eye. Pain had worsened after the patient took his shower and irrigated the eye with tap water. He presented approximately 4 hours after the incident to the emergency department and was referred to the Ophthalmology team. At presentation visual acuity was 20/30 bilaterally. Left eye conjunctiva was moderately congested and everted upper lid showed no foreign body. There were few linear

abrasions on the nasal and temporal periphery cornea with no infiltrates or cornea oedema. Anterior chamber, intraocular pressure (IOP) and fundus examination were unremarkable. The fellow eye was normal. Provisional diagnosis of left eye corneal abrasion was made. His left eye was padded with ointment chloramphenicol and allowed home.

Next day on follow up (12 hours after onset of symptoms), the left eye pain had worsened with best corrected visual acuity (BCVA) deteriorating to 20/200, the lids were swollen and conjunctiva remained moderately congested with mucoid discharge. Cornea showed multiple punctate epithelial erosions with several bullae, diffuse stromal oedema and Descemet folds (Figure 1). Anterior chamber revealed cells 1+ and intraocular pressure was 16mmHg. Fundoscopy was normal. Patient then recalled to have sap from a



**Figure 1:** Anterior segment photo taken approximately 12 hours after the initial insult, showing corneal epithelial defect and stromal edema.

plant entering his left eye while trimming it. (Figure 2) The diagnosis was revised as left eye toxic keratouveitis secondary to contact with plant sap. He was admitted and treated with topical 1% prednisolone acetate 2 hourly (*Pred Forte*®, Allergan, Inc., Irvine, CA), 1% tropicamide 8 hourly (Mydriacyl ®, Alcon-Couvreur, Puurs, Belgium), 0.5% levofloxacin 4 hourly (*Cravit*® ophthalmic solution 0.5%; Santen Pharmaceutical Co., Ltd., Osaka, Japan), preservative free artificial tears 2 hourly, and 1% chloramphenicol ointment at night (Chlorop eye ointment 1%, SM Pharmaceuticals Sdn Bhd, Kedah, Malaysia). Cap. Mefenamic acid 500mg 8 hourly (*Ponstan*®, Pfizer, Zurich, Switzerland) was given for pain relief. Patient was reassessed a few hours later and was symptomatically better. However, the cornea showed a total epithelial defect after the loose epithelium sloughed off with dense stromal oedema and Descemet folds.



Figure 2: *Euphorbia lacteal* plant belonging to the patient

A day later, he showed symptomatic and clinical improvement with left eye BCVA improving to 20/40. Left eye corneal epithelial defect, oedema and Descemet folds diminished significantly (Figure 3). Topical 1% prednisolone acetate was slowly tapered to 4 hourly for three days, 6 hourly for three days, and 8 hourly until the end of two weeks. By two weeks, his vision improved to 20/20 with almost complete resolution of cornea oedema and uveitis (Figure 4).

He also developed painful weepy erythematous plaque with vesicles on the right antecubital fossa secondary to exposure to the sap, which was diagnosed as Type 4 hypersensitivity reaction by the dermatologist. (Figure 5) He was treated with topical 0.1% Betamethasone valerate cream b.i.d. (Pharmaniaga, Selangor, Malaysia) and potassium permanganate dabs 1:10000 b.i.d. and achieved recovery by five days with residual scarring.

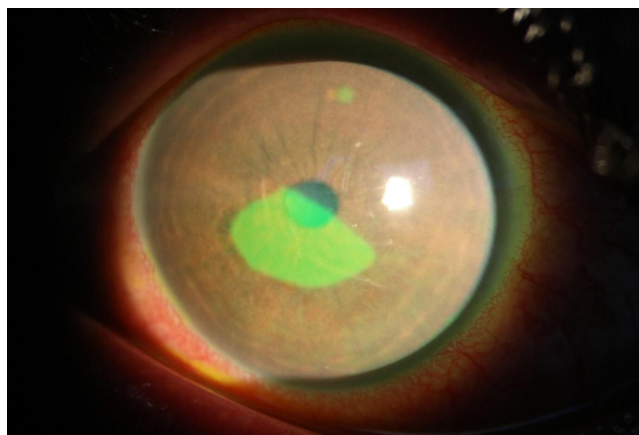


Figure 3: Corneal epithelial defect, edema and Descemet folds diminished significantly two days after exposure to *E. lacteal* sap.

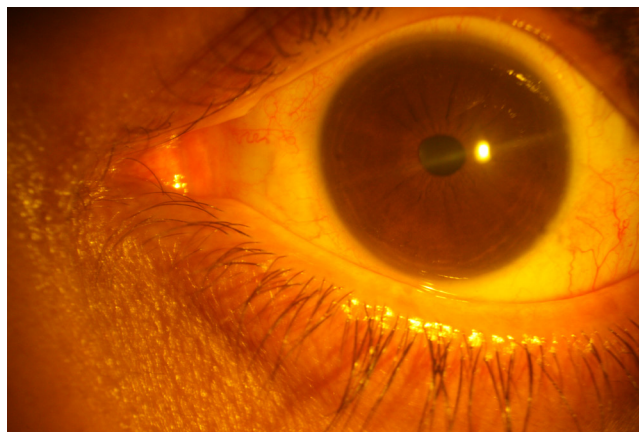


Figure 4: Complete resolution of left eye corneal epithelial defect and edema



Figure 5: Right antecubital fossa showing erythematous plaque with vesicles

## DISCUSSION

With help from our local botanical expert, the plant was identified as *Euphorbia lactea* cultivar *Cristata*. *Euphorbia lactea* belongs to the *Euphorbiaceae* family and it is commonly known as 'crested elkhorn' due to its appearance (1). The exact mechanism of Euphorbia sap keratopathy remains unclear. However, the milky sap has been shown to be acidic and contains irritant and cytotoxic diterpene esters, which are responsible for the clinical side effects (2, 4).

Severity of symptoms is dependent on the concentration and duration of contact (4). Exposure to the plant sap causes ocular inflammation such as conjunctivitis, epiphora, keratitis, and keratouveitis sparing the posterior segment usually. It also causes skin erythema, swelling, vesicles and blisters upon contact which were present in our patient. The ocular symptoms commonly follow a typical course as described in previous literature (1, 3-5), with patients presenting with burning eye pain immediately after contact with the sap, followed by redness, photophobia and lacrimation, which may worsen in a few hours despite irrigation. Initially, the corneal epithelium may be intact, but it may slough off eventually possibly secondary to the anti-neoplastic effects of Euphorbia sap, and takes a week or more to regenerate (4, 5). Visual acuity may deteriorate rapidly on the day after the initial insult secondary to corneal edema and keratouveitis before it improves over several days or weeks after commencing treatment (5), as seen in our patient. Complete clinical resolution may take up to two weeks (3). Patients may develop sequelae such as corneal ulcer, corneal scarring and blindness if left untreated (5).

Our patient responded well to treatment and achieved complete resolution without sequelae after two weeks of treatment. We attribute this to the prompt treatment

instituted once the diagnosis was confirmed in addition to the close monitoring of the patient.

## CONCLUSION

In conclusion, individuals are advised to wear protective glasses and gloves while handling Euphorbia plants to avoid contact with the sap. Patients should be warned that their symptoms may worsen initially for several hours to days before gradual improvement. Adequate topical steroids and topical antibiotics should be commenced with close follow-up once the etiology is confirmed in order to achieve favourable visual outcome.

## ACKNOWLEDGEMENT

We are grateful to Dr Saw Leng Guan, Penang Botanic Gardens, Malaysia, for formal identification of the plant.

## REFERENCES

1. World of Succulents[Internet]. *Euphorbia lactea* 'Cristata'; 2014 [cited 15 May 2019]. Available from: <https://worldofsucculents.com/euphorbia-lactea-f-cristata/>
2. Webster GL. Plant dermatitis. Irritant plants in the spurge family (*Euphorbiaceae*). *Clin Dermatol*. 1986; 4(20):36-45.
3. Merani R, Sa-ngiampornpanit T, Kerdraon Y, Billson F, McClellan KA. *Euphorbia lactea* sap keratouveitis: case report and review of the literature. *Cornea*. 2007; 26(6):749-52.
4. Scott IU, Karp CL. *Euphorbia* sap keratopathy: four cases and a possible pathogenic mechanism. *Br J Ophthalmol*. 1996; 80(9): 823-826.
5. Eke T, Al-Husainy S, Raynor MK. The spectrum of ocular inflammation caused by *Euphorbia* plant sap. *Arch Ophthalmol*. 2000; 118(1):13-16.