



## ASTUDY OF CALOTROPIS INDUCED OCULAR TOXICITY IN WESTERN RAJASTHAN

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### INTRODUCTION

*Calotropis procera* (Fig. 1) belonging to Asclepiadaceae family grows generally in desert areas and is ubiquitous across Rajasthan. In India, it is found mainly in Assam, West Bengal, Rajasthan, Punjab, particularly in the wastelands. It is called Ak in Hindi and Akonda in Bengali and also known as Sodom apple or Madar shrub. It produces copious amounts of thick milky sap which profusely exudes out on breaking the leaves or stalk of the plant also called milkweeds. It is common to get ocular injuries caused by accidental contact or inoculation of the latex while cutting it or plucking flower for worship of lord shiva and children during playing.

We report the spectrum of ocular toxicity following accidental inoculation of latex of *Calotropis procera* in 15 eyes between July 2015 and July 2016. All patients underwent complete examination including visual acuity assessment, slit lamp examination, fundus evaluation, tonometry and fluorescein staining. Pachymetry and specular microscopy was carried out in some cases to confirm presence of corneal oedema and evaluate endothelial cell count and morphology.



calotropis fig.1

**OBJECTIVE-** The latex of *Calotropis procera* causes significant ocular morbidity which may be preventable by simple health education like importance of washing hands after handling its flower and leaves.

### METHODOLOGY-

Prospective clinical study; Most of the patients in our study were male and they got injured while cutting wood. One child who was playing with plant stem and two females while plucking flowers got injured. All patients reported a burning sensation and watering immediately after the accidental splashing of *Calotropis* latex associated with blurring of vision within few hours. There was mild discomfort although none of the patients reported any significant pain. There was no history of ocular trauma, surgery, or any other ophthalmic problem in any of the patients. The visual acuity was variably reduced in all eye while in the uninvolved eyes, the best corrected visual acuity (BCVA) was 6/6. On slit lamp examination all eyes showed mild conjunctival and circumcorneal congestion and there was corneal odema and descemet folds present.

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On fluorescein staining seven out of fifteen cases showed corneal staining suggestive of epithelial defect and four cases showed conjunctival staining in form of triangle from lower fornix. There were no keratic precipitates (KPs). Anterior chamber showed no cells or flare. Iris, pupil, lens were normal. Fundus examination was normal. Intraocular pressure was within normal range 10-14 mmhg. Specular microscopy was performed in four cases but on presentation reading can't be taken due to epithelial defect and in one case there was significant difference in central corneal thickness and endothelial count.

All patients immediately washed their eyes with water and presented to our department within few hours. All patients were prescribed topical corticosteroid, cycloplegic, tear supplement except the patient who had epithelial defect treated with plain antibiotic drop and after healing of defect topical steroid was given. Patients were followed after five and fifteen days. All patient recovered within a period of 5 to 10 days.

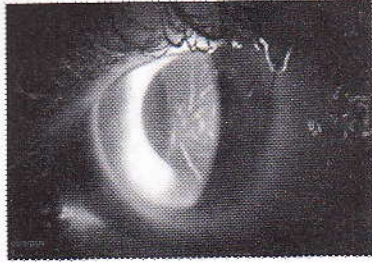
**Demography and visual acuity in all patients**

Case no	age	Sex	Eye involved	Time of presentation after injury	Visual acuity at presentation	Visual acuity after 5 days	Visual acuity after 15 days
1	18	Male	RE	17hours	6/24	6/9	6/6
2	21	Male	RE	22hours	6/24	6/6	6/6
3	6	Male	LE	24 hours	6/36	6/9	6/6
4	32	Female	RE	18 hours	6/9	6/6	6/6
5	22	Female	RE	4 hours	6/18	6/9	6/6
6	18	Female	LE	22 hours	6/24	6/6	6/6
7	25	Male	RE	6 hours	6/18	6/6	6/6
8	21	Male	RE	16 hours	6/9	6/6	6/6
9	50	Male	RE	2 hours	6/18	6/6	6/6
10	30	Male	LE	24 hours	6/36	6/9	6/6
11	32	Male	RE	9 hours	6/60	6/18	6/9
12	40	Male	RE	12 hours	6/36	6/9	6/6
13	40	Female	LE	24 hours	6/60	6/18	6/9
14	18	Female	LE	22 hours	6/18	6/9	6/6
15	25	Male	RE	12 hours	6/24	6/6	6/6

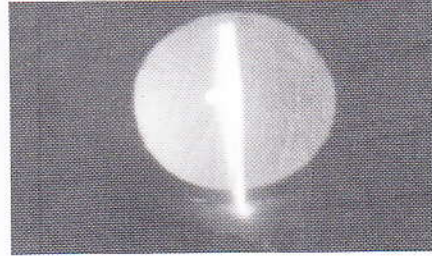


**Fluorescein staining of and conjunctiva following calotropis milk injury**

There was a case of post calotropis induced corneal ulcer due to delayed presentation at hospital and treatment taken by some local quack resulting in poor visual prognosis.



slit lamp examination of corneal edema and descemet folds



Slit lamp examination of descemet fold on retroillumination

**DISCUSSION -**

The sap of *C. procera* is **acidic** in reaction and turns blue litmus red . On keeping for some time the latex separates into a white coagulum and clear serum. Latex contains several alkaloids like **calotropin, catotoxin, calcinin, gigantín, strychnine**. The serum is highly toxic. **Gigantín** a white crystalline substance isolated from the serum has been found to be 15-20 times as poisonous as **strychnine**<sup>1</sup>. Previous reports showed that accidental contact of *Calotropis* latex into the eye caused violent keratoconjunctivitis with associated corneal edema and gross dimness of vision but without any pain. In this series, all patients presented with sudden dimness of vision with photophobia due to corneal edema with Descemet's folds. Ocular manifestation may be due to either acidic nature of milky latex or toxin present in latex. A study done by Col Shrikant Waikar , Brig V.K. Srivastava showed two stages of calotropis toxicity –

- (1) stage of acid injury                      (2) stage of toxicity

**Stage 1** manifest immediately with burning sensation, pain and photophobia. There is staining of cornea and conjunctiva due to epithelial defects as a result of acid injury.

In **Stage 2** toxic effect manifests after a few hours with diminution of vision. The noticeable cause of this was corneal oedema with folds in Descemet's membrane. It probably occurs because of toxicity to corneal endothelium<sup>1-4</sup>.

**CONCLUSION**

1. Initial first six hours of injury are critical , if patient comes with in six hours of injury then visual prognosis is good as compare to the patient who comes later.
2. Immediate wash with normal saline or plain water can prevent severe visual loss.
3. Topical steroid with cycloplegic in form of homatropine is effective drug modality with supportive treatment in form of lubricant and analgesics.
4. Local treatment is not advisable.
5. Immediate wash of hands after contact with sap to avoid contact with eyes.

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