Abstract

The use of *Calotropis* plant is widespread in the Indian system of Medicine (Ayurveda) and for religious purpose as an offering to Hindu god. Having an advantage of growing abundantly in unfavorable and harsh atmosphere, this shrub is easily found in many Indian states. We report here a case, in which a young boy developed severe corneal edema in both eyes following the application of *Calotropis* latex over the scalp area for the treatment of alopecia as prescribed by some Ayurveda practitioner. Patient responded well with the treatment including topical steroids with a complete resolution of corneal edema and persistent endothelial cell loss at the end of 6 weeks. This case report highlights the possibility of *Calotropis*-induced corneal endothelial toxicity while using it as an Ayurveda remedy and its management. Public education is must regarding this particularly in India where the use and availability of *Calotropis* shrub is widespread.

**Keywords:** Ayurveda medicine, *Calotropis procera*, corneal toxicity, endothelial toxicity, madar

Introduction

*Calotropis procera* is a wild shrub belonging to *Asclepiadaceae* family that grows abundantly in many parts of world with warm climate in dry, sandy, and alkaline soils. It is primarily found in wastelands and also as a weed in cultivated lands. It is a medium height perennial shrub that grows from 1 to 4 m in height with leaves measuring 10–13 cm wide and 17–19 cm long and flowers. It is known by various names such as Madar shrubs, Sodom apple, and Aak. It produces abundant white latex on breaking up any part of the plant. This latex has been widely used for Ayurvedic medicinal purposes such as vertigo, baldness, toothache, intermittent fever, joint swelling, and paralysis. The accidental eye contact with latex following local application as a medicinal use has been reported rarely. As elicited by history, the burn marks were visible at the hair scalp area, which were healing in nature. At the time of presentation, his visual acuity was counting-finger-close-to-face in the right eye and hand-movement-close-to-face in the left eye. The intraocular pressure (non-contact tonometry) was 10 mm Hg and 11 mm Hg in the right and left eyes, respectively. The patient had circumcilliary congestion with diffuse corneal haze associated with corneal edema and Descemet’s fold in both eyes. The intraocular pressure (non-contact tonometry) was 10 mm Hg and 11 mm Hg in the right and left eyes, respectively. The patient had circumcilliary congestion with diffuse corneal haze associated with corneal edema and Descemet’s fold in both eyes. Anterior chamber details were hazily visible, and lens status was within the normal limits. Fundus details were not visible due to the hazy media. We were not able to obtain specular count and central corneal thickness (CCT) due to...

Case Report

A 28-year-old male patient presented with the complaints of sudden diminution of vision associated with redness, watering, and photophobia in both eyes following the accidental instillation of *Calotropis* latex 1 month back. He was using this as a local application over the scalp area as a remedy for alopecia as prescribed by some local ayurvedic practitioners. As elicited by history, the burn marks were visible at the hair scalp area, which were healing in nature. At the time of presentation, his visual acuity was counting-finger-close-to-face in the right eye and hand-movement-close-to-face in the left eye. The intraocular pressure (non-contact tonometry) was 10 mm Hg and 11 mm Hg in the right and left eyes, respectively. The patient had circumcilliary congestion with diffuse corneal haze associated with corneal edema and Descemet’s fold in both eyes. Anterior chamber details were hazily visible, and lens status was within the normal limits. Fundus details were not visible due to the hazy media. We were not able to obtain specular count and central corneal thickness (CCT) due to...
poor fixation and severe photophobia. However, in subsequent visits, these were reported. On the basis of the history of contact with *C. procera* extract [Figure 1] and clinical finding, the diagnosis of *Calotropis*-induced corneal toxicity was formed. Patient was started topical moxifloxacin (0.5%), prednisolone acetate (1%), homatropine (2%), sodium chloride (5%), and carboxymethylcellulose (0.5%). After 1 week of treatment, his visual acuity improved up-to 6/18 (Snellen’s Chart) with resolving corneal edema in both eyes. On the final visit after 6 weeks of treatment, patient responded well with best-corrected visual acuity of 6/12 in the right eye and 6/9 in the left eye, respectively [Figure 2c (right eye) and d (left eye)]. The corneal thinning was observed in the right eye with the CCT of 388 μm in due to the post *Calotropis* latex corneal inflammation and 509 μm in the left eye. His specular count was low (1708 μm² in the right eye and 1857 μm² in the left eye) with pleomorphism and polymegathism.

**DISCUSSION**

*C. procera* plant contains abundant of latex which is a milky fluid consisting of many biologically active compounds. It contains several alkaloids in the sap responsible for endothelial toxicity including gigantin, which is a highly toxic and poisonous compound. In our case, we reported a gross diminution of vision with severe corneal edema and Descemet’s fold. The severity of visual loss was worse compared to the earlier series in which none of the patients had worse visual acuity than 20/200. However, Basak *et al.* reported <20/200 vision in 8 eyes of their 29 patients. There were no corneal epithelial defects and features of iridocyclitis in our case. The possible mechanism for selective corneal edema without affecting corneal epithelium might be the selective toxicity to the endothelial cells due to the intracorneal penetration of sap-containing alkaloids. Similar to our case, Basak *et al.* reported mild-to-severe corneal edema with Descemet’s fold in all patients of *Calotropis*-related ocular toxicity in their retrospective series of 29 eyes. They also reported low specular counts in the affected eyes compared to normal healthy eyes 3–6 months after recovery as shown in our case too. The accidental contact with *Calotropis* latex occurred mostly while plucking flowers or leaves for offerings to Hindu deity (Lord Shiva) during religious festival in their series of Basak *et al.* Similar to our case, the severe corneal edema with hand movement close to face vision after inoculation of latex was reported by Al Ghadeer *et al.* *Calotropis* induced ocular toxicity has also been reported in 16 army personnel during the movement of troops in Rajasthan deserts with a mild form of corneal edema in all patients. Another case series of 47 eyes from the eastern part of Madhya Pradesh, showed variable presentation of *Calotropis*-related ocular toxicity arising due to the accidental contact during worship of Hindu God. Variable loss of endothelial cells following inoculation of latex has also been reported by Al-Mezaine *et al.*

Since the use of *Calotropis* plant is heavily ingrained in traditional Indian culture, be it for religious purpose or as ayurvedic medicine, public education is must regarding the possible dreaded sight-threatening complications. These kind of ocular toxicities are totally preventable by increasing local awareness about the *Calotropis*-related ocular toxicities. They must be treated on an emergency basis, as the treatment results are fair if treated properly and within time.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Figure 1: Plant of *Calotropis procera* from which patient got accidental inoculation of latex in his both eyes while using it as a local application as an Ayurveda medicine for alopecia

Figure 2: Clinical photographs of a patient after accidental *Calotropis* latex inoculation at presentation (a: right eye and b: left eye) showing circumcular congestion with severe corneal edema and Descemet’s folds which was resolved at last visit after 6 weeks (c: right eye and d: left eye)
Conflicts of interest
There are no conflicts of interest.

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