

## **Case study**

# **Chemical injury due to pain balm- Case series**

### **ABSTRACT**

Ocular chemical injuries accounts for 11.5% to 22.1% of ocular injuries. Ocular chemical burns are an ophthalmic emergency and requires immediate treatment. We report a series of three cases of chemical injury secondary to accidental exposure to red balm used as local application for headache. In our cases menthol, cajuput oil and capsaicin might have contributed to chemical injury and nerve damage. Nerve damage might have lead to delayed epithelial healing. All three patients improved completely within 1 to 3 week.

### **KEYWORDS**

Chemical injury, red balm, balm injury, cornea

### **INTRODUCTION**

Ocular chemical injuries accounts for 11.5% to 22.1% of ocular injuries. Ocular chemical burns are an ophthalmic emergency and requires immediate treatment. [1,6,7,8,9] After chemical injury, the goal of therapy is to restore a normal ocular surface and corneal clarity.[2,3,4,10] As per our knowledge no case reports of chemical injury due to red balm are reported. We report a series of three cases of chemical injury secondary to accidental exposure to red balm used as local application for headache.

## CASE REPORT

Three patients presented to us on different days with sudden diminution of vision, pain, redness, watering and photophobia. All three patients had history of accidental entry of red balm while applying on forehead for headache. Two patients had bilateral while one had unilateral presentation. On examination all three patients had decreased visual acuity with lid edema. On slit lamp examination conjunctival congestion, corneal epithelial defect and diffuse corneal edema was present. Epithelial defect was fluroscein stain positive. Rest of the anterior segment examination was normal. Intraocular pressure measured with non contact method was within normal limit in all cases. (Table 1) After giving thorough saline wash, all patient were started on topical Gatifloxacin 0.3% with Prednisolone 1%, Carboxy\_methyl\_cellulose eye drop 1%, Atropine sulphate eye drop 1%, along with bandage contact lens. Systemic steroids according to weight was given and tapered, systemic vitamin C 500 mg thrice a day, analgesic and antacid for 3 days were given. All three patients improved completely within 1 to 3 week.(Table 1) In case 1, epithelial defect was completely healed by day 10 but stromal edema has taken 3 weeks to resolve completely. Case 2 responded very well to treatment with

improvement in vision and almost showed healed epithelial defect with minimal stromal edema by day 10, complete recovery took almost 2 weeks. In case 3, stromal edema resolved completely after 10 days, but epithelial defect had taken a long course of around 3 weeks to completely heal.

**Table 1 Epidemiological profile**

	Case 1		Case 2		Case 3
Age/sex	64/Female		60/Female		62/Female
	RE	LE	RE	LE	LE
Visual acuity at presentation	CFCF	CFCF	6/60	3/60	3/60
Conjunctival congestion	+	+	+	+	+
Corneal epithelial defect	8x7mm corneal epithelial defect	7x6.5mm corneal epithelial defect	5.5x4.5mm central corneal epithelial defect	5.5x5mm central corneal epithelial defect	7x6.5mm corneal epithelial defect
Corneal edema	+	+	+	+	+
IOP(mmHg)	16	14	18	16	14
Duration of recovery	3 week	3 week	2week	2 week	3 week
Final visual acuity	6/60	6/60	6/24	6/36	6/12

## DISCUSSION

The chemical injury was caused by red balm in these cases which was for local application for relieving pain such as headache, joint pain. The main constituent in this balm is Menthol 20%, Oil of

Gaultheria 25%, Cajuput Oil 5%, Clove Oil 5%, Capsaicin Extract 0.02%. Out of these, capsaicin related ocular chemical injuries are reported in past.[2,3] Menthol also causes ocular surface damage.[4 ] Both cajuput oil and capsaicin are irritant and causes ocular surface damage. Capsaicin is the principal ingredient of pepper spray. Confocal microscopic examination of the cornea after exposure to pepper spray has revealed nerve damage and keratocyte activation within the anterior two-thirds of the stroma.[5] The physiology underlying the toxic effect of capsaicin involves massive calcium entrance that leads to cell damage and functional inactivation rendering the nerve endings insensitive to further stimuli.[2]

In our cases menthol, cajuput oil and capsaicin might have contributed to chemical injury and nerve damage. Nerve damage may have lead to delayed epithelial healing. Therefore it is best to use these products cautiously to prevent chemical injury.

## **CONCLUSION**

Menthol, cajuput oil and capsaicin are common constituents of red balm and causes severe chemical injuries to eye. These injuries should be treated promptly. It may require long period to heal epithelial defect and stromal edema to resolve. So it is best to prevent these accidental exposure.

### **Ethical Approval:**

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

### **Consent**

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

#### **COMPETING INTERESTS:**

**Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.**

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