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AYURVEDIC MANAGEMENT OF FUNGAL KERATITIS – A CASE REPORT

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ABSTRACT

Fungal keratitis or keratomycosis refers to an infective process of the cornea caused by any of the multiple fungi capable of invading the ocular surface.[1] Risk factors include trauma, ocular surface disease, and topical steroid use. Risks and type of fungi also might vary by geographic location and climate.The infection probably starts when the epithelial integrity is broken either due to trauma or ocular surface disease and the organism gains access into the tissue and proliferates. Diagnosis is confirmed using slit lamp bio microscopy evaluation.

A 28year old male patient reported to the OPD of Department of Shalakya Tantra Sri Dharmasthala Manjunatheshwara Ayurveda Hospital Hassan, with complaints of pain, watering, photophobia, redness, swelling of the eyelids and diminished vision in the right eye. Patient presented with a history of trauma to the right eye due to a twig while unloading the goods at the market. Patient did not seek any medical assistance elsewhere and approached our hospital 2 days after the said incident. Patient was not a known case of diabetes mellitus and hypertension and was not on medications for any other conditions.

Visual acuity in the right eye was 6/36 with no pinhole improvement. His visual acuity was 6/9 bilaterally and also in the left eye. The near vision reading was N12 in the right eye and was recorded to be N6 in the left eye.

Treatment was provided on an outpatient basis and significant relief was noted with prevention of further spread. Hence, the treatment approach was found to be effective.

KEY WORDS: *Fungal Keratitis, Corneal Epithelium, Epithelial Integrity*

INTRODUCTION

Fungal keratitis or keratomycosis refers to an infective process of the cornea caused by any of the multiple fungi capable of invading the ocular surface.[1] Fungal keratitis is a serious ocular infection with potentially catastrophic visual results.

In his description of *Kshatasukla*, *Acharya Vagabata* identified three concentric layers of *Krishnamandala*, and labelled them as *Twacham* (outermost), *Dwitheeya* (middle), and *Thritheeya* (innermost) mandala. The prognosis of the condition worsens as the injury extends to deeper layers, with increasingly severe symptoms and signs. If left untreated, the condition can progress and become *Asadya*.[2]

The progression of corneal opacities—ranging from nebular, macular, to leucomatous types—reflects the deepening involvement of corneal layers, much like the pathogenesis of Kshata Sukla. In the early stages, when only the superficial layer is affected, the condition is more easily treatable and manageable with Sadyovrana Chikitsa, which is a therapeutic approach for superficial wounds. However, as the opacity penetrates deeper into the corneal layers, such as Bowman's layer, half of the stroma, or even beyond, the prognosis becomes increasingly poor, and treatment becomes more difficult.[2]

CASE REPORT

Patient Information

A 28year old male patient reported to the OPD of Department of Shalakya Tantra Sri Dharmasthala Manjunatheshwara Ayurveda Hospital Hassan, with complaints of pain, watering, photophobia, redness, swelling of the eyelids and diminished vision in the right eye. Patient presented with a history of trauma to the right eye due to a twig while unloading the goods at the market. Patient did not seek any medical assistance elsewhere and approached our hospital 2 days after the said incident. Patient was not a known case of diabetes mellitus and hypertension and was not on medications for any other conditions. (Table 1: Historical and current information of the case)

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Clinical Findings
Visual acuity in the right eye was 6/36 with no pinhole improvement. His visual acuity was 6/9 bilaterally and also in the left eye. The near vision reading was N12 in the right eye and was recorded to be N6 in the left eye.
Corneal sensations were found to be diminished; however no corneal vascularization was found. Anterior chamber examination did not reveal the presence of any flares or cells which indicated the absence of uveitis. (Table 2: clinical findings)

Diagnostic Assessment
Slit-lamp examination revealed severe circum-ciliary congestion. On staining the right eye with fluorescein dye, presence the of a greyish -white ulcer in the right lower quadrant on the temporal side of the cornea with elevated rolled out margins were found.

Diagnosis
Based on the clinical presentation and the examination findings, the case was diagnosed as Fungal Keratitis.

Therapeutic Intervention
The treatments were administered on an outpatient basis. Course of treatments were started with *Panchatiktaka guggulu ghrita, Capsule Grab* and *Syrup Shodhak as internal medications.* Topically, *Eye plus eyedrops* were instilled and the patient was advised to come for a follow up after 3 days. Patient was advised to use protective glasses, avoid exposure to sunlight and breeze and avoid rubbing of the affected eye.
(Table 3: Therapeutic Intervention)

Follow- up and Outcomes
Patient was followed – up on Day-3 during which his visual acuity in the right eye improved from 6/36 to 6/9. Circum-ciliary congestion had significantly reduced and the stain was partially retained with reduction in the area of the ulcer.

Follow- up on Day-15 showed a stable visual acuity of 6/9 in the right eye along with complete absence of circum- ciliary congestion. The stain was not retained which indicated a healed ulcer leaving behind an opacity. (Table 4: Follow up)

DISCUSSION
Patient experienced considerable relief from symptoms like pain, watering and photophobia within 48 hours of onset of the treatment. Appreciable amount of decrease in the circum-ciliary congestion was also noted.

Capsule Grab has the following ingredients-*Vranapahari Rasa, Triphala guggulu, Gandhaka Rasayana, Arogyavardhini vati, and Guduchi.*

Vranapahari rasa consists of *Suddha Parada, gandhaka, haratala, manashila, Shodhita guggulu and Shodhita Triphala*.[3]The *tikshnatwa* of *dravyas* like *Shodhita haratala* and *Manashila* are balanced by dravyas like *Triphala* and *guggulu*; and *Shodhita Parada* ensures faster and quicker circulation of its active ingredients. The anti-inflammatory and analgesic activity is taken care of by guggulu and faster wound contraction is further enhanced by haratala and manashila. This may ensure better and faster wound healing.

Triphala guggulu's constituents, both as a whole and individually, possesses anti-inflammatory and analgesic properties, contributing to the pain relief and faster wound healing. *Triphala* being *tridoshahara* in nature and *pippali* being *anushnasheeta* in *veerya* and owing to its katu rasa acts as *pacahaka* and is *kapha* vata hara. The *kledahara* and *shothahara* karma of guggulu acts by relieving the srotorodha, and may reduce the cicum ciliary congestion and pain. The *guna karmas* of the *Vibhitaki* may have accelerated the healing process by tackling the fungal growth due to its anti-fungal activity.[4] *Guggulu* is *Kaphavatahara, Kledahara* and its *tikta-Kashaya rasa* and can aid in the treatment of *Shopha.* The *ushna veerya* of *Guggulu* does *vata shamana* and relieves *srotorodha,* thereby aiding in the process of wound healing.

Gandhaka has *Madhura- katu rasa, ushna veerya,* hence possess *Kaphavatahara, Deepana* and *pachana gunas.* Further, *Gandhaka* by nature possess *Jantughna karma* which might have played a role in halting the pathogenesis. These *gunas* of *Gandhaka Rasayana* are augmented by repeated *bhavana samskara* by using various *kashtoushadhis* like *Chaturjata, Guduchi, Bhringaraja, Triphala,* and *Ardraka* which facilitates wound healing by acting as anti-inflammatory and analgesic.[5]

Panchatiktaka guggulu ghrita due to its *tikta kashaya rasa, katu vipaka* and *ushna veerya*, it is *kapha vata shamaka*. It is a drug of choice in *savrana shukla*. The main ingredients of this are the *dravyas* belonging to the *panchatikta gana, ghrita and guggulu.* All the ingredients majorly have *tikta rasa* and *laghu-ruksha gunas,* hence they mainly act on *kelda, and shelshma.*[6]*Nimba,* contains compounds like, Nimbidin, which exhibit potent anti-inflammatory and anti-ulcer properties.*Guduchi,*is rich in berberin and tinosporin which primarily function as antioxidants and immune boosters, enhancing cellular defence mechanism during the disease process. *Vasa* contains Vascicinone, which possess anti-histaminic, anti-oxidant and anti-inflammatory properties. *Patola* is known for its anti-oxidant properties, while *Nidigdhika* exhibits anti-histaminic effects. *Ghrita* exhibits lipophilic properties, facilitating the transport of ions to target organs and enhancing the intracellular delivery of drugs. It is indicated in *Urdhwajatrugata vikaras.*
Syrup Shodhak consists of *Manjishtadi Kashaya* and *pancha nimba churna*. *Manjistadi Kashaya* contains the following ingredients- *Manjistha, Haritaki, Amalaki, Guduchi, Yastimdhu, Daruharidra, Vasa, Pippali* and *Chitaraka.* All these ingredients are *Ushna* in *Veerya* and are *Teekshna guna yukta.* Hence, they might have an effect on the *dooshita kapha* and may facilitate *vrana shodhana*.
Eye plus eyedrops contains drugs like *Padmakam, Tulasi, Jati, Shatapatri, Durva, Madhu* and *Karpoora*. These dravyas possess mild *lekhana* effect, which is the first line of treatment in conditions involving *vrana* in the *Krishna mandala*.

The combination of all these *yogas* with their *guna karma's* might have helped in wound healing and tissue regrowth, thereby allowing epithelialisation of the tissue.

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CONCLUSION

In the present case, it was found that usage of combinations containing *tikta kashaya rasas* and *lekhana* effect showed significant relief in the symptoms experienced by the patient. This treatment protocol was found to be effective as it not only helped in giving a symptomatic relief to the patient but also prevented further increase in the lesion and ensured an improvement in the visual acuity of the affected eye.

Patient's Perspective

The patient's response to the treatments was highly positive. Following the treatments, the patient reported significant improvement in his symptoms, experiencing substantial relief from photophobia, watering of the eye and improvement in the vision.

Declaration of Patient Consent

The authors have secured consent from the patient for publication, with assurances of confidentiality and protection of identity.

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Nil

Conflicts of Interest

There are no conflicts of interest.

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Table 1: Timeline

Historical and current information of the case

DATE	RELEVANT INFORMATION
10/10/2023	History of trauma to the right eye due to a twig while unloading the goods at the market. Patient did not seek any medical assistance elsewhere and approached our hospital 2 days after the said incident
13/10/2023	Presented with c/o pain, watering, photophobia, redness, swelling of the eyelids and diminished vision in the right eye.

TABLE 2: CLINICAL FINDINGS

DAY	VISUAL ACUITY				OBSERVATION	
DAY-1		RE	LE	B/L	• Severe circum-ciliary congestion • Fluorescence staining- greyish-white ulcer with elevated rolled out margins	
	VA	6/36	6/9	6/9		
	PH	NI	NI			
	NV	N12	N6	N6		
DAY-3		RE	LE	B/L	• Circum-ciliary congestion- reduced • Fluorescence staining- partially retained stain with reduction in the area of ulcer	
	VA	6/9	6/6(P)	6/6(P)		
	PH	6/6 (P)	6/6(P)			
	NV	N12	N6	N6		

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DAY-15		RE	LE	B/L	• Circum-ciliary congestion- absent • Fluorescence staining- stain was not retained indicating a healed ulcer leaving behind an opacity	
	VA	6/9	6/6(P)	6/6(P)		
	NV	N6	N6	N6		

TABLE 3: THERAPEUTIC INTERVNTION

INTERNAL MEDICINES

SERIAL NUMBER	MEDICINE	DOSAGE	NUMBER OF DAYS
1.	Pancha tiktaka guggulu ghrita	10ml-0-0 In the morning on empty stomach	15
2.	Cap Grab	1 -0-1 (A/F)	15
3.	Syrup Shodhak	15ml-0-15ml(B/F)	15

TOPICAL INSTILLATION

SERIAL NUMBER	MEDICINE	DOSAGE	NUMBER OF DAYS
1.	EYE PLUS EYEDROPS	2 drops every two hourly for the first 5 days Then 2 drops TID for the next 10 days	15

TABLE 4: FOLLOW UP

DAY-15		RE	LE	B/L	• Circum-ciliary congestion- absent • Fluorescence staining- stain was not retained indicating a healed ulcer leaving behind an opacity	
	VA	6/9	6/6(P)	6/6(P)		
	NV	N6	N6	N6		