

Cluster cases of severe microbial keratitis following unsupervised usage of corticosteroid–antibiotic combination for the recent conjunctivitis outbreak in India

Dear Editor,

Conjunctivitis epidemics/pink eye is highly transmissible and can occur sporadically or follow seasonal patterns, affecting populations of all ages and socioeconomic strata.^[1,2] Most cases are self-resolving and need no specific medications for resolution. Therefore, it is essential to differentiate conjunctivitis from other vision-threatening causes of acute red eyes, such as keratitis, uveitis, scleritis, acute angle closure glaucoma, endophthalmitis, carotid-cavernous fistula, and cellulitis.

Nearly 80% of epidemic conjunctivitis outbreaks are presumed to be of viral origin, most commonly adenovirus (pharyngoconjunctival fever and epidemic

keratoconjunctivitis), with other causes being rubella, rubeola, herpes, coxsackievirus A24, and enterovirus 70. Most published literature lacks proper microbiological workup, surveillance, prevention, and treatment guidelines.^[3,4] India has witnessed a recent outbreak of epidemic conjunctivitis, popularly referred to as “Eye Flu,” this year (July–August 2023) from all over the country with the onset of heavy rainfall.

We report a cluster of seven severe microbial keratitis (MK) cases following the unsupervised use of a topical corticosteroid–antibiotics combination for conjunctivitis from July to August 2023. The mean age was 44.9 ± 21.4 (range: 11–62) years, with a male: female ratio of 4:3. All patients were diagnosed with conjunctivitis elsewhere, 7.9 ± 2.4 (range: 4–10) days back. They had been prescribed topical corticosteroid–antibiotic combinations 2–4 hourly/day (moxifloxacin 0.5% or ciprofloxacin 0.3% + dexamethasone 0.1%) by local ophthalmologists. All cases had contact history, and bilateral conjunctivitis was present in 5/7 cases, with the most severely affected eye developing MK. On slit-lamp examination, the mean size of the corneal infiltrate was 7.04 ± 1.4 and 6.2 ± 1.6 mm in horizontal and vertical dimensions,

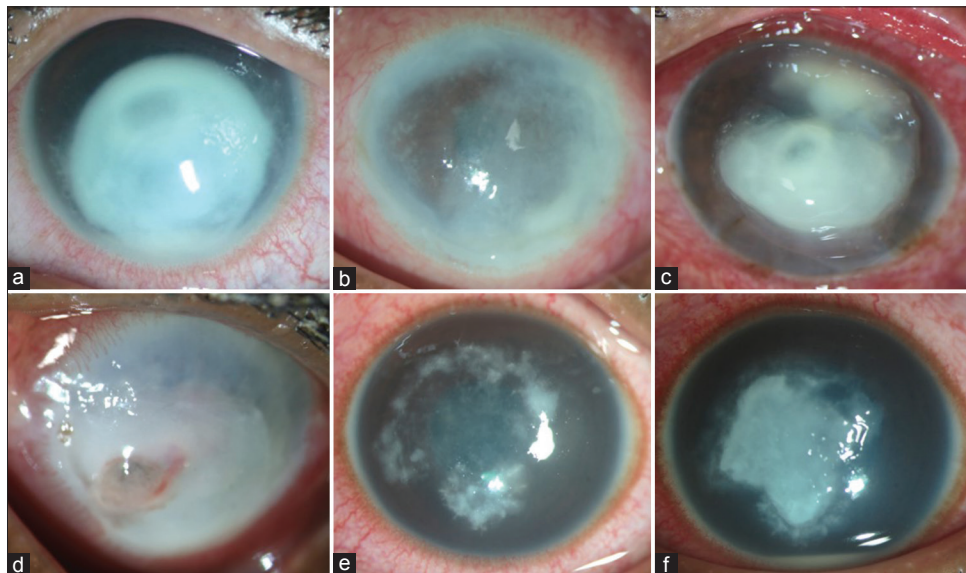


Figure 1: Diffuse slit-lamp pictures on presentation, Cases 3 (a) and 7 (b) larger corneal infiltrate and hypopyon; Cases 2 (c) and 5 (d) with perforation, all requiring therapeutic penetrating keratoplasty; Case 1 (e) at presentation, (f) response to medical management in 1 week

Table 1: The demographic and clinical profile, microbiological results, and treatment of all seven cases of microbial keratitis

Case	Age (in years)/ Sex	Conjunctivitis History-UL/BL (DOS in days)	Ulcer Size (in mm)		Smear	Culture	Management	
			H	V			Medical	Surgical (days from presentation)
1.	11/F	BL (4)	7.8	8	FF	<i>Aspergillus flavus</i> <i>Pseudomonas aeruginosa</i>	Natamycin 5% + Tobramycin 0.3% + Ketoconazole 200 mg	NA*
2.	49/M	UL (10)	8	7	FF	NG	Natamycin 5% + Ketoconazole 200 mg	TABCL (2) TPK (10)
3.	12/M	BL (10)	8.4	7.5	FF	<i>Fusarium</i>	Natamycin 5% + Ketoconazole 200 mg	TABCL (1) TPK (6)
4.	59/F	BL (8)	6.5	5	FF	<i>Fusarium</i>	Natamycin 5% + Ketoconazole 200 mg	TABCL (14)
5.	66/M	UL (7)	5.5	4.5	FF	NG	Natamycin 5% + Ketoconazole 200 mg	TPK (12)
6.	59/M	BL (10)	4.5	4	FF	<i>Cryptococcus laurentii</i>	Natamycin 5% + Ketoconazole 200 mg	NA*
7.	62/F	BL (4)	8.8	8	FF	<i>Colletorichum dematium</i>	Natamycin 5% + Ketoconazole 200 mg	TPK (5)

F - Female, M - Male, UL - Unilateral, BL - Bilateral, DOS - Duration of symptoms, H - Horizontal, V - Vertical, NG - No growth, FF - Fungal filaments, NA - Not applicable, *responded to medical management, TABCL - Tissue adhesive and bandage contact lens, TPK - Therapeutic penetrating keratoplasty

respectively [Fig. 1]. The location of the infiltrate was mid-deep stromal in four and anterior-mid stromal in three, with hypopyon [Fig. 1a and b] and perforation [Fig. 1c and d] present in three patients each.

On microbiological evaluation, all cases revealed fungal filaments on the smear examination of corneal scrapings. Five patients were culture positive: *Fusarium* species (2), *Cryptococcus laurentii* (1), *Colletorichum dematium* (1), and *Aspergillus flavus* + *Pseudomonas aeruginosa* (1). Previously used corticosteroid-antibiotic eye drops were available with three patients and were culture-negative. Surgical management was advised in five (71.4%), tissue adhesives in three, and therapeutic penetrating keratoplasty in four within 7.1 ± 4.6 days of presentation [Fig. 1a–d]. The remaining two responded to medical management (natamycin 0.5% eye drops and ketoconazole 200 mg tablets) within a week, with consolidation of the infiltrate size. The mean duration of follow-up was 14 ± 0.9 days [Table 1].

Topical antibiotics in adenoviral conjunctivitis have a limited role in preventing superadded bacterial infections and are not advisable to avoid antimicrobial resistance.^[5] The role of topical corticosteroids is controversial and requires judicious case selection limited to the presence of severe symptoms or subepithelial infiltrates, pseudo membranes, or rarely iridocyclitis.^[6] Although topical corticosteroids alleviate the symptoms faster, they do not decrease the disease duration and prolong adenovirus shedding, thus increasing transmissibility. Other complications are steroid dependency, cataract, and glaucoma.^[6] In addition, missed diagnosis of herpes, acanthamoeba, and fungal keratitis can result in sight-threatening exacerbations with topical corticosteroids.^[4]

All the cases of MK in our study were found to be of fungal etiology and were using highly potent corticosteroids (dexamethasone) in combination with antibiotics. Fungal keratitis (FK) is a leading cause of corneal blindness in tropical countries with a chronic indolent course and is often misdiagnosed.^[7] Topical corticosteroids have been associated with rapid progression and worse clinical outcomes in FK due to local immunosuppression, enhanced fungal replication, and subdued effectiveness of antifungals.^[8]

All of our cases had an acute onset within 10 days, larger infiltrate (4.5–8.8 mm), deep stromal involvement (43%), and perforation or hypopyon (57%) and required an early surgical intervention (71%).

This brief communication represents the tip of the iceberg, with limitations of patient recall bias or missed clinical history documentation. This highlights the need for proper epidemiological surveillance of conjunctivitis outbreaks and raising public awareness by the government at the community and primary healthcare levels regarding the disease course and preventive measures. Structured treatment guidelines should be implemented universally with restrictive prescriptions of topical antibiotics/corticosteroids.

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**Amrita Mohanty, Joveeta Joseph¹, Ahmed A Pasha²,
Bhupesh Bagga**

Cornea and Anterior Segment Service, Shantilal Shanghvi Cornea Institute, L. V. Prasad Eye Institute, Kallam Anji Reddy Campus, Hyderabad, Telangana, ¹Jhaveri Microbiology Centre, ²Electronic Medical Record, L. V. Prasad Eye Institute, Kallam Anji Reddy Campus, Hyderabad, Telangana, India

Correspondence to: Dr. Bhupesh Bagga, Ramoji Foundation Centre for Ocular Infection, Shantilal Shanghvi Cornea Institute, L. V. Prasad Eye Institute, Kallam Anji Reddy Campus, Hyderabad, India. E-mail: bhupesh@lvpei.org

References

- Azari AA, Barney NP. Conjunctivitis: A systematic review of diagnosis and treatment [published correction appears in JAMA 2014;311:95. Dosage error in article text]. JAMA 2013;310:1721-9.
- Azari AA, Arabi A. Conjunctivitis: A systematic review. J Ophthalmic Res 2020;15:372-95.
- Kaur G, Seitzman GD, Lietman TM, McLeod SD, Porco TC, Doan TD, et al. Keeping an eye on pink eye: A global conjunctivitis outbreak expert survey. Int Health 2022;14:542-4.

4. Jhanji V, Chan T, Li E, Agarwal K, Vajpayee RB. Adenoviral keratoconjunctivitis. *Surv Ophthalmol* 2015;5:435-43.
5. World Health Organization. Antimicrobial Resistance: Global Report on Surveillance. World Health Organization; 2014. Available from: <https://apps.who.int/iris/handle/10665/112642>. [Last accessed on 2022 Sep 15].
6. Holland EJ, Fingeret M, Mah FS. Use of topical steroids in conjunctivitis: A review of the evidence. *Cornea* 2019;38:1062-7.
7. Atta S, Perera C, Kowalski RP, Jhanji V. Fungal keratitis: Clinical features, risk factors, treatment, and outcomes. *J Fungi* 2022;8:962.
8. Prajna NV, Krishnan T, Mascarenhas J, Srinivasan M, Oldenburg CE, Toutain-Kidd CM, *et al.* Predictors of outcome in fungal keratitis. *Eye (London, England)* 2012;26:1226-31.

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