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Clinical Features and Management of Ocular Stevens-Johnson Syndrome at a Tertiary Care Centre

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Abstract: ***Purpose**: To analyse the clinical presentation, etiology, and management of SJS patients with ocular involvement. **Methods**: A prospective study was conducted at a tertiary care centre in South India from December 2022 to June 2024. Laterality, presentation, probable etiological variables, and comprehensive ocular results were recorded. Results: 11 cases were diagnosed over 1.5 years, all had bilateral involvement. The most common cause was drug use, notably antibiotics. Lid involvement was observed in 90.90% of patients, conjunctival in 72.72%, and corneal in 81.8%. Treatment modalities included lubricating drops, topical steroids, antibiotics, immunosuppressants, and bandage contact lenses. Three patients with severe cases underwent amniotic membrane transplant. **Conclusion**: SJS causes significant ocular morbidity. Timely ophthalmic intervention and advancements such as amniotic membrane grafting are crucial in reducing corneal blindness and improving quality of life.*

Keywords: Stevens-Johnson Syndrome, ocular complications, amniotic membrane transplant, drug-induced SJS

1. Introduction

Stevens-Johnson syndrome and its severe variant, toxic epidermal necrolysis (TEN), are acute, immune-mediated mucocutaneous reactions typically precipitated by adverse drug reactions or infections. Although these syndromes primarily affect the skin, ocular involvement is common and may lead to significant ocular morbidity.

The spectrum of ocular manifestations ranges from mild conjunctivitis and transient corneal epithelial defects to chronic conjunctival scarring, symblepharon formation, limbal stem cell deficiency, severe dry eye, and corneal blindness. Early diagnosis and aggressive management are therefore paramount in preserving vision and enhancing quality of life among affected patients. Kompella et al. (2002) described a wide array of ocular complications at a tertiary eye care centre, emphasizing the importance of prompt ophthalmic intervention to avert long-term sequelae.

Given the continuously evolving landscape of ocular SJS management, our study focuses on current clinical profiles and therapeutic modalities, with particular emphasis on both medical and surgical interventions used in our tertiary centre.

2. Materials and Methods

A prospective study was executed at a tertiary eye care centre in South India between December 2022 and June 2024. The study protocol adhered to institutional review board guidelines and ethics committee approval was obtained prior to initiating the study.

Eleven consecutive patients diagnosed with ocular manifestations of SJS were enrolled. Informed consent was obtained from all participants. An extensive history focusing on possible etiological triggers—especially recent drug intake (with antibiotics being the most common causative agents)—was recorded. Demographic details, symptom duration, and ocular history were also documented.

Clinical Evaluation:
Each patient underwent a comprehensive ophthalmologic examination, which included:

- Visual Acuity Assessment: Best-corrected visual acuity (BCVA) measurements ranged from 6/12 to counting fingers at 1 meter.
- Anterior Segment Examination: Slit-lamp evaluation was conducted to assess the lids, conjunctiva, and cornea. Specific attention was given to signs of inflammation, epithelial defects, symblepharon formation, and limbal deficiency.
- Additional Diagnostic Procedures: In cases of suspected severe ocular surface disease, adjunctive investigational modalities (such as fluorescein staining) were employed.

Management Protocol:
The treatment approach was individualized:

- **Medical Therapy:** All patients received topical lubricants (tear substitutes), corticosteroids (to reduce inflammation), antibiotics (to prevent secondary infection), cycloplegics (to alleviate ciliary spasm), and immunosuppressants in selected cases. Frequent irrigation of superior and inferior fornices was performed.
- **Adjuvant measures and Surgical Intervention:** Procedures such as symblepharon release and glass rod-assisted manoeuvres were employed as needed. Specifically, 27.7% of patients underwent electrolysis for trichiasis, 18.1% received Bandage contact lens and 54.5% underwent punctal occlusion to manage severe dry eye. In

the three patients (27.3%) with severe ocular surface involvement, amniotic membrane transplantation (AMT) was undertaken.

3. Results

During the 1.5-year study period, 11 patients with ocular SJS were identified. All patients presented with bilateral involvement. The demographic profile revealed a predominance of cases in the adult population, with the majority having a history of recent antibiotic use (accounting for 81.8% of cases), consistent with previous literature.
Visual Acuity and Anterior Segment Findings: BCVA values ranged from 6/12 in milder cases to counting fingers at 1 meter in more severe involvement. Slit-lamp evaluation showed:

- Lid abnormalities were present in 90.9% of patients, manifesting as lid edema, misdirected eyelashes, or cicatricial changes.
- Conjunctival involvement, noted in 72.7% of cases, included features of acute conjunctivitis and early symblepharon formation.
- Corneal changes were observed in 81.8% of cases, characterized by epithelial defects, superficial punctate keratopathy, and in some instances, early scarring.

Table 1: Ocular complications in Stevens-Johnson Syndrome

Ocular structure involved	Ocular findings	No.of patients
Eyelids (90.9%)	Thickening/edema	6
	Meibominitis/bhlepharitis	7
	Trichiasis	3
	Distichiasis	2
	Thick discharge	3
Conjunctiva (72.7%)	Congestion	5
	Xerosis	6
	Symblepharon	4
	Ankyloblepharon	2
Cornea (81.8%)	Vascularization	6
	Superficial punctate keratitis	5
	Keratinization	3
	Thinning	2

Therapeutic Interventions and Outcomes:
Every patient was initially managed medically with intensive topical regimens. In cases with severe inflammatory signs and extensive epithelial defects, more aggressive management was adopted:

- Three patients with advanced ocular surface involvement received AMT, which resulted in stabilization of the ocular surface and a reduction in chronic inflammation.
- Additional interventions, such as electrolysis for trichiasis (27.27%) and punctal occlusion (54.5%), were essential adjuncts in managing the sequelae of the inflammatory process.
- Bandage contact lenses were utilized in two patients (18.1%) to promote corneal healing and to provide symptomatic relief.

Table 2: Adjuvant measures and surgical intervention employed

Technique	Percentage of patients
Electrolysis for trichiasis	27.7%
Punctal occlusion	54.5%
Bandage contact lens	18.1%
Amniotic membrane graft	27.27%

Figure 1: Ocular SJS with lid edema, thick discharge

Figure 2: After 3 months of treatment

4. Discussion

Ocular manifestations in SJS pose a significant therapeutic challenge. The multifactorial pathophysiology—including an acute inflammatory cascade, direct drug toxicity, and secondary microbial colonization—contributes to the complex clinical picture. Our study reaffirms the role of specific drugs, particularly antibiotics, as predominant triggers in the South Indian context, echoing the findings of Kompella et al. (2002) and Pradeep and Shetti (2022).

Pathophysiology and Ocular Surface Disruption:
The acute phase of SJS is characterized by an intense inflammatory response that compromises not only the skin but also the delicate ocular surface. The subsequent healing process can precipitate conjunctival scarring, symblepharon, and limbal stem cell loss. Recent work by Kittipibul and Puangsricharern (2021) underlines the role of ocular surface microbiome dysregulation in exacerbating inflammation and delaying recovery. Furthermore, Sotozono et al. (2018) noted that severe dry eye in SJS results from combined mechanisms—namely, aqueous deficiency, poor tear film stability, and increased evaporation—which are often underappreciated in the initial clinical evaluation.

Treatment Modalities:
Early and aggressive treatment remains the cornerstone of managing ocular SJS. Our regimen—combining topical

corticosteroids, antibiotics, immunosuppressants, and tear substitutes—mirrors contemporary best practices. The timely initiation of these therapies can reduce inflammatory damage when applied within the first week of symptom onset. In patients with more severe ocular involvement, surgical techniques such as AMT have emerged as valuable tools to rehabilitate the ocular surface. Sharma et al (2016) concluded that Amniotic membrane transplantation is a useful adjunct to conventional medical therapy in maintaining BCVA and a stable ocular surface in cases of acute ocular SJS, and the adjunctive use of AMT also helps to prevent intermediate-term ocular cicatricial sequelae.

Comparative Analysis:
Our clinical findings are consistent with previous Indian studies that have reported high rates of lid, conjunctival, and corneal involvement. The high incidence of bilateral involvement reinforces the need for systemic as well as topical therapeutic strategies. Additionally, the integration of adjunctive therapies such as punctal occlusion and electrolysis for trichiasis addresses the multifaceted nature of ocular SJS sequelae. Recent literature emphasizes that maintaining ocular surface moisture and minimizing evaporative loss are essential in preventing the progression of dry eye symptoms and subsequent vision loss.

5. Conclusion

Ocular SJS is an acutely devastating condition that can lead to profound long-term visual impairment if not managed promptly. Our study underscores the critical importance of early ophthalmic consultation and tailored treatment protocols in the management of ocular SJS. The integration of conventional topical therapy with innovative surgical techniques such as amniotic membrane transplantation significantly contributes to ocular surface rehabilitation and visual preservation. Future research must continue to explore the interplay between ocular inflammation, microbial dysbiosis, and regenerative strategies to further enhance patient outcomes.

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