Original Research Paper

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Ophthalomology

OCULAR MANIFESTATIONS OF STEVENS-JOHNSON SYNDROME

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ABSTRACT Stevens-Johnson Syndrome (SJS) frequently cause severe ocular complications ranging from acute inflammation to chronic cicatricial damage. This case series of four patients illustrates the spectrum of ocular involvement and highlights the critical importance of early ophthalmologic assessment and intervention. Surgical treatments such as amniotic membrane transplantation, symblepharon lysis, and limbal stem cell transplantation significantly improve visual outcomes. Delayed or absent treatment results in irreversible vision loss, underscoring the need for multidisciplinary care and timely management to preserve sight. In this series, patients receiving acute-phase amniotic membrane grafting demonstrated significantly reduced eyelid margin keratinization and better maintenance of the ocular surface environment compared to those presenting late. The latter group required complex reconstruction for advanced sequelae, including severe dry eye and ankyloblepharon. Long-term follow-up revealed that while late-stage interventions can restore some functional vision, the visual prognosis remains superior in eyes managed aggressively at onset. Consequently, we propose a standardized protocol integrating ophthalmology consultation immediately upon SJS diagnosis to mitigate the devastating progression of cicatrizing conjunctivitis and ensure optimal visual rehabilitation.

KEYWORDS : Stevens-Johnson Syndrome, Amniotic Membrane Transplantation, Cicatrizing Conjunctivitis, Limbal Stem Cell Transplantation, Symblepharon Lysis, Visual Rehabilitation

INTRODUCTION

Stevens-Johnson Syndrome (SJS) and its more severe counterpart, Toxic Epidermal Necrolysis (TEN), are rare but life-threatening mucocutaneous hypersensitivity reactions, most commonly triggered by medications such as antibiotics, anticonvulsants, and non-steroidal anti-inflammatory drugs (NSAIDs) [1,2]. While these conditions initially present with systemic symptoms such as fever, malaise, and widespread epithelial detachment, ocular involvement is both frequent and often severe [3]. In the acute phase, more than 50% of patients exhibit ocular manifestations, including conjunctivitis, corneal epithelial defects, and intense ocular surface inflammation [4]. Without timely intervention, these acute symptoms may progress to chronic sequelae such as symblepharon formation, conjunctival cicatrization, corneal scarring, limbal stem cell deficiency, and irreversible vision loss [5].

Early ophthalmologic assessment and interventions—particularly the use of amniotic membrane transplantation—have demonstrated efficacy in mitigating long-term ocular complications [6]. A growing body of literature, including multiple case series, has documented the heterogeneity of ocular manifestations and the variable responses to medical and surgical treatment [7].

Innovations such as scleral lenses, mucous membrane grafts, and keratoprosthesis have provided functional visual rehabilitation in select patients [8]. Outcomes, however, remain highly dependent on patient age, timing of intervention, and severity of initial ocular involvement.

This prospective observational review synthesizes current evidence on the spectrum of ocular manifestations in SJS/TEN, with a focus on clinical presentation, therapeutic strategies, and prognostic indicators, highlighting the urgent need for early, individualized ophthalmologic management to preserve visual function.

Case Study 1

A 56-year-old female reported redness, photophobia, watering, and diminution of vision following ingestion of non-steroidal anti-inflammatory drugs (NSAIDs). Ocular examination showed conjunctival hyperemia, pseudomembrane formation, symblepharon, fornix shortening, and dry eye. She received topical steroids and lubricants during the acute phase and underwent surgical symblepharon lysis with Amniotic Membrane graft and stem cell transplant. Visual acuity improved from 6/36 to 6/12 at the two-week follow-up, with no further complications noted.

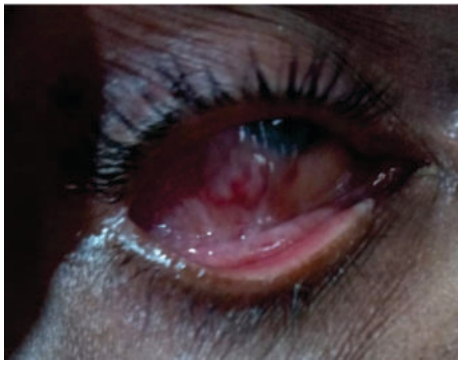

Figure 1 Showing: Conjunctival Hyperemia, Pseudomembrane Formation, Symblepharon, Fornix Shortening

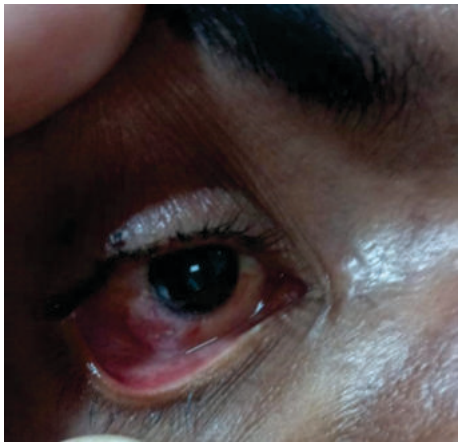

Figure 2: Surgical Symblepharon Lysis With Amniotic Membrane Graft And Stem Cell Transplant

Case Study 2

A 15 years male developed bilateral ocular symptoms including redness, photophobia, diplopia, mild ptosis and restricted extraocular movements after oral intake of an unknown drug. Clinical examination revealed symblepharon formation, limbal stem cell deficiency, dry eye, and shortening of the fornices. He was treated with topical

steroids, lubricants, and moxifloxacin eye drops. Symblepharon lysis was performed with amniotic membrane graft and he was advised to undergo limbal stem cell transplantation for ocular surface rehabilitation. Her best corrected visual acuity improved from 6/60 to 6/12 over a two-week follow-up.

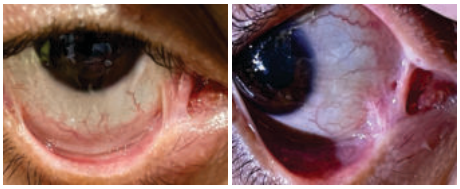

Figure 3 : Symblepharon Formation, Limbal Stem Cell Deficiency, Dry Eye, and Shortening of the Fornices

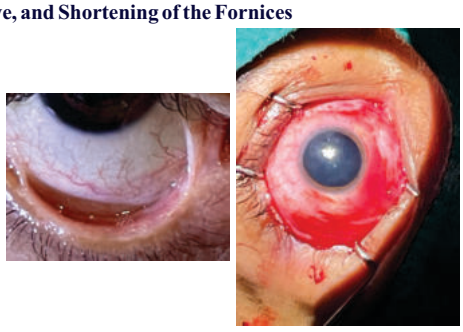

Figure 4 : Symblepharon Lysis was Performed with 2 Snip Canuloplasty

Case Study 3

A 60-year-old female presented with complaints of redness, foreign body sensation, photophobia, and watering in both eyes following oral intake of ciprofloxacin. On ocular examination she had conjunctival hyperemia, symblepheron and signs of dry eye. There were no significant lid or corneal complications. He was managed conservatively in the acute phase with topical corticosteroids and preservative-free lubricants. Symblepharon removal was done. Patient was advised Dalk and limbal stem cell transplant. At two-week follow-up, the patient showed marked clinical improvement with visual acuity improving from 6/36 to 6/9. No chronic complications were noted during the follow-up period.

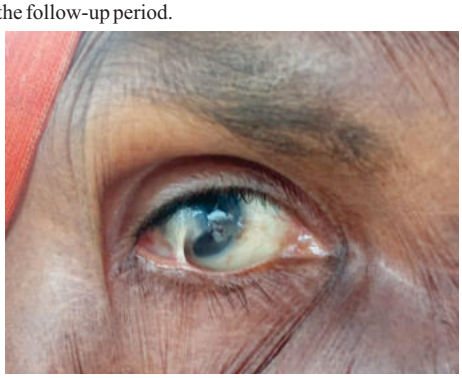

Figure 5 : Corneal Lid Symblepharon Conjunctival Hyperaemia

Case Study 4

A 7-year-old male with a two-year history of decreased vision presented with severe ocular sequelae of SJS of unknown etiology. The patient exhibited conjunctival dryness, symblepharon formation, trichiasis, corneal keratinization, limbal stem cell deficiency, and meibomian gland loss. Visual acuity was perception of light (PL) positive only in the inferior and temporal quadrants of both eyes. He had received no acute phase treatment. Due to extensive chronic ocular surface damage, Gundersen flap was placed. He was advised penetrating keratoplasty combined with limbal stem cell transplantation.

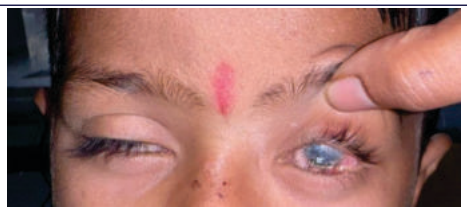

Figure 6: conjunctival Dryness, Symblepharon Formation, Trichiasis, Corneal Keratinization

DISCUSSION

Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) constitute a spectrum of severe mucocutaneous hypersensitivity reactions frequently leading to significant ocular morbidity [1]. The four cases in this series highlight the broad variability in ocular involvement, underscore the critical importance of early intervention, and illustrate the challenges posed by chronic sequelae. Ocular manifestations ranged from conjunctival hyperemia, pseudomembrane formation, and symblepharon in the acute phase, to severe chronic complications such as limbal stem cell deficiency, fornix shortening, corneal keratinization, and meibomian gland loss [3,4]. This spectrum is consistent with prior studies reporting that ocular involvement occurs in the majority of SJS/TEN cases, with up to half developing chronic ocular surface disease if left untreated [5].

In three of the four cases, drug exposure was implicated as the likely trigger—NSAIDs in Case 1, ciprofloxacin in Case 3, and an unidentified oral agent in Case 2—corroborating well-established links between SJS and common medications including antibiotics and NSAIDs [2,3]. Case 4, involving a young child with unknown etiology and a delayed presentation, underscores the devastating consequences of missed acute-phase management, manifesting as severe cicatricial changes and profound visual loss [4]. Management strategies varied based on severity and chronicity. Cases 1 and 2 underwent surgical symblepharon lysis combined with amniotic membrane transplantation (AMT) and were advised limbal stem cell transplantation, reflecting current evidence that early surgical intervention can mitigate long-term damage and improve visual outcomes [6]. Case 3, managed conservatively during the acute phase with topical corticosteroids and lubricants followed by symblepharon removal, showed significant clinical and visual improvement without chronic sequelae [7]. Conversely, Case 4, which lacked any acute phase treatment, exhibited severe ocular surface destruction necessitating more extensive surgical procedures including Gundersen flap and consideration for penetrating keratoplasty with limbal stem cell transplantation [8].

Visual outcomes in this series clearly correlated with disease severity and promptness of intervention. Patients who received timely AMT and surgical management (Cases 1, 2, and 3) demonstrated notable improvements in visual acuity (ranging from 6/60 or worse to 6/9–6/12), whereas the delayed and untreated pediatric case (Case 4) suffered irreversible vision loss [5,6]. These findings emphasize the importance of early ophthalmologic assessment and intervention in SJS/TEN patients. Amniotic membrane transplantation in the acute phase, combined with surgical management of cicatricial complications, can preserve ocular surface integrity and prevent progression to limbal stem cell deficiency and blindness [6]. Moreover, this case series highlights the ongoing challenge of managing chronic ocular sequelae in resource-limited settings, where access to advanced surgical interventions may be limited [1,7].

A multidisciplinary approach involving dermatologists, ophthalmologists, and other specialists is paramount for optimizing outcomes, ensuring early diagnosis, and implementing tailored treatment strategies to preserve vision and improve quality of life for affected patients [2,8].

Limitations of this series include the small sample size and relatively short follow-up duration for some cases. Long-term follow-up would allow better characterization of chronic sequelae and the effectiveness of proposed interventions.

CONCLUSIONS

This case series demonstrates the wide range of ocular involvement in Stevens-Johnson Syndrome, from acute inflammation to chronic cicatricial damage. Early diagnosis and timely ophthalmic

interventions—including amniotic membrane transplantation, symblepharon lysis, and limbal stem cell transplantation—are vital to preserving vision. Increased awareness and a multidisciplinary approach are essential to reduce long-term ocular complications and improve patient outcomes.

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