E-ISSN 2250-0944
ISSN 2250-1150
doi: 10.31838/ijprt/15.01.123

Research Article

Ocular Manifestations in Systemic Lupus Erythematosus: A Case Series

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Received: 04.03.25, Revised: 23.04.25, Accepted: 21.05.25

ABSTRACT
The primary purpose of this study is to elucidate the spectrum of ocular manifestations in patients with SLE, emphasizing the importance of early recognition and appropriate management to prevent irreversible vision loss. This case series includes eight patients diagnosed with SLE who presented with various ocular manifestations at a tertiary care center. Patient demographics, clinical presentations, diagnostic evaluations, treatment regimens, and outcomes were documented and analyzed. Diagnostic workups included fundus examinations, slit-lamp assessments, serological testing, and imaging studies when indicated.

Keywords: SLE, Ocular Manifestations, Vision Loss.

INTRODUCTION

Systemic lupus erythematosus (SLE) is a chronic, autoimmune connective tissue disorder characterized by multisystem involvement and the production of autoantibodies against nuclear and cytoplasmic antigens. The disease has a highly variable clinical presentation, affecting the skin, joints, kidneys, nervous system, and hematologic systems, among others. Among the less commonly emphasized but clinically significant manifestations are ocular complications, which can range from mild to vision-threatening conditions.[1,2]

Ocular involvement in SLE occurs in up to one-third of patients and can be the initial presentation of the disease or develop later during its course.[3,4] The eye and its adnexa may be affected at multiple levels, including the eyelids, conjunctiva, sclera, cornea, retina, choroid, optic nerve, and orbital tissues. Common ocular manifestations include keratoconjunctivitis sicca (secondary to Sjögren's syndrome), retinal vasculitis, optic neuritis, and ischemic optic neuropathy. More severe presentations, such as vaso-occlusive retinopathy, carry a poor visual prognosis and often indicate systemic disease activity.[5]

The pathogenesis of ocular manifestations in SLE is primarily immune complex-mediated vasculopathy, although direct autoantibody-mediated damage also plays a role. Retinal involvement, in particular, often correlates with systemic disease severity and may serve as a marker for central nervous system involvement.[6] Early recognition and prompt management of ocular complications are crucial to preventing irreversible visual impairment.

Given the wide spectrum and potential severity of ocular manifestations in SLE, this case series aims to highlight varied ophthalmic presentations in patients with SLE, emphasizing the importance of interdisciplinary collaboration between rheumatologists and ophthalmologists. By documenting and analyzing these cases, we aim to improve awareness, facilitate early diagnosis, and contribute to better patient outcomes.

Case

Case 1: Lupus Retinopathy

- **Patient:** 35-year-old female
- **Symptoms:** Bilateral blurry vision, floaters
- **Findings:** Fundus examination showed cotton-wool spots, retinal hemorrhages, arteriolar narrowing.
- **Diagnostics:** Elevated anti-double-stranded DNA antibodies, reduced complement levels.
- **Treatment:** High-dose corticosteroids and immunosuppressive therapy; outcome:

resolution of retinopathy, improvement in visual acuity.

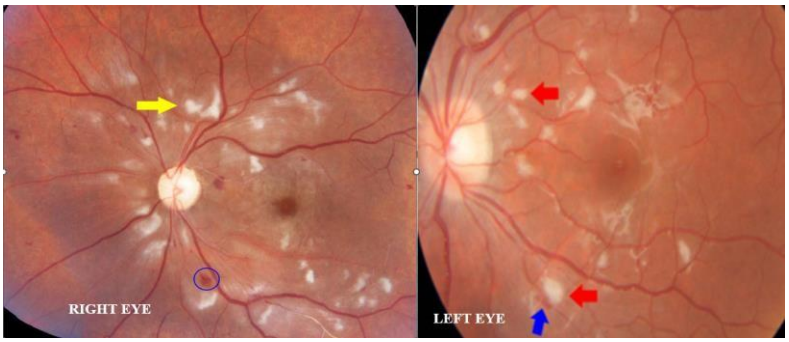

Figure 1: Fundus Showing Cotton-Wool Spots, Retinal Hemorrhages, Arteriolar Narrowing.

Case 2: Scleritis

- **Patient:** 45-year-old male
- **Symptoms:** Severe ocular pain, redness, photophobia in the right eye.
- **Findings:** Diffuse scleral inflammation on slit-lamp examination.
- **Diagnostics:** Elevated inflammatory markers, positive anti-nuclear antibodies.
- **Treatment:** Systemic corticosteroids and immunomodulatory therapy; outcome: resolution of scleriti

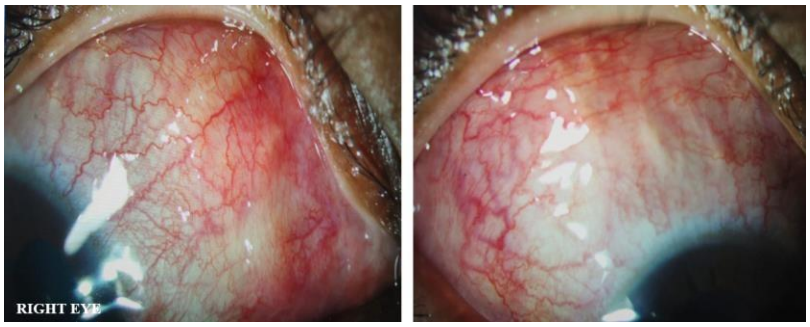

Figure 2: Right Eye Showing Diffuse Scleral Inflammation

Case 3: Optic Neuritis

- **Patient:** 28-year-old female
- **Symptoms:** Sudden-onset vision loss, eye pain in the left eye.
- **Findings:** Optic disc swelling and peripapillary hemorrhages on fundus examination.
- **Diagnostics:** MRI confirmed optic nerve inflammation.
- **Treatment:** Intravenous corticosteroids followed by oral taper; outcome: improvement of vision.

Figure 3: Left Eye Fundus Showing Optic Disc Swelling and Peripapillary Hemorrhages

E-ISSN 2250-0944
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Case 4: Secondary Sjögren Syndrome

- **Patient:** 50-year-old female
- **Symptoms:** Dry eyes and mouth.
- **Findings:** Decreased tear production on Schirmer's test, punctate epithelial erosions.
- **Diagnostics:** Salivary gland biopsy confirmed lymphocytic infiltration.
- **Treatment:** Artificial tears, punctal plugs, immunosuppressive therapy; outcome: alleviation of symptoms.

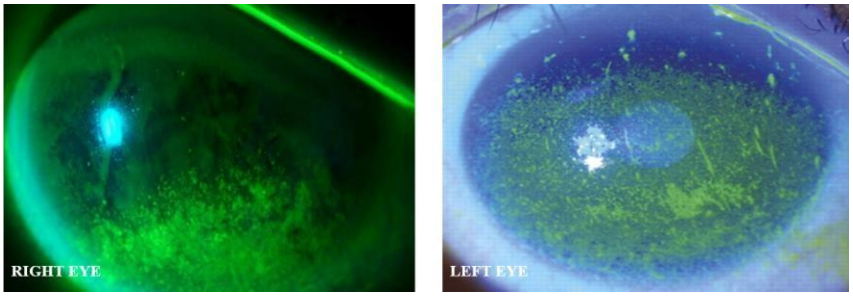

Figure 4: Punctate Epithelial Erosions

Case 5: Keratoconjunctivitis Sicca

- **Patient:** 55-year-old female
- **Symptoms:** Chronic dryness, irritation, foreign body sensation.
- **Findings:** Decreased tear breakup time, punctate epithelial erosions.
- **Diagnostics:** Positive anti-Ro (SS-A) and anti-La (SS-B) antibodies.
- **Treatment:** Lubricating drops, cyclosporine, hydroxychloroquine; outcome: symptom relief and preserved ocular surface health.

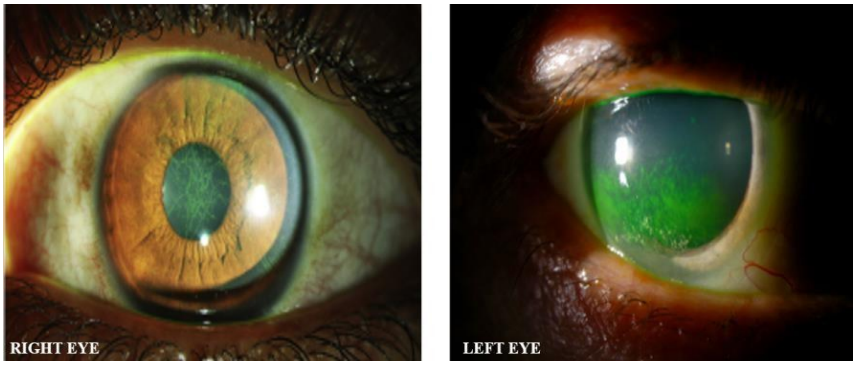

Figure 5: Anterior Segment Revealing Trace Bulbar Injection in Both Eyes, Linear Erosions in the Right Eye, Inferior Punctate Epithelial Erosions in both Eyes, And Decreased Tear Lake Bilaterally

Case 6: Anterior Uveitis

- **Patient:** 40-year-old male
- **Symptoms:** Unilateral eye pain, photophobia, blurred vision.
- **Findings:** Cells and flare in the anterior chamber, iris nodules.
- **Diagnostics:** Elevated inflammatory markers.
- **Treatment:** Topical corticosteroids, cycloplegic agents, systemic therapy; outcome: resolution of uveitis.

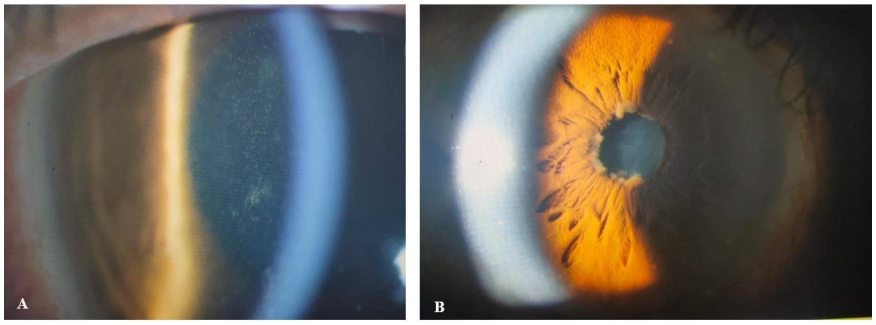

Figure 6: A) AC Inflammation: Cells & Flare; B) Koeppe & Busacca Nodules

Case 7: Episcleritis

- **Patient:** 30-year-old female
- **Symptoms:** Acute eye redness, discomfort in the left eye.
- **Findings:** Focal inflammation of episcleral vessels.
- **Diagnostics:** Elevated inflammatory markers, positive anti-nuclear antibodies.
- **Treatment:** Topical corticosteroids, NSAIDs; outcome: resolution of episcleritis.

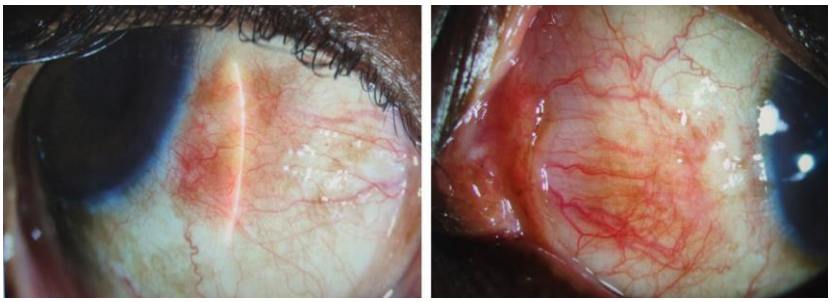

Figure 7: Left Eye Showing Focal Inflammation of Episcleral Vessels

Case 8: Corneal Infiltrates

- **Patient:** 25-year-old female
- **Symptoms:** Bilateral eye redness, photophobia, decreased vision.
- **Findings:** Peripheral corneal infiltrates with anterior chamber inflammation.
- **Diagnostics:** Elevated inflammatory markers, positive anti-double-stranded DNA antibodies.
- **Treatment:** Topical corticosteroids, cyclosporine, systemic therapy; outcome: resolution of corneal infiltrates.

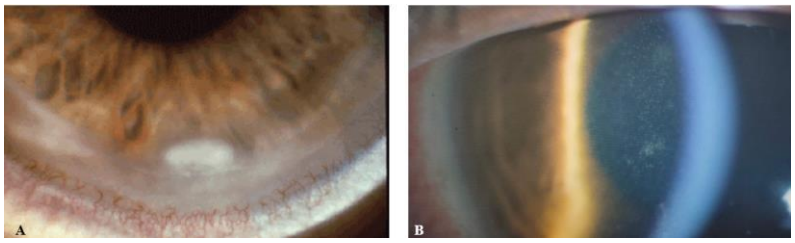

Figure 8: A) Peripheral Keratitis: Peri Limbal, Circumferential Mid To Deep Stromal Infiltrate In The Corneal Stroma; B) AC Inflammation: Cells & Flare

DISCUSSION

Ocular manifestations in systemic lupus erythematosus (SLE) present diverse challenges in diagnosis and management, underscoring the need for early recognition to prevent irreversible damage. As per study conducted by Tselios et al., Lupus retinopathy is a severe complication that requires regular ophthalmic evaluations and timely treatment with corticosteroids and immunosuppressants to improve visual outcomes.[7]

A study by Zahir et al., revealed that conditions such as scleritis and episcleritis, while less common, can indicate underlying disease activity and may necessitate systemic corticosteroids for control.[8] A study by Buchanan et al., demonstrated that Optic neuritis, characterized by optic disc swelling, requires prompt treatment with intravenous corticosteroids to avoid permanent vision loss.[9]

A study conducted by Müller et al. revealed that anterior uveitis, marked by inflammation in the anterior chamber, also demands an interdisciplinary approach for effective management.[10] additionally, a study by Ramos-Casals et al. demonstrated that secondary Sjögren syndrome frequently affects SLE patients, leading to dry eye conditions that significantly impact quality of life. Effective management includes artificial tears and systemic therapies, with recognition of associated serological markers being crucial to prevent severe ocular surface damage and complications.[11]

CONCLUSION

Ocular manifestations in SLE are varied and can significantly impact patients' quality of life. Clinicians should maintain a high index of

suspicion for these conditions in patients with SLE.

Overall, the cases presented in this series illustrate the importance of a thorough ophthalmologic examination in patients with SLE. Each ocular manifestation presents unique challenges but also opportunities for targeted therapeutic interventions that can preserve vision and improve quality of life.

Continued research into the pathophysiology of these ocular manifestations will aid in the development of more effective management strategies and highlight the importance of a multidisciplinary approach involving rheumatology and ophthalmology in the care of patients with SLE for optimal management and preservation of vision.

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