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Clinical Profile and Etiological Spectrum of Scleritis in a Tertiary Care Centre

Pradeep Nitture[1], Geetha G[2]

[1]Fellow, Dept. of Retina, Sankara Eye Hospital, Coimbatore
[2]Senior Consultant, Dept. of Retina, Sankara Eye Hospital, Coimbatore

Corresponding Author: Pradeep Nitture

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ABSTRACT

Background: Scleritis is a potentially vision-threatening inflammatory disorder that is frequently associated with underlying systemic disease. In many instances, ocular symptoms may represent the first clinical manifestation of conditions such as rheumatoid arthritis or tuberculosis. This study was undertaken to evaluate the systemic associations of scleritis, determine the proportion of patients in whom systemic disease was newly detected during ophthalmic evaluation, and analyse treatment response and recurrence patterns.
Methods: A retrospective review was performed on 28 consecutive patients diagnosed clinically with scleritis and treated between June 2024 and December 2025 at tertiary eye care centre in South India. All patients underwent a standardised systemic evaluation protocol. Data regarding demographic profile, systemic diagnosis, treatment instituted, remission, and recurrence were collected and analysed.
Results: Among the 28 patients included in the study, 17 patients (60.7%) had an identifiable systemic association. The mean age was 46.8 ± 12.4 years, with a female predominance (16 women, 12 men). Rheumatoid arthritis was the most common associated systemic condition (25%), followed by tuberculosis (17.9%). Other associations included HLA-B27 spondyloarthropathy, systemic lupus erythematosus, and IgA nephropathy. Eleven patients (39.3%) were categorised as idiopathic. In 9 of the 17 patients with systemic disease (52.9%), the diagnosis was established for the first time during evaluation for scleritis. The overall recurrence rate was 17.9%, which was lower than rates reported in several previous studies.
Conclusions: Scleritis should prompt a thorough search for underlying systemic disease. Early multidisciplinary assessment and targeted therapy may improve disease control and reduce recurrence.

Keywords: Scleritis, Systemic associations, Rheumatoid arthritis, Tuberculosis, Immunomodulatory therapy, Ocular inflammation

INTRODUCTION

Scleritis is a severe inflammatory disorder involving the scleral tissue and is often associated with significant ocular discomfort and visual morbidity. Clinically, it differs from episcleritis by the presence of deep vascular congestion, marked ocular tenderness, and severe boring pain that may radiate to surrounding facial structures [1].
Previous studies have demonstrated that a substantial proportion of patients with scleritis have an associated systemic disorder [2,3]. Autoimmune conditions such as rheumatoid arthritis, systemic lupus

erythematosus, granulomatosis with polyangiitis, and HLA-B27-related diseases are among the most frequently reported causes [3,9]. Infectious etiologies, especially tuberculosis, are also important in countries with a high endemic burden, such as India [7,8].

An important aspect of scleritis is that ocular inflammation may precede the diagnosis of systemic illness [3]. Consequently, ophthalmologists may play a key role in identifying previously undetected systemic disease during evaluation of ocular complaints [3]. Failure to perform an appropriate systemic workup can delay diagnosis and treatment of potentially serious underlying conditions [2,3].

The present study was conducted to evaluate the etiological spectrum of scleritis in patients presenting to a tertiary eye care centre, identify the proportion of newly diagnosed systemic diseases detected through ophthalmic evaluation, and analyse treatment outcomes and recurrence patterns.

METHODS

Study design and setting

This retrospective observational study was carried out at Sankara Eye Hospital, Coimbatore, India. Medical records of patients diagnosed with scleritis between June 2024 and December 2025 were reviewed. Institutional Ethics Committee approval was obtained (Approval no: SHE/CBE/EC/2026/008) from the Ethics Committee Sankara Eye Hospital.

Patient selection

Patients aged 18 years or older with a clinical diagnosis of scleritis were included in the study. Diagnosis was based on characteristic clinical findings, including deep scleral congestion, ocular pain disproportionate to redness, and scleral tenderness on examination. Patients with incomplete clinical records or inadequate follow-up were excluded.

Clinical evaluation and classification

All patients underwent detailed ophthalmic evaluation, including best-corrected visual acuity assessment, slit-lamp examination, applanation tonometry, and dilated fundus examination. B-scan ultrasonography was performed when posterior scleritis was suspected clinically.

Scleritis was classified according to the Watson and Hayreh classification system into anterior diffuse, anterior nodular, anterior necrotizing and posterior scleritis [1].

Systemic investigations

A comprehensive systemic evaluation protocol was followed for all patients irrespective of clinical suspicion. Investigations included:

- Complete blood count
- Erythrocyte sedimentation rate and C-reactive protein
- Rheumatoid factor and anti-cyclic citrullinated peptide antibody
- Antinuclear antibody and anti-double-stranded DNA
- HLA-B27 typing and ANCA profile
- Serum complement levels
- Chest radiography
- Mantoux test and interferon-gamma release assay
- Urine routine examination and renal function tests

Patients with abnormal autoimmune markers were referred for rheumatology evaluation, while those with suspected tuberculosis underwent pulmonology consultation [3].

Treatment protocol

Treatment was individualised according to severity and underlying aetiology. Mild anterior scleritis was managed with oral non-steroidal anti-inflammatory drugs and topical corticosteroids. Patients with moderate-to-severe inflammation received oral prednisolone at a dose of 1 mg/kg/day followed by gradual tapering.

Immunomodulatory therapy was initiated in patients with confirmed autoimmune disease. Methotrexate was the preferred steroid-

sparing agent in rheumatoid arthritis-associated disease [4], while mycophenolate mofetil was used in selected patients with renal involvement [10]. Patients with tuberculosis-associated scleritis received standard anti-tubercular therapy [7,8].

Outcome measures

The primary outcome measures included:

1. Distribution of systemic associations
2. Frequency of newly diagnosed systemic disease detected through scleritis workup
3. Recurrence rate following treatment

Recurrence was defined as reappearance of active scleral inflammation after a symptom-free interval of at least four weeks.

Statistical analysis

Data were entered into Microsoft Excel 2021 and analysed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. As this was a descriptive retrospective study with a limited sample size, no inferential statistical testing was performed.

RESULTS

Demographic profile

Twenty-eight patients fulfilled the inclusion criteria. The mean age of presentation was 46.8 ± 12.4 years, with ages ranging from 22 to 68 years. Females constituted 57.1% of the study population. Bilateral involvement was noted in six patients.

Systemic associations were identified in 17 patients (60.7%), whereas 11 patients (39.3%) remained idiopathic despite detailed evaluation (Table 1).

Table 1: Demographic and clinical characteristics of study patients (N=28)

Parameter	Value
Total patients	28
Mean age ± SD, years (range)	46.8 ± 12.4 (22–68)
Males, n (%)	12 (42.9%)
Females, n (%)	16 (57.1%)
Bilateral disease, n (%)	6(21.4%)
Mean follow-up, months	9
Patients with systemic association, n (%)	17 (60.7%)
Idiopathic cases, n (%)	11 (39.3%)
Anterior diffuse scleritis, n (%)	23 (82%)
Anterior nodular scleritis, n (%)	4 (14%)
Posterior scleritis, n (%)	1 (4%)

SD: standard deviation

Etiological distribution

Rheumatoid arthritis was the most common associated systemic disease and was identified in seven patients (25%). Tuberculosis was detected in five patients (17.9%). Other associated conditions included HLA-B27 spondyloarthropathy and systemic lupus erythematosus in two patients each, and IgA nephropathy in one patient. Idiopathic disease accounted for 39.3% of cases.

Rheumatoid arthritis-associated scleritis

Among the seven patients with rheumatoid arthritis-associated scleritis, five had not been diagnosed previously with rheumatoid

arthritis. Positive serological markers combined with rheumatological evaluation confirmed the diagnosis. Most patients responded well to oral corticosteroids followed by methotrexate therapy.

Tuberculosis-associated scleritis

Tuberculosis-associated scleritis was identified in five patients. In four of these patients, tuberculosis was diagnosed for the first time during systemic workup for ocular inflammation. Diagnosis was supported by positive Mantoux testing, interferon-gamma release assay, and compatible chest imaging findings. All patients received anti-tubercular therapy, with satisfactory resolution of scleral inflammation.

Other systemic associations

The two patients with HLA-B27-associated disease initially responded to oral steroids and NSAIDs; one later required methotrexate because of recurrence. Patients with systemic lupus erythematosus demonstrated good control with systemic corticosteroids and immunosuppressive therapy.

The patient with IgA nephropathy was identified following abnormalities on urine examination and responded well to mycophenolate mofetil.

Idiopathic scleritis

Eleven patients had no detectable systemic association despite extensive evaluation. These patients generally demonstrated a milder disease course and none developed recurrence during follow-up.

Newly diagnosed systemic disease

Overall, 9 of the 17 patients with systemic disease were diagnosed for the first time during ophthalmic evaluation for scleritis. This finding highlights the importance of systemic screening in patients presenting with scleral inflammation (Table 2).

Table 2: Etiological distribution and timing of systemic diagnosis in scleritis (N=28)

Systemic Diagnosis	N	% of Total (N=28)	% of Systemic (n=17)	Newly Diagnosed n (%)
Rheumatoid Arthritis	7	25.0%	41.2%	5 (71.4%)
Tuberculosis	5	17.9%	29.4%	4 (80.0%)
HLA-B27 Spondyloarthropathy	2	7.1%	11.8%	—
Systemic Lupus Erythematosus	2	7.1%	11.8%	—
IgA Nephropathy	1	3.6%	5.9%	—
Idiopathic	11	39.3%	—	—
Total	28	100%	—	9/17 (52.9%)

Recurrence patterns

The overall recurrence rate was 17.9%. Recurrences were observed predominantly in patients with rheumatoid arthritis and HLA-B27-associated disease (Table 3). No recurrences occurred in patients with tuberculosis, systemic lupus erythematosus, IgA nephropathy, or idiopathic scleritis.

Table 3: Management summary and outcomes by etiological group

Etiology	First-line Therapy	Steroid-sparing / Adjunct	Time to Remission	Recurrence n (%)
RA (n=7)	Oral prednisolone 1 mg/kg/d	MTX 10–15 mg/wk + folic acid (6/7)	8–12 weeks	3 (42.8%)
TB (n=5)	ATT (HRZE 4-drug)	Oral steroids in 3/5	6–8 weeks	0 (0%)
HLA-B27 (n=2)	NSAIDs + short prednisolone	MTX for recurrence (1/2)	4–8 weeks	2 (100%)
SLE (n=2)	IV methylprednisolone, then oral	Hydroxychloroquine + MTX	6–10 weeks	0 (0%)
IgA Nephropathy (n=1)	Oral prednisolone	Mycophenolate mofetil	8 weeks	0 (0%)
Idiopathic (n=11)	NSAIDs ± topical steroids	Oral prednisolone as needed	4–8 weeks	0 (0%)
Overall (N=28)				5 (17.9%)

ATT: anti-tubercular therapy; HRZE: isoniazid, rifampicin, pyrazinamide, ethambutol; MTX: methotrexate; NSAIDs: non-steroidal anti-inflammatory drugs; RA: rheumatoid arthritis; SLE: systemic lupus erythematosus; TB: tuberculosis

DISCUSSION

The present study demonstrated that systemic disease was associated with scleritis in a majority of patients, consistent with previously published literature [2,3,9]. Rheumatoid arthritis was the leading systemic association, followed by tuberculosis, reflecting both global autoimmune trends and the continued burden of tuberculosis in the Indian population [3,7,8].

One of the important findings of this study was that more than half of the patients with systemic disease received their diagnosis only after ophthalmic evaluation for scleritis. This observation emphasises the role of the ophthalmologist in detecting systemic inflammatory and infectious diseases at an early stage [3].

Patients with rheumatoid arthritis-associated scleritis responded favourably to methotrexate therapy, supporting earlier reports that advocate early introduction of steroid-sparing immunosuppressive agents in autoimmune ocular inflammation [4]. Biologic therapy, including rituximab, has been described for refractory scleritis, although none of the patients in the present series required biologics [5].

Tuberculosis-associated scleritis remains clinically significant in endemic regions. Appropriate systemic evaluation and timely initiation of anti-tubercular therapy are essential for achieving good outcomes and preventing recurrence [7,8]. Posterior scleritis and recurrent scleral inflammation have also been reported in association with systemic disease, further supporting the need for careful follow-up [6,11].

The recurrence rate observed in this study was lower than that reported in many previous series [2,3,11]. Early systemic diagnosis, multidisciplinary collaboration, and timely initiation of targeted therapy may have contributed to improved disease control.

The limitations of this study include its retrospective nature, relatively small sample size, and single-centre design. Larger prospective studies are required to further validate these findings.

Limitations

The relatively small sample size limits the generalizability of findings.

CONCLUSION

Scleritis is frequently associated with underlying systemic disease and should not be regarded as an isolated ocular condition. Thorough systemic evaluation is essential [3], particularly in regions where autoimmune disease and tuberculosis are prevalent. Early identification of the underlying etiology and institution of targeted therapy may reduce recurrence and improve overall patient outcomes.

Declaration by Authors

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