

Clinical Profile of Patients Presenting with Scleritis and Episcleritis: A Cross Sectional Observational Study

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Abstract

Background: Scleritis and episcleritis are inflammatory disorders affecting the scleral and episcleral tissues of the eye. Although episcleritis is generally a benign and self-limiting condition, scleritis may be associated with significant ocular morbidity and visual impairment. Understanding the clinical profile of patients presenting with these disorders is important for early diagnosis, appropriate classification, and timely management.

Aim: To describe the clinical profile of patients presenting with scleritis and episcleritis at a tertiary care ophthalmology center.

Material and Methods: A hospital-based cross-sectional observational study was conducted in the Department of Ophthalmology, Government Medical College, Kottayam, Kerala, India, over a period of 12 months following Institutional Review Board approval. A total of 256 consecutive patients clinically diagnosed with episcleritis or scleritis were enrolled. Detailed history taking and comprehensive ophthalmological examination were performed, including assessment of visual acuity, slit-lamp biomicroscopy, intraocular pressure measurement, posterior segment evaluation, and B-scan ultrasonography whenever posterior scleritis was suspected. Clinical parameters including demographic profile, ocular symptoms, duration of illness, visual acuity, ocular examination findings, posterior segment findings, intraocular pressure, and subtype of scleritis or episcleritis were analysed. Data were entered into Microsoft Excel and analysed using SPSS version 16.0. Results were expressed as frequencies and percentages.

Results: The majority of patients belonged to the 31–40 years age group (50.4%), and females constituted 60.9% of the study population. Right eye involvement was observed in 49.6% of cases, while bilateral disease occurred in 16.8%. Redness of the eye was the most common presenting symptom (91.4%), followed by defective vision (63.3%), pain (58.2%), watering (52.0%), and photophobia (24.6%). Most patients presented within 1–2 weeks of symptom onset (45.3%). Diffuse episcleritis was the most common diagnosis (39.8%), followed by non-necrotizing diffuse anterior scleritis (23.4%) and posterior scleritis (16.0%). Good visual acuity (6/6–6/9) was maintained in 72.3% of patients. Posterior segment findings were predominantly observed in posterior scleritis, with choroidal folds being the most common abnormality. Raised intraocular pressure was uncommon and observed in 2.7%.

Conclusion: Episcleritis and scleritis exhibit distinct clinical patterns with regard to age distribution, symptomatology, visual status, and ocular findings. Diffuse episcleritis and non-necrotizing anterior scleritis constituted the majority of cases. Recognition of characteristic clinical features facilitates early diagnosis and appropriate management, thereby minimizing ocular morbidity and preserving visual function.

Keywords: Scleritis; Episcleritis; Clinical profile; Ocular inflammation; Posterior scleritis; Anterior scleritis; Visual acuity; Ocular examination.

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Introduction

Scleritis and episcleritis are inflammatory disorders involving the outer fibrous coats of the eye and represent important causes of ocular redness and discomfort encountered in ophthalmic practice. Although both conditions involve inflammation of tissues covering the globe, they differ substantially

in their pathogenesis, severity, prognosis, and management. Episcleritis is generally a benign, self-limiting inflammation confined to the episcleral tissue, whereas scleritis is a deeper, more destructive inflammatory disorder involving the sclera and is often associated with severe ocular

pain, visual impairment, and potentially sight-threatening complications. Accurate differentiation between these entities is therefore essential for effective patient management and prevention of visual morbidity [1].

The sclera constitutes the principal structural framework of the eye and plays a critical role in maintaining ocular integrity. Inflammatory involvement of the sclera may occur in various forms, including diffuse anterior scleritis, nodular anterior scleritis, necrotizing anterior scleritis, and posterior scleritis. Episcleritis is commonly classified into diffuse and nodular forms. The clinical manifestations of these disorders vary considerably depending on the extent, location, and severity of inflammation. Patients may present with redness, ocular discomfort, severe pain, photophobia, tearing, tenderness, visual disturbances, or even profound visual loss in advanced cases [2].

Historically, Watson and Hayreh provided the most comprehensive clinical classification of scleritis and episcleritis and emphasized the importance of differentiating superficial episcleral inflammation from deeper scleral disease [1]. Their classification continues to serve as the basis for the modern diagnosis and management of scleral inflammatory disorders. Subsequent studies have further refined the understanding of these conditions and highlighted the diverse clinical spectrum associated with scleral inflammation [3].

The epidemiology of scleritis and episcleritis varies among different populations. Episcleritis is generally more common than scleritis and tends to affect younger adults, whereas scleritis is more frequently encountered in middle-aged individuals. Several studies have reported a female predominance, particularly among patients with scleritis [4]. Although many patients present with unilateral disease, bilateral involvement may occur, especially in chronic and recurrent forms. Understanding demographic characteristics and patterns of disease presentation can assist clinicians in establishing an early diagnosis and formulating appropriate management strategies.

Clinical presentation remains the cornerstone of diagnosis in patients with episcleritis and scleritis. Episcleritis typically manifests as localized or diffuse redness associated with mild discomfort and minimal visual disturbance. In contrast, scleritis often presents with severe boring ocular pain that may radiate to the forehead, jaw, or temple and may worsen at night or with eye movement.

Associated findings such as scleral edema, nodules, corneal involvement, elevated intraocular pressure, and posterior segment abnormalities may provide valuable clues regarding disease severity and

subtype [5]. Posterior scleritis represents a particularly important subtype because of its variable clinical manifestations and diagnostic challenges. Patients may present with decreased vision, pain, exudative retinal detachment, optic disc edema, or choroidal folds. B-scan ultrasonography remains an important diagnostic modality, with characteristic findings such as scleral thickening and the “T-sign” aiding confirmation of diagnosis [6]. Early recognition is essential because delayed diagnosis may result in significant visual loss.

Several studies have evaluated the clinical characteristics of patients presenting with scleral inflammatory disease. Sainz de la Maza et al. analysed a large cohort of patients with scleritis and episcleritis and reported considerable variation in disease presentation, severity, and ocular complications among different subtypes [4]. Similar observations have been reported by Yoshida et al., who highlighted differences in clinical characteristics according to disease subtype and severity [5].

Despite advances in understanding these conditions, there remains limited data regarding the clinical profile of patients presenting with scleritis and episcleritis in many regions of India. Knowledge of demographic characteristics, presenting symptoms, ocular findings, and disease patterns is important for improving diagnostic accuracy and optimizing patient care. Therefore, the present study was undertaken to describe the clinical profile of patients presenting with scleritis and episcleritis at a tertiary care teaching hospital and to analyze their demographic and ophthalmological characteristics.

Materials and Methods

This hospital-based cross-sectional observational study was conducted in the Department of Ophthalmology, Government Medical College, Kottayam, Kerala, India, over a period of 12 months following approval from the Institutional Review Board [IRB Approval No. and Date: 194/2023, 12/06/2023]. The study population comprised all consecutive patients presenting to the ophthalmology department who were clinically diagnosed with episcleritis or scleritis during the study period. Patients with other anterior segment inflammatory conditions such as conjunctivitis and anterior uveitis were excluded from the study. Written informed consent was obtained from all participants prior to enrollment.

A total of 256 patients satisfying the inclusion and exclusion criteria were included using a consecutive sampling technique. Detailed demographic information, medical history, ocular symptoms, duration of illness, history of trauma,

chemical exposure, and previous ocular surgery were documented using a structured proforma. All patients underwent comprehensive ophthalmological examination including measurement of best corrected visual acuity using Snellen's chart, external ocular examination, slit-lamp biomicroscopy, and intraocular pressure measurement using Goldmann applanation tonometry.

Patients were evaluated carefully to differentiate episcleritis from scleritis. Phenylephrine eye drops were instilled, and slit-lamp examination was repeated after 20 minutes to assess blanching of superficial episcleral vessels.

Diffuse or sectoral redness associated with mild discomfort and blanching of vessels was considered suggestive of episcleritis. Patients presenting with deep ocular pain, violaceous scleral discoloration, scleral edema, tenderness, nodules, or persistent vascular congestion were diagnosed as having scleritis.

Posterior segment evaluation was performed using slit-lamp biomicroscopy with a Volk 90D lens and indirect ophthalmoscopy with a Volk 20D lens after pupillary dilatation. Particular attention was paid to the presence of choroidal folds, optic disc edema, exudative retinal detachment, and other posterior segment abnormalities. Patients with clinical suspicion of posterior scleritis underwent B-scan ultrasonography. Findings such as increased scleral thickness, scleral nodules, fluid

accumulation in the sub-Tenon space producing the characteristic "T-sign," and separation of Tenon's capsule from the sclera were considered diagnostic of posterior scleritis. Patients were classified into diffuse episcleritis, nodular episcleritis, non-necrotizing diffuse anterior scleritis, non-necrotizing nodular anterior scleritis, necrotizing anterior scleritis without inflammation, posterior scleritis, and combined anterior and posterior scleritis based on clinical findings. Demographic variables, presenting symptoms, duration of illness, visual acuity, ocular examination findings, posterior segment findings, intraocular pressure, and disease subtype were recorded and analyzed.

Data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) version 16.0. Qualitative variables were expressed as frequencies and percentages. The findings were presented in the form of tables, charts, and descriptive statistics to characterize the clinical profile of patients with episcleritis and scleritis.

Results

The majority of patients belonged to the 31–40 years age group (50.4%), followed by those above 50 years (31.6%). Females constituted a greater proportion of the study population (60.9%) compared with males (39.1%). Right eye involvement was most common (49.6%), while bilateral disease was observed in 16.8% of patients. [Table 1]

Table 1: Demographic and Clinical Characteristics of the Study Population (n=256)

Variable	Frequency	Percentage (%)
Age Group (Years)		
16–30	6	2.3
31–40	129	50.4
41–50	40	15.6
>50	81	31.6
Gender		
Male	100	39.1
Female	156	60.9
Eye Involved		
Right	127	49.6
Left	86	33.6
Bilateral	43	16.8

Redness of the eye was the most common presenting complaint, occurring in 91.4% of patients. Visual impairment was reported by 63.3% of patients, while ocular pain was present in 58.2%.

Nearly half of the patients (45.3%) presented within 1–2 weeks of symptom onset, indicating relatively early healthcare seeking behaviour. [Table 2]

Table 2: Presenting Symptoms and Duration of Symptoms

Clinical Parameter	Frequency	Percentage (%)
Presenting Symptoms		
Redness of eye	234	91.4
Defective vision	162	63.3
Pain	149	58.2
Watering	133	52.0
Photophobia	63	24.6
Duration of Symptoms		
<1 week	66	25.8
1–2 weeks	116	45.3
>2 weeks	74	28.9

Most patients (72.3%) maintained good visual acuity ranging from 6/6 to 6/9. Conjunctival congestion was the predominant ocular sign (85.5%), followed by blanching of vessels (48.0%)

and scleral edema (33.6%). Corneal involvement was uncommon. Intraocular pressure remained within normal limits in the vast majority of patients (97.3%). [Table 3]

Table 3: Ocular Findings and Visual Acuity

Parameter	Frequency	Percentage (%)
Visual Acuity		
6/6–6/9	185	72.3
6/12–6/24	32	12.5
6/36–6/60	32	12.5
<6/60	7	2.7
Ocular Examination Findings		
Congestion	219	85.5
Blanching	123	48.0
Scleral edema	86	33.6
Corneal involvement	7	2.7
Intraocular Pressure		
11–20 mmHg	249	97.3
≥21 mmHg	7	2.7

Diffuse episcleritis was the most common diagnosis, accounting for 39.8% of cases, followed by non-necrotizing diffuse anterior scleritis (23.4%). Posterior scleritis represented 16% of all

cases. Choroidal folds were the most common posterior segment abnormality and were predominantly observed in patients with posterior scleritis. [Table 4]

Table 4: Distribution of Clinical Diagnosis and Posterior Segment Findings

Diagnosis	Frequency	Percentage (%)
Diffuse episcleritis	102	39.8
Non-necrotizing diffuse anterior scleritis	60	23.4
Posterior scleritis	41	16.0
Nodular episcleritis	21	8.2
Necrotizing anterior scleritis without inflammation	14	5.5
Non-necrotizing nodular anterior scleritis	12	4.7
Combined anterior and posterior scleritis	6	2.3
Posterior Segment Findings		
Normal	216	84.4
Choroidal folds	24	9.4
Exudative retinal detachment	7	2.7
Choroidal folds with disc edema	9	3.5

Discussion

The present study evaluated the clinical profile of patients presenting with episcleritis and scleritis at a tertiary care ophthalmology center. The findings demonstrated distinct demographic patterns,

symptom profiles, ocular examination findings, and disease distributions among affected individuals. Understanding these characteristics is important because early recognition of scleral inflammatory disease facilitates prompt diagnosis, appropriate

management, and prevention of visual complications.

In the present study, the majority of patients belonged to the 31–40 years age group, and females constituted approximately two-thirds of the study population. These findings are consistent with the observations of Watson and Hayreh, who reported that scleral inflammatory diseases commonly affect middle-aged adults and demonstrate a female predominance, particularly among patients with scleritis [1]. Similar demographic trends were later reported by McCluskey et al., who found that posterior scleritis predominantly affected middle-aged individuals and was more common among women [2]. Female predominance has also been attributed to the higher prevalence of autoimmune disorders among women, many of which are known to be associated with scleral inflammation.

The clinical presentation observed in the present study was largely consistent with established descriptions of episcleritis and scleritis. Redness of the eye was the most frequent presenting complaint, affecting over 90% of patients, followed by visual impairment and ocular pain. Watson and Hayreh originally described redness and ocular discomfort as the cardinal features of episcleritis, while deep-seated ocular pain was considered characteristic of scleritis [1]. Similarly, Katz et al. reported that pain remains one of the most important clinical features distinguishing scleritis from episcleritis and often reflects the severity of scleral inflammation [3]. The high prevalence of pain among patients with scleritis in the present study supports these observations.

Nearly half of the patients presented within one to two weeks of symptom onset. Early presentation is clinically advantageous because prompt diagnosis and treatment may prevent progression to more severe disease and reduce the risk of complications. Sainz de la Maza et al. emphasized that delayed diagnosis of scleral inflammation may result in prolonged symptoms and increased ocular morbidity [4]. The relatively early presentation observed in the present study may reflect increased awareness of ocular symptoms and improved access to ophthalmic services.

Visual acuity remained relatively preserved in most patients, with more than 70% maintaining vision between 6/6 and 6/9. However, significant visual impairment was observed among patients with posterior scleritis and combined anterior-posterior scleritis. McCluskey et al. reported similar findings, noting that posterior scleritis frequently causes visual impairment due to associated choroidal folds, exudative retinal detachment, and optic nerve involvement [2]. Visual loss in posterior scleritis may occur secondary to

inflammation involving deeper ocular structures, emphasizing the importance of early diagnosis.

Conjunctival congestion was the most common ocular examination finding in the present study, followed by blanching of superficial vessels after instillation of phenylephrine and scleral edema. These findings are consistent with classical descriptions of episcleritis and anterior scleritis. Watson and Hayreh highlighted that blanching of superficial vessels after phenylephrine instillation is useful in differentiating episcleritis from deeper scleral inflammation [1]. The presence of scleral edema and persistent deep vascular congestion observed in patients with scleritis further supports the clinical distinction between these disorders.

Diffuse episcleritis was the most common diagnosis in the present study, accounting for nearly 40% of cases. Similar findings were reported by Sainz de la Maza et al., who observed diffuse episcleritis as the most frequent subtype among patients presenting with episcleral inflammation [4]. Non-necrotizing diffuse anterior scleritis represented the most common form of scleritis in the present study. This finding is consistent with reports by Yoshida et al., who identified diffuse anterior scleritis as the predominant scleral subtype in their cohort [5].

Posterior scleritis accounted for 16% of cases in the present study, a proportion slightly higher than that reported in some previous series. Posterior scleritis remains an important diagnostic challenge because of its variable clinical manifestations and potential for visual loss. McCluskey et al. demonstrated that posterior scleritis frequently presents with choroidal folds, exudative retinal detachment, and optic disc edema [2]. In the present study, choroidal folds represented the most common posterior segment abnormality, followed by combined choroidal folds and disc edema. These findings closely resemble those described in previous studies.

Recent literature continues to emphasize the diverse clinical spectrum of scleral inflammatory disease. Nevares et al. reported that patients with autoimmune-associated scleritis often exhibit more severe clinical manifestations and greater ocular morbidity than those with isolated ocular disease [6]. Similarly, Promelle et al. highlighted the importance of early recognition of scleral inflammation because timely treatment can prevent progression to vision-threatening complications [7].

Hsu et al. demonstrated that ocular inflammatory disorders frequently contribute to visual morbidity among patients with systemic autoimmune diseases, particularly when diagnosis is delayed [8]. Rademacher et al. further emphasized that inflammatory ocular diseases may be the first manifestation of systemic rheumatologic disorders,

underscoring the importance of careful clinical evaluation [9]. Although the present study focused primarily on clinical characteristics, the observed disease patterns reinforce the need for comprehensive ophthalmological assessment in all patients presenting with ocular redness and pain. More recent investigations by Arruza et al. and Soubrier et al. have highlighted the value of detailed clinical examination, imaging, and long-term follow-up in the evaluation of patients with scleral inflammatory disease [10,11]. Their findings support the observations of the present study, which demonstrate considerable variation in disease presentation and severity among different subtypes of episcleritis and scleritis.

Overall, the present study provides a comprehensive overview of the clinical profile of patients presenting with episcleritis and scleritis.

The findings emphasize the importance of recognizing characteristic symptoms, ocular signs, and disease subtypes to facilitate early diagnosis and optimize patient outcomes as suggested by previous studies. [12-14]

Conclusion

The present study demonstrated that episcleritis and scleritis predominantly affect middle-aged adults and show a female preponderance. Redness, visual impairment, and ocular pain were the most common presenting symptoms. Diffuse episcleritis was the most frequent diagnosis, while non-necrotizing diffuse anterior scleritis represented the most common scleral subtype. Most patients maintained good visual acuity; however, posterior scleritis was associated with greater visual impairment and characteristic posterior segment abnormalities such as choroidal folds and exudative retinal detachment. Recognition of the clinical profile of these disorders facilitates early diagnosis, appropriate classification, and timely intervention, thereby reducing the risk of ocular complications and preserving visual function.

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