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Original Research Article

A cross-sectional study of systemic disorders in patients with episcleritis and scleritis

Rajasekaran Karunakaran[1], **Sudan Marudhachalam**[2], **Lavannya Thiyagarajan**[2], **Dhyan Selvaraj**[2,*]

[1]*Thanjaur Medical College, Thanjavur, Tamil Nadu, India*
[2]*Dept. of Ophthalmology, Trichy SRM Medical College Hospital*

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ABSTRACT

Background: Episcleritis and scleritis are both inflammatory disorders of the eye and may have underlying systemic disorder precipitating them. Therefore a thorough clinical examination and laboratory investigations are needed to rule them out. Systemic conditions that have been associated include rheumatoid arthritis, Wegener's granulomatosis, systemic vasculitis, systemic lupus erythematosis, sarcoidosis, spondyloarthropathies, tuberculosis, gout, syphilis, hepatitis B and many others.
Aim: To estimate the prevalence of systemic disorders in patients with episcleritis and scleritis visiting ophthalmology OPD. To identify the potential underlying systemic disorders requiring treatment.
Results: This study was conducted in 105 patients who attended ophthalmology outpatient department of a tertiary care hospital over a period of one year and four months. Systemic association of a precipitating disease was noted in 20% of cases and the remaining 80% of cases had no association of an underlying precipitating systemic illness. Tuberculosis was a major precipitating disorder associated with scleritis and episcleritis. Rheumatoid arthritis, systemic lupus erythematosis, Wegener granulomatosis, syphilis, inflammatory bowel disease, sarcoidosis, ankylosing spondylitis and herpes zoster were some of the other systemic associations noted.
Conclusion: Scleritis and episcleritis are common conditions encountered in an ophthalmology out patient department. Their frequent association with an underlying systemic disorder prompts us to assess the systemic status of such patients. Early diagnosis and proper management of such disorders has helped to reduce both systemic and ocular morbidity.

1. Introduction

Episcleritis and scleritis are a group of inflammatory disorders with varied etiology that affect the outer layers of the eyeball namely episclera and sclera respectively. These disorders are commonly encountered in an ophthalmology outpatient department. Though a few of them may run a benign course, others cause significant ocular morbidity. A rising concern is that a proportion of patients with episcleritis and scleritis have an underlying systemic disorder precipitating them. This has been evident by the fact that over the past few decades, a number of connective tissue disorders, autoimmune disorders and infective conditions have been proven to be associated with scleritis and episcleritis. Hence, it has become mandatory to identify such associated disorders and treat them for an overall favorable outcome for the patient. A thorough clinical examination and a battery of laboratory tests are needed to identify them. Previous studies revealed the prevalence rate of systemic disease in patients with

* *Corresponding author*.
E-mail address: sudandr1993@gmail.com (D. Selvaraj).

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episcleritis /scleritis to be around 20 to 40 percent.[1–3] The disease pattern is also found to be more common among females and among the middle age group. Moreover scleritis has been proven to have more chance of being associated with a systemic illness.

Infectious diseases like Tuberculosis, Syphilis, viral agents like Herpes and many idiopathic and autoimmune disorders like Rheumatoid Arthritis,[4] Inflammatory bowel disease,[5] Sarcoidosis,[6] Systemic lupus erythematosus[7] etc., have been associated with scleritis and episcleritis. Topical and oral NSAIDS, Corticosteroids and Immunomodulators[8] have been used to treat episcleritis and scleritis.[9] In some cases such as necrotizing scleritis, intensive therapy has to be given in order to reduce ocular morbidity. Thus, it is essential for every ophthalmologist to be vigilant to search for a systemic association whenever a patient has been diagnosed with scleritis or episcleritis. Appropriate investigation and specialist referral should be done based on the clinical scenario of the patient.

2. Materials and Methods

This is a cross-sectional study done on 105 patients at the Department of Ophthalmology, Government Raja Mirasudar hospital, Thanjavur Medical College, Thanjavur during the period January 2020 to May 2021.

2.1. Inclusion criteria

1. All patients clinically diagnosed with epislceritis scleritis
2. Both male and female
3. Both unilateral and bilateral cases
4. All age groups

2.2. Exclusion criteria

1. Patients with other anterior segment diseases.
2. Those not willing for ocular examination/those who have not given consent to participate in the study.

The study was approved by institutional ethical committee. Informed consent was obtained from participants. The proforma was used to collect the patients profile which includes name, age, sex, occupation, clinical history, general examination, detailed ocular examination and investigations. Following examinations are done in cases of scleritis and episcleritis.

1. Visual acuity (distance and near vision)
2. Intraocular pressure
3. Detailed anterior segment examination using slit lamp biomicroscopy
4. Posterior segment evaluation using direct and indirect ophthalmoscopy and B scan ultrasnography
5. Investigations.

Basic investigations like complete blood count, erythrocyte sedimentation rate and C Reactive protein was done in all patients to screen for systemic association. Also since Tuberculosis is endemic in our country, mantoux test was done in all patients. Based on the preliminary investigations and clinical examination of the patient, investigations for autoimmune disease screening was done in 31.4% of patients, infective disease screening was done in 7.6% of patients, radio imaging (CT and MRI) was done in 24.8% of patients and other investigations (serum uric acid, peripheral smear study, urine analysis etc.,) were done in 12.4% of patients. Similarly, patients were referred to other specialty departments based on the preliminary investigations and clinical examination.

2.3. Blood investigations

1. Complete blood count
2. ESR and CRP
3. Serum uric acid
4. Peripheral smear study
5. Rheumatoid factor
6. Anti nuclear antibody
7. VDRL
8. Anti cyclic citrullinated antibodies
9. HBs Ag

2.4. Investigations to tule out TB

1. Mantoux test
2. Sputum AFB
3. Chest X-ray

2.5. Imaging

1. Ray of involved joints.

2.6. Other investigations

1. Urine analysis.

2.7. Study duration

January 2020 to May 2021.

2.8. Sample size calculation

A study done abroad revealed the prevalence rate of systemic disease in patients with episcleritis / scleritis to be 36 percent.[1] With prevalence of 36 percent, confidence interval of 95 percent, with an allowable error of 7.5 percent the estimated sample size comes out to be 158.

3. Results

The study was conducted among 105 patients clinically diagnosed with scleritis and episcleritis.

Table 1: Age distribution

Age distribution	Frequency	Percent (%)
0 to 12 years (Young age group)	24	22.9
13 to 60 years (middle age group)	65	61.9
>60 years (old age group)	16	15.2
Total	105	100

Table 2: Gender distribution

Gender	No of cases	Percentage (%)
Male	43	41
female	62	59
Total	105	100

Table 3: Subtypes noted in study subjects

Type	No of cases	Percentage %
Diffuse episcleritis	61	58.1
Nodular episcleritis	30	28.6
Anterior scleritis	10	9.5
Necrotizing anterior scleritis	-	-
Posterior scleritis	4	3.8
Total	105	100

Table 4: Specific systemic association of scleritis and episcleritis noted in study subjects

Systemic disease	Diffuse episcleritis	Nodular episcleritis	Anterior scleritis	Posterior scleritis
Tuberculosis	2	6	1	-
Rheumatoid arthritis	-	-	1	2
Systemic lupus erythematosus	-	-	2	-
Ankylosing spondylitis	-	-	1	-
Sarcoidosis	-	1	-	-
Inflammatory bowel disease	-	1	-	-
Syphilis	-	2	-	-
Wegener granulomatosis	-	-	1	-
Herpes zoster virus	-	-	1	-

Table 5: Comparing systemic disease association in scleritis and episcleritis patients

Type	Precipitating systemic disease association (no of cases)	Precipitating systemic disease association (percentage)	No systemic disease association (no of cases)	No systemic disease association (percentage)
Episcleritis	12	13.2	79	86.8
Scleritis	9	64.3	5	35.7
Total	21		84	

4. Discussion

In our study, the highest incidence of episcleritis and scleritis was found in middle age group (61.9%) followed by young age group (22.8%) and then old age group (15.2%)(Table 1). Females were more commonly affected (59%) and males contributed to 41% of cases (Table 2). The prevalence of episcleritis (86.6%) was more compared to scleritis (13.3%). Among the subtypes diffuse episcleritis was the most common type (58.1%) followed by nodular episcleritis (28.6%). Anterior and posterior scleritis contributed to 9.5% and 3.8% of cases respectively (Table 3). Unilateral involvement of eye was most commonly seen (78.1%) and bilateral involvement of eyes was less commonly seen (21.9%).

Systemic association of a precipitating disease was noted in 20% of cases and the remaining 80% of cases had no association of an underlying precipitating systemic illness. Tuberculosis was a major precipitating disorder associated with scleritis and episcleritis (Table 4). This is evident by the fact tuberculosis is endemic and common in our country. Rheumatoid arthritis was identified in 3 patients. Yang P et al[10] al in their study published in 2016 showed rheumatoid arthritis and tuberculosis to be an important association

in scleritis patients. Systemic lupus erythematosus and syphilis were each noted in two patients. Heron E et al[2] published in French journal of ophthalmology in 2017 and revealed systemic autoimmune diseases to be an important association of scleritis and episcleritis. Wilhelmus et al[11] revealed the association of syphilis with episcleritis and scleritis. Ankylosing spondylitis, inflammatory bowel disease, sarcoidosis, herpes zoster and Wegener granulomatosis were noted in one patient each (Table 4). Bacchiega et al 2017[12] found that ankylosing spondylitis and sarcoidosis were associated with various ocular inflammatory conditions including scleritis, episcleritis and uveitis. Troncoso et al[5] found scleritis and episcleritis to be important ocular manifestations of inflammatory bowel disease.

The middle age group comprising ages between 13 and 60 had the maximum number of systemic disease association (90.4%) followed by young and old age groups each contributing to 4.8% each. Among those cases where a systemic disease association was identified, female patients contributed to 71.4% of cases and male patients contributed to 28.6% of cases. This shows that systemic disease association was more common among female patients compared to male patients. This also correlates with the fact that most of the auoimmune and connective tissue disorders are more common in females.

The systemic disorder noted in episcleritis patients had infective etiology in 83.3% of patients and non infective etiology was observed in 16.7% of patients. In scleritis, the precipitating systemic disorder had infective etiology in 22.2% of cases and non infective etiology was observed in 77.8% of patients. This shows that the precipitating systemic illness in episcleritis patients had predominantly infective origin and in scleritis patients it had predominantly non infective origin like autoimmune and connective tissue pathology. Scleritis patients had more incidence of precipitating systemic illness (64.3%) than episcleritis (13.2%) (Table 5). So it becomes very essential to search for a systemic cause in scleritis patients.

As previously described above, ocular features can be the first manifestation of a systemic disease. Ocular features was the first manifestation in 1 case of sarcoidosis and 4 cases of tuberculosis. 33.3% of episcleritis patients and 11.1% of scleritis patients had ocular features as the presenting complaint of their systemic disease. Hence, prompt recognition helped to reduce systemic and ocular morbidity.

5. Conclusions

Scleritis and episcleritis are common conditions encountered in an ophthalmology out patient department. Their frequent association with an underlying systemic disorder prompts us to assess the systemic status of such patients. Early diagnosis and proper management of such disorders has helped to reduce both systemic and ocular morbidity.

The most vulnerable group are the female population of middle age. A meticulous history taking, clinical examination and investigations help us to identify the associated underlying systemic disorder. Wherever needed, referral to other medical and surgical specialities are done and the control of the systemic disorder often reduces the ocular morbidity. Since ocular features can be the presenting feature of certain systemic disorders, our timely diagnosis can improve the overall outcome.

6. Limitations

1. Long term followup up was not included in the study
2. Follow up of few patients were lost due to the COVID pandemic and travel restrictions and hence the targeted sample size could not be achieved.

7. Source of Funding

None.

8. Conflict of Interest

None.

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Author biography

Rajasekaran Karunakaran, Assistant Professor https://orcid.org/0000-0003-3199-6966

Sudan Marudhachalam, Senior Resident https://orcid.org/0000-0001-8481-4500

Lavannya Thiyagarajan, Assistant Professor https://orcid.org/0000-0002-3289-8615

Dhyan Selvaraj, Senior Resident https://orcid.org/0000-0002-6150-3723

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