



Original Article

Clinical profile and outcome of infectious scleritis

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Abstract

Purpose: To study the clinical profile and outcome of infectious scleritis.

Methods: Retrospective review of medical records of patients of infectious scleritis, from January 2016 to January 2018 at tertiary eye care center was done. Information including patient's age, predisposing factors, clinical presentation, pathogenic organism, treatment and outcome were noted.

Results: A total of 11 eyes of infectious scleritis were identified. All eyes had preceding predisposing factors; trauma (9 eyes) being most common followed by previous ocular surgery (3). Organisms identified in these 11 cases were; *Pseudomonas* (3), Fungus (3), Methicillin resistant staphylococcus epidermidis (2), *Nocardia* (1), *Enterobacter species* (1), and Methicillin sensitive staphylococcus aureus (1). Corneal involvement was seen in 4 cases in form of localized corneal infiltrate. Multifocal scleral abscess was seen in 3 eyes. During the course of treatment, 2 eyes developed serous retinal detachment and 1 eye developed localized retinitis. Mostly cases respond well to treatment.

Conclusion: Early diagnosis, appropriate antimicrobial therapy, and timely surgical intervention are essential to shorten the course of treatment and improve the final outcome of infective scleritis.

Keywords: Infectious scleritis, *Pseudomonas*, Fungal scleritis.

Introduction

Scleritis, an inflammatory disorder of sclera, is often due to immunological phenomena. In nearly 40–50% patients, it is associated with systemic collagen vascular diseases. Infection is a rare but important cause of scleritis, occurring in about 5%–10% of all patients presenting with scleral inflammation.^{1–3} However, the initial clinical picture of infectious scleritis may mimic immune-mediated scleritis. Therefore, patients presenting with scleritis, as an infectious etiology is usually not suspected, which often result in an unusual

delay in the diagnosis. Infectious scleritis can follow accidental or surgical trauma, or can occur as an extension of a primary corneal infection.⁴ Although a variety of organisms have been identified as the cause of infectious scleritis, *Pseudomonas aeruginosa* has been the most commonly reported causative agent in various series.^{6–8} In the earlier series, the clinical outcomes were reported to be poor and most cases required enucleation or evisceration. A review of more recent reports clearly suggest that infectious scleritis can be managed successfully with

preservation of vision as a result of combined antibiotic therapy and early surgical intervention.⁶⁻⁸

We report a series of 18 patients of infectious scleritis from tertiary eye care center in Eastern India.

Methods and Material

Patients of infectious scleritis seen at a tertiary care centre from January 2016 to January 2018 were included in present study. All patients underwent a detailed microbiological workup that consisted of scleral scrapings from the active lesion or de-roofing (in Operation Theater) of the nodular lesion by dissecting the overlying conjunctiva; for microscopic examination as well as culture on blood and chocolate agar, brain–heart infusion broth and Sabouraud’s dextrose agar. Initial therapy was based on either the clinical suspicion or results of microscopic examination of smears. Treatment was later modified depending on the clinical response and the results of culture and sensitivity. The medical management included topical and systemic antibiotics and surgical debridement was performed as indicated to remove the infected necrotic tissue and facilitate antibiotic penetration. Screening was done in all the patients to rule out collagen vascular diseases (Erythrocyte sedimentation rate, C-reactive protein, Antinuclear antibody, Rheumatoid factors factor). Information including patient’s age, the predisposing factors, pathogenic organisms, clinical presentation, methods of diagnosis, treatment, and outcomes were noted from the medical records.

Result

A total of 11 patients (11 eyes) were included in this study. Demographic data of these cases are given in table 1. The age of these patients ranged between 25 and 70 years. Male to female ratio was 6: 5.

All cases had predisposing factors; Trauma (9 eyes) was the most common predisposing factor in

present study. Previous pterygium surgery (3) was second common predisposing factor. The various organisms isolated from these cases are shown in table 2.

8 (72.2%) cases in this series presented with inflamed unifocal tender scleral nodule with pus point. In addition, 3(27.2%) eyes presented with multifocal scleral abscesses.

At presentation, 4 cases (36.3%) had associated corneal involvement. Corneal infiltrate was contiguous with the scleral lesion in all cases and was associated anterior chamber reaction. All the cases of corneal involvement had history of either trauma or surgery. 3 (27.2%) cases had posterior segment involvement in the form of sub retinal fluid (2) and localized retinitis (1).

Initially all cases were treated with broad spectrum topical antibiotics, Followed by treatment modified as per microbiological reports and culture sensitivity patterns. Bacterial scleritis cases were treated with topical and oral antibiotics based on culture and sensitivity reports.

Fungal scleritis cases were treated with topical Natamycin 5% or Itraconazole 1%, supplemented with systemic Ketoconazole 200 mg or Itraconazole 100 mg two times per day. Nocardia scleritis was treated with topical amikacin along with oral Trimethoprim–sulfamethoxazole combination.

Treatment regimen of cases given in table 3.

Surgical debridement was performed in 4 (36.3%) eyes. During the surgical debridement, the actual area of involvement was found to be larger than the visible lesion on biomicroscopic view. 1 cases underwent scleral patch grafting after surgical debridement. Out of 11 cases, infection was resolved in 9 eyes. 1 case lost follow up and 1 cases developed phthisis bulbi.

Table-1 Demographic data

Characteristics	No
No of patients / eyes	11/11
M:F	6:5
OD:OS	4:7
Range of age(Mean)	25-70(Mean 40.22+/-18.65)
Mean follow-up (Months)	13.05

Table-2; Organisms detected in scleral scrapings

Organisms			
Bacterias	No.(%)	Fungus	No.(%)
Pseudomonas	3(27.2)	Aspergillus	2(18.1)
Methicillin resistant staphylococcus epidermidis	2(18.1)	Scedosporium apiospermum	1(0.9)
Enterobacter species	1(0.9)		
Methicillin sensitive staphylococcus aureus	1(0.9)		
Nocardia			1(0.9)

Table-3 Treatment regimen

	Topicals	Oral
Pseudomonas	Moxifloxacin Fortified Amikacin Ciprofloxacin	T. Ciprofloxacin 750 mg BD
Nocardia	Amikacin Moxifloxacin	T. Trimethoprim-sulfamethoxazole
Aspergillus	Natamycin Ciprofloxacin	T Itraconazole 100mg BD
Scedosporium apiospermum	Natamycin Voriconazole Ciprofloxacin	T Ketoconazole 200 mg BD
Enterbacter species	Gatifloxacin Tobramycin	T. Ciprofloxacin 750 mg BD
Staphylococcus aureus	Moxifloxacin Fortified cefazoline	T. Ciprofloxacin 750 mg BD
Surgical management	3 cases - Scleral debridment 1 case - Scleral debridment +Scleral patch graft	

Discussion

Infection is a rare cause of scleritis and prognosis is not as good as autoimmune scleritis. High index of suspicion should be raised in cases of infectious scleritis presenting with progressive scleral necrosis with suppuration, especially if there is a history of accidental or surgical trauma. On other end autoimmune scleritis, generally associated with autoimmune vasculitic diseases. All cases of autoimmune scleritis, require treatment with systemic corticosteroid or other immunosuppressive agents that may worsen infectious scleritis.

Although various organisms have been identified as the cause of infectious scleritis, *P. aeruginosa* remains the leading responsible organism in reported literature.⁴⁻⁷ Unlike these previous reports, Jain et al⁹ reported fungus as a commonest offending organism (38%), probably due to geographic areas with a hot and humid climate.

In our study, we found equal incidence of pseudomonas (27.2%) and fungus. (27.2%)

Fungal scleritis is a rare entity. Huang et al reported 16 cases of infectious scleritis, of which three were fungal (18%). Lin et al⁵ reported 30 patients of infectious scleritis of which only one had fungal keratitis (3%). In a series by Hsio et al.⁶ only one case had fungal etiology (5%) out of total 18 cases of infectious scleritis.

In our study, we have reported 3(27.2%) cases of fungal scleritis out of 11 cases. *Aspergillus flavus* was the most common fungus isolated in these cases. In our series, all cases of fungal scleritis had a preceding history of accidental trauma as predisposing factor. Fungal scleritis usually occurs as an exogenous infection; however, it may result from the hematogenous spread of systemic fungal disease occasionally.¹⁷ We found a single case of *Nocardia* (5.5%) scleritis in this series. This number is less as reported in other series from India. Jain et al⁹ reported 5 cases (24%) and Pradhan¹⁰ et al reported 3 cases (25%) of *Nocardia* scleritis from India. In various other articles, this organism is a rare cause of scleritis.¹¹⁻¹⁴ *Nocardia* is not a normal part of the ocular flora.

The mode of infection is normally by implantation or seeding of the organisms from the soil due to preceding trauma or a foreign body. In present study case with *Nocardia* scleritis had history of both trauma and oral steroid intake. Corticosteroid is known to worsen the nocardia infection, probably by stabilizing and inhibiting the release of lysosomal enzymes thereby preventing the destruction of phagocytosed intracellular *Nocardial* organisms. While literature review suggests a variable response to medical, surgical, and combined treatment regimes, the case in our series responded favourably to treatment.¹¹⁻¹⁴

Staphylococcus aureus is also an established cause of bacterial scleritis¹⁵⁻¹⁶. In our study we also reported *Staphylococcus aureus* as a cause of infectious scleritis. As recommended for severe scleritis refractory to medical treatment, surgical debridement and irrigation of the exposed scleral bed with antibiotics was performed in this series in 4 cases. Surgical debridement not only facilitates the penetration of antibiotics but also

debulks the infected scleral tissue. Lin et al⁵ reported favourable outcomes in 26 cases of infectious scleritis that underwent surgical debridement. Hsio et al⁶ also reported similar outcomes in their series of 18 patients of infectious scleritis. We also reported favorable outcome in all cases managed surgically with scleral debridement and scleral patch grafting.

In our series, the overall outcome of treatment was good, infection resolved in 9 of 11 cases. 1 case lost follow up and 1 case developed phthisis. Unlike the other series visual outcome is good in our series (Table 6); probable cause might be good presenting visual acuity. Hodson et al¹⁸ suggested that degree of final vision loss does not significantly correlate with any specific inciting factor, infectious organism, duration of time from symptom initiation to diagnosis. Rather, visual outcome only significantly correlates with low presenting vision.

Conclusion

In conclusion, Fungal and bacterial infections can equally cause infectious scleritis. Early diagnosis, appropriate antimicrobial therapy, and timely surgical intervention can shorten the course of treatment and improve the final outcome of infectious scleritis.

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