



Spontaneous Extrusion of Lens in Fungal Scleral Abscess

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Authors' contributions

This work was carried out in collaboration between both authors. Author SCR designed the study, performed literature search, treated the patient and wrote the first draft of the paper. Author MS reported the laboratory microbiological tests, contributed to literature search and corrected the first draft of the paper. Both authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Infection is an uncommon cause of scleral inflammation and it heals with appropriate treatment in majority of patients. However, necrosis of scleral tissue occurs in severe microbial infections resulting in abscess rarely. We describe a case of 45- years old female patient who presented with pain, redness in left eye and swelling of left eyelids of four days duration. There was no history of trauma to the eye. Left eye had only perception of light. There were signs of central leucoma and abscess in upper nasal quadrant of sclera in left eye. Patient was started on topical and systemic antibiotics. Eye swab culture did not grow any organisms. The slough excised from the scleral abscess was positive for fungus in Grams stain and potassium hydroxide preparation; and *Candida albicans* was isolated in the culture. The patient was treated with topical and systemic antifungal drugs. Five days later, scleral perforation was noted with partially transparent lens in the scleral

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abscess area which was extruded spontaneously due to movement of the eye. After complete healing, the eye became phthisical and blind. This case is reported in view of the rare occurrence of spontaneous extrusion of the lens in a patient with fungal scleral abscess.

Keywords: Infectious scleritis; scleral abscess; Candida albicans; lens extrusion.

1. INTRODUCTION

Scleritis is a severe, painful inflammation of the sclera which can be idiopathic or a manifestation of systemic auto immune disease/ collagen vascular disease or due to infection. Infectious scleritis can be exogenous or endogenous in origin. Exogenous infections are due to bacteria in majority of cases. Most of the scleral wounds heal rapidly, but virulent infections may give rise to necrotic ulceration and formation of intrascleral abscess. Mycotic infections although rare, may produce a progressive scleritis which may result in perforation.

The pubmed search revealed few reports with different types of fungus isolated as pathogenic organism in patients of infectious scleritis [1-8]. Spontaneous lens extrusion has not been reported in any patient of infectious scleritis in the above studies. The extrusion of lens is seen commonly in cases of perforation of corneal ulcer or following trauma to the cornea. We present, to the authors' knowledge, the first reported case of spontaneous extrusion of lens in a patient with fungal scleral abscess with a brief review of literature on both clinical entities.

2. CASE REPORT

A 45-years old female patient came to eye clinic with complaints of pain, redness, and swelling of left eye of four days duration. There was no history of trauma to the eye or any operation done in the eye. She gave a history of treatment for corneal ulcer in both eyes by a private ophthalmologist three years back, following which she developed white opacities and poor vision in both eyes.

2.1 Left Eye

Vision was only perception of light. Both eyelids were swollen covering the eyeball (Fig. 1). On separating the lids, there was mild proptosis. The conjunctiva was found to be edematous and congested. Slit lamp examination revealed central leukomatous corneal opacity, 8 mm in diameter with marked vascularization all round. Greyish white infiltration was seen in the stroma at 11o'clock position, two mm inside the limbus. There was a whitish area of necrosis in the sclera (10 mm size) in the upper nasal quadrant

in the parsplana region. Adjacent sclera was edematous. Anterior chamber, iris, pupil and lens were not visible due to central corneal opacity. Ocular movements were limited in all directions. Intraocular pressure was normal with digital tonometry.



Fig. 1. Showing corneal opacity in the right eye; and edematous eyelids, congested conjunctiva and corneal opacity in the left eye

2.2 Right Eye

Vision was counting fingers at 3 meters, not improving with pinhole. Eye was not congested. There was a 6 mm size central circular macular corneal opacity (Fig. 1). Pupil was sluggishly reacting to light. Dilated pupil examination revealed posterior synechiae and early lenticular opacity. Binocular indirect ophthalmoscope examination of fundus was normal. Intraocular pressure with tonopen was 19 mm Hg.

The diagnosis of corneal leukoma and scleral abscess in left eye, macular corneal opacity with healed iridocyclitis in right eye was made. Eye swab was taken from the infected area of sclera in the left eye and sent for Gram's stain, and culture and sensitivity before admission to eye ward. She was started on ciprofloxacin eye drops one hourly, atropine eye drops three times daily in the left eye. She was given intravenous gentamicin 80 mg three times daily and Tab. Mephenemic acid 500 mg three times daily, Tab. Vitamin C 500 mg daily.

All the investigations (full blood count, fasting blood sugar, x- ray paranasal sinuses, rheumatoid factor) were within normal range. Urine culture, blood culture were sterile. Grams stain did not show any micro organisms. Culture from eye swab did not grow any organisms.

Edema of eyelids and chemosis of conjunctiva became less and scleral abscess showed whitish slough.

As the eye swab culture was negative, superficial slough from the scleral abscess was excised and sent for Gram's stain, potassium hydroxide (KOH) preparation and culture for bacteria and fungus. Gram's stain of the smear showed few pus cells and few budding oval spores with pseudo mycelia. KOH preparation was positive for fungus. Antibiotic eye drops and intravenous gentamicin were stopped and antifungal drugs were started immediately. Natamycin eye drops 5% (2 hourly) and Amphotecin-B eye drops 0.5% (2 hourly) were started along with Tab. Itraconazole 400 mg per day.

The culture was done using Sabourauds agar and broth which were incubated at 37°C and 22°C respectively. After 48 hours, large raised, white moist and creamy colonies were seen on the media. This characteristic culture was examined on a Gram's stain smear which showed round or oval budding yeast cells mixed with long filaments (pseudo mycelia) indicating the *Candida* species.

However, five days later scleral perforation was noted with a partially transparent lens over the abscess area (Fig. 2 A). The lens extruded spontaneously due to movement of the eye (Fig. 2 B). Yellowish vitreous came out. There was no perception of light in the left eye. Same topical and systemic antifungal treatment was continued.

The patient was explained about the condition of left eye and zero visual prognosis. The necrosed sclera sloughed out completely and the perforated area closed in two weeks period by granulation tissue in the next ten days time (Fig. 3). Culture on Sabourauds agar medium showed *Candida albicans* after three weeks period.

Tab. Itraconazole was stopped. The patient was discharged from the hospital and same topical antifungal eye drops were continued four times daily. She was followed up at weekly interval, during which the eye became phthisical after four weeks. The patient was advised corneal transplantation in right eye and referred to the

government state hospital where facilities were available.

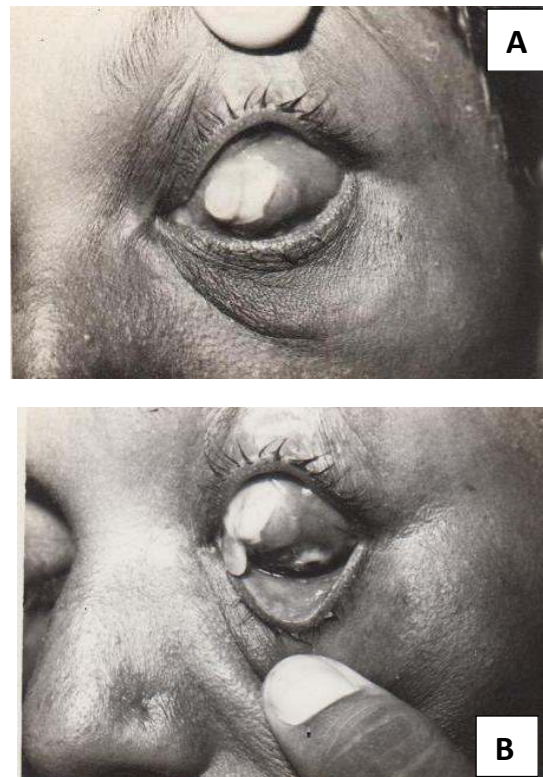


Fig. 2. (A) showing the perforated scleral abscess with lens on its surface, and (B) showing the extrusion of the lens, seen on the lower eyelid margin



Fig. 3. Showing the healing of scleral abscess area by granulation tissue in the left eye

3. DISCUSSION

The prevalence of infectious scleritis has been reported to be varying from 1.7% (6 out of 349

scleritis) [1], 14.5% (11 out of 76 scleritis) [2] to 17.87% (42 out of 235 scleritis) [3]. Among the infectious scleritis cases, the reported prevalence of fungus isolation varied from 10.9% to 45.5% in the literature (Table 1).

The clinical findings in fungal scleritis reported in the literature are scleral abscess, scleral necrosis, corneal infiltrate [4,5], scleral perforation, stromal edema, anterior chamber reaction, anterior uveitis, endophthalmitis [4], keratitis, uveitis [6]. The risk factors reported in these patients are pterygium excision [3,4,6], systemic steroids, vegetable (wooden) matter injury, topical steroids, vitreo retinal surgery for retinal detachment [3], scleral buckling surgery, acid burns [4], cataract surgery, injury to eye [4-6].

During investigation for the causative organism, fungus can be seen in Grams stain or KOH preparation, and is cultured on Sabouraud

agarmedium. Some times the smear is positive for fungus and not the culture, and vice versa has been reported in the literature. Occasionally, the fungus species could not be identified. Various species of fungus isolated is different studies are shown in Table 2.

The medical treatment in fungal scleritis includes intensive topical antifungal (natamycin 5%, amphotericin B (0.5%) eye drops and systemic antifungal (Tab. Itraconazole 400 mg daily, Tab. Ketoconazole 200-400 mg daily, Tab. Fluconazole 200-400 mg daily) drugs. Surgical treatment includes debridement for diagnostic and therapeutic purpose, and depending on the progress and complications (perforation of sclera, endophthalmitis, phthisis) evisceration is required.

Jain et al. [4] reported that fungal scleritis is more commonly encountered in hot, humid climates, generally following surgical or accidental trauma.

Table 1. Showing the prevalence of fungal aetiology in infectious scleritis cases

Author	Country	Period of study	No. of infectious scleritis	No. with fungal aetiology (%)
Cunningham et al. [1]	USA	1999 – 2009	6	1 (16.6%)
Ahn et al. [2]	Korea	Jan 2005 to Dec 2008	11	5 (45.5%)
Reddy et al. [3]	India	March 2005to Dec 2009	42	10 (23.8%)
Jain et al. [4]	India	Jan 2000 to Feb 2005	21	8 (38.1%)
Sahu et al. [5]	India	Nov.2006 to Aug 2009	17	4 (23.5%)
Pradhan & Jacob [6]	India	Jan 2007 to Aug 2011	12	3 (25.0%)
Ho et al. [7]	Taiwan	Jan 2003 to Dec 2012	48	9 (18.7%)
Hodson et al. [8]	USA	1987 – 2010	55	6 (10.9%)

Table 2. Showing various species of fungus species reported from different studies in infectious scleritis eyes

Author	Various fungus isolated in infectious scleritis
Cunningham et al. [1]	<i>Scedosporium apiospermum/Pseudallescheria boydii</i> .
Ahn et al. [2]	<i>Fusarium, Stenotrophilia, Aspergillus, Beauveria, Candida</i> .
Reddy et al. [3]	<i>Cladosporium, Colletotrichum dematium, Aspergillus flavus, Demataciou fungus, Paecilomyceslilacinus, Aspergillus tereus</i> .
Jain et al. [4]	<i>Aspergillus fumigatus, Acremonium, Claudosporium, Hyaline fungus</i>
Sahu et al. [5]	<i>Fusarium, Paecilomyces</i> .
Pradhan & Jacob [6]	<i>Aspergillus flavus, Filamentous fungus, Yeast Rodotorula</i> .
Ho et al. [7]	<i>Fusarium solani, A. flavus, Acremonium, Candida albicans, Paelomyces, C.parapsilosis</i> .
Hodson et al. [8]	<i>Fusarium axysporium, Sedosporium apiaspermum, Aspergillus, Carvularia</i> .

Full thickness corneal inflammation contiguous with scleral inflammation is common. In their study, patients with fungal scleritis progressed, despite treatment, to develop cataract, choroidal detachment, endophthalmitis, phthisis. If the infection is completely resolved, the visual outcome will be good; otherwise when the complications occur the outcome of treatment is poor and sometimes evisceration is needed.

In our case, the typical scleral abscess was seen at presentation and the fungus was positive in Grams stain and KOH preparation. *Candida albicans* was isolated in the culture. Unfortunately the eye did not respond to topical and systemic antifungal therapy, resulting in perforation of sclera and extrusion of the lens which could be probably due to the location of scleral abscess in parsplana region and due to movements of the eye. The scleral wound finally healed but the outcome was phthisical blind eye.

Spontaneous lens extrusion is rarely seen in ophthalmic practice following perforation of large corneal ulcers. Spontaneous extrusion of the lens has been reported following perforation of cornea due to *Acanthamoeba* keratitis in a 61-year-old lady who experienced the sensation of an object 'falling out of the eye' and she brought it in a wine glass to the emergency department [9]. Hall and Goyal [10] reported a 5-month-old female infant who presented with corneal perforation and crystalline lens extrusion secondary to *Pseudomonas aeruginosa* endophthalmitis and was later diagnosed with cystic fibrosis. Corneal ulceration and perforation with extrusion of the lens in burns patient was reported by Ho et al. [11]. In a case series of seven eyes of penetrating keratoplasty, lens extrusion was noted due to traumatic wound dehiscence. The mean interval between keartoplasty and trauma was 15.6 months (range, 2.5 to 26.5 months). Hitting by a hand was the cause of blunt trauma in most cases [12].

4. CONCLUSION

Candida albicans infection causing scleral abscess and perforation of eyeball with spontaneous extrusion of the lens is very rare. As the scleral perforation was in the parsplana region, the lens was extruded, due to movements of the eye, through the opening in the scleral abscess.

CONSENT

As per international standard or university standard written patient consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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