

Infectious scleritis after using mitomycin in the postoperative period of pterygium surgery

Esclerite infecciosa após uso de mitomicina no pós-operatório de cirurgia de pterígio

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ABSTRACT

This report described a case of a 56-year-old female patient with a history of pterygium excision and use of mitomycin C eye drops during the postoperative period who developed necrotizing infectious scleritis caused by *Pseudomonas aeruginosa*. The patient was admitted for treatment with intravenous antibiotic therapy, topical fortified antibiotics, systemic corticotherapy, and debridement of the necrotic ocular tissue. After 3 weeks, she presented with good clinical evolution and resolution of the infection. Mitomycin eye drops should be used cautiously, particularly after surgery. If mitomycin is used, it should be applied at the lowest concentration and for the shortest duration possible and should be avoided postoperatively to prevent these complications. Although scleral infection is a serious condition with a high risk of permanent vision loss, early and appropriate treatment can be critical for good clinical outcomes.

RESUMO

Este relato descreve o caso de uma paciente de 56 anos com história de exérese de pterígio e uso de colírio de mitomicina C no pós-operatório, que desenvolveu esclerite infecciosa necrosante por *Pseudomonas aeruginosa*. A paciente foi internada para tratamento com antibioticoterapia endovenosa, antibióticos tópicos fortificados, corticoterapia sistêmica e desbridamento do tecido necrótico ocular. Após 3 semanas, apresentou boa evolução clínica e resolução da infecção. Os colírios de mitomicina devem ser usados com cautela, principalmente após a cirurgia. Se a mitomicina for usada, ela deve ser aplicada na menor concentração e pela menor duração possível, devendo ser evitada no pós-operatório, para evitar essas complicações. Embora a infecção escleral seja uma condição grave com alto risco de perda permanente da visão, o tratamento precoce e correto pode ser fundamental para bons resultados clínicos.

INTRODUCTION

Scleritis is an inflammatory process of the sclera that can lead to permanent vision loss. Several etiologies are involved, with autoimmune etiology being the most significant, accounting for nearly 90% of all cases.⁽¹⁻⁵⁾ Although infection is considered the second most common cause of scleritis, it accounts for only 5 to 10% of cases. A history of eye surgery is the main associated trigger and may be related to trabeculectomy, scleral buckling, and pterygium excision surgery.⁽¹⁻⁸⁾

The most common infectious agent is *Pseudomonas aeruginosa*.⁽¹⁻⁵⁾ Other pathogens such as *Nocardia*, *Streptococcus*, *Haemophilus*, *Candida*, and *Aspergillus* have also been reported.^(1,2,5,7)

On ophthalmological examination, patients with infectious scleritis usually present with pain, redness, scleral necrosis, and purulent discharge. They may also exhibit calcified plaques, anterior segment inflammation, corneal involvement, multiple scleral abscesses, and poor vision.^(1,5,6,9)

Patients with newly diagnosed scleritis and no history of ocular trauma should undergo clinical and laboratory investigations for vasculitis. Systemic infections such as Lyme disease or syphilis should also be ruled out.^(1,9)

In the presence of infectious scleritis, scleral tissue samples should be obtained for culture^(1,2,6,9) using blood and chocolate agar, thioglycolate, Sabouraud agar, non-nutrient agar with *Escherichia coli*, and brain heart infusion.⁽¹⁾

Suspecting the infectious etiology of scleritis and initiating immediate treatment such as intravenous therapy and, at the appropriate time, using steroidal anti-inflammatory drugs can prevent permanent vision loss.^(4,8)

This report described a case of a 56-year-old female patient with a history of pterygium excision and use of mitomycin C eye drops during the postoperative period that developed necrotizing infectious scleritis caused by *P. aeruginosa*.

CASE REPORT

A 56-year-old healthy woman was admitted to the Ophthalmology Emergency Room of *Santa Casa de São Paulo*, at São Paulo (SP), with complaints of severe pain and irritation in her right eye for 30 days. She had undergone pterygium surgery with conjunctival transplant in the right eye at another institution a month earlier and used mitomycin C 0.02% eye drops postoperatively for 1 week.

Ophthalmological examination revealed conjunctival hyperemia of the right eye (3+/4+), chemosis (1+/4+),

and a scleral ischemic area in the nasal region with purulent secretion (Figure 1) associated with poorly defined corneal thinning and punctate keratitis. The biomicroscopy of the anterior segment of the left eye was unaltered.



Figure 1. Biomicroscopy of the anterior segment of the right eye showing infectious scleritis.

After clinical evaluation, infectious scleritis was suspected, and samples of scleral lesion material were collected for culture and microbiological evaluation. The patient was admitted and started on topical fortified antibiotics (vancomycin and amikacin) and systemic intravenous ceftazidime. Additionally, surgical intervention was performed for debridement of the necrotic lesion borders and cautious subconjunctival injection of vancomycin and amikacin.

After 3 days, the bacterial culture results were positive for *P. aeruginosa*, which was sensitive to the proposed antibiotic therapy, confirming the clinical suspicion. The decision was made to maintain the treatment and conduct daily ophthalmologic evaluation. After 2 weeks of favorable clinical progress, oral corticosteroid (prednisone 60mg/day) was prescribed, followed by topical fluorometholone eye drops three times a day. As the condition improved, weekly weaning from oral corticosteroids and topical antibiotics was implemented.

The patient showed significant improvement after 3 weeks of hospitalization and maintenance of topical and systemic treatment; however, scleral thinning in the

ischemic area of the right eye persisted (Figure 2). The patient remains under medical follow-up, during which revascularization at the topography of the infection was observed. Therefore, expectant management was decided at the moment. (Figure 3)

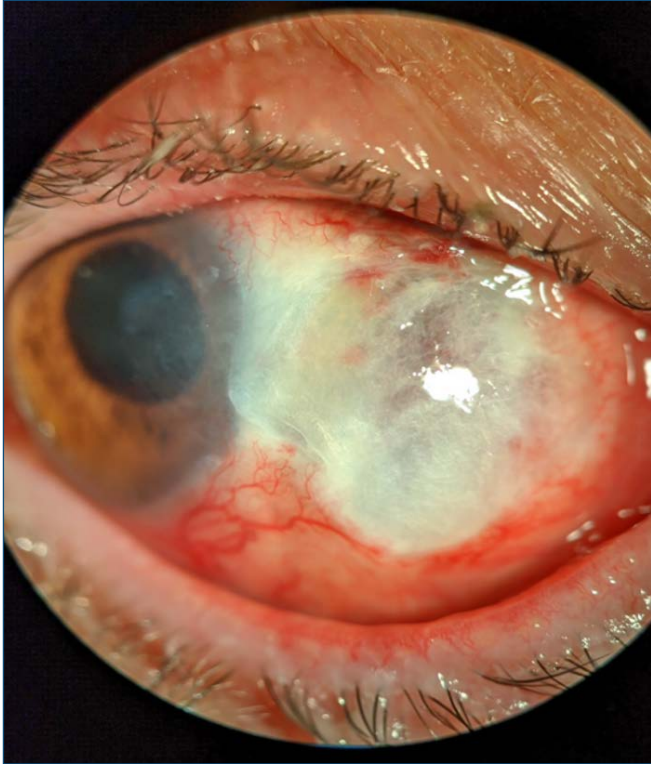


Figure 2. Biomicroscopy of the anterior segment of the right eye after treatment for infectious scleritis.

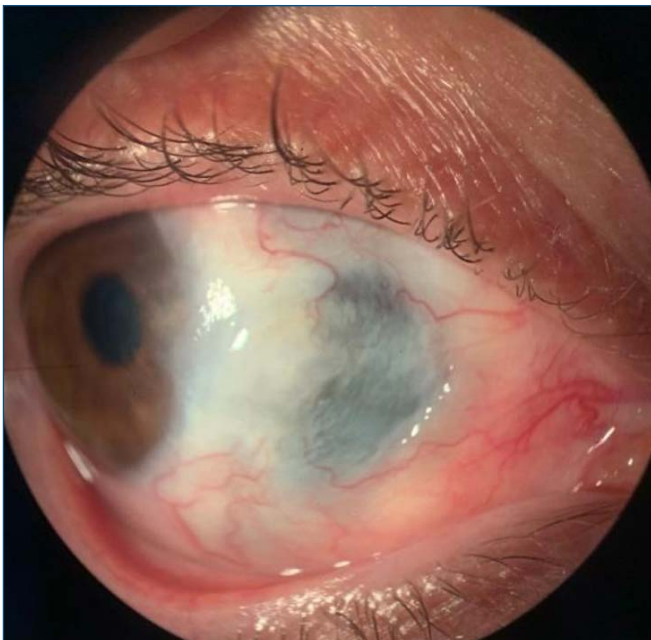


Figure 3. Biomicroscopy of the anterior segment at the follow-up after treatment, in which it is possible to observe revascularization at the site where the infection occurred.

DISCUSSION

It is extremely important to define the cause of scleritis; hence, most cases are autoimmune, and the treatment is systemic corticosteroids, which could lead to drastic evolution in infectious scleritis. Early antibiotic treatment is essential to stop progression; it should be precocious and aggressive serious ocular impairment.

As described in the literature, infectious scleritis occurs due to surgical trauma in most cases, the leading cause being pterygium excision. The chances of complications increased when the surgery was associated with using mitomycin C intraoperatively and/or postoperatively,⁽¹⁰⁾ as observed in our case.

In this patient, the causative agent was *P. aeruginosa*. The most common infectious agent was *P. aeruginosa*.⁽¹⁻⁵⁾ Other vectors such as *Nocardia*, *Streptococcus*, *Haemophilus*, *Candida*, and *Aspergillus* have also been described.^(1,2,5,7)

Although tissue necrosis occurred, the structural and functional integrity of the patient's eye was maintained, and the infection did not recur after treatment, due to the early and aggressive treatment.

Therefore, it is very important to use appropriate surgical techniques to excise the pterygium and adequate adjuvant therapy to avoid complications and, if they occur, to intervene immediately.

Measures such as avoiding the excessive use of cautery^(1,9) and antimetabolic therapy, especially after surgery, can prevent the development of scleritis.^(1,2,9) The correct mitomycin dilution for topical ocular use and a short exposure time (30 seconds to 3 minutes, depending on each case) should also be observed, avoiding direct contact with the chemotherapeutic agent with the naked sclera.

If acute purulent infectious scleritis is suspected, initial treatment with broad-spectrum topical and systemic antibiotics against *Pseudomonas* can be initiated even without scraping results, and later treatment can be optimized based on the culture results.^(1,3-6) After apparent favorable responses to antibiotics, systemic oral steroids should be administered for clinical improvement.^(3-5,9,11) These patients may also undergo early and repetitive surgical debridement of the lesions.^(1,3)

Untreated infectious scleritis has a high risk of progressing to evisceration or enucleation owing to the spread of infection to neighboring structures or perforation of the eyeball.^(1,6)

Worse visual outcomes were correlated with low visual acuity at onset, endophthalmitis, keratitis, isolated drug therapy, and fungal infections.^(1,2,9)

Although postoperative use of mitomycin may provide low recurrence rates, the risks, including persistent corneal epithelial defects, corneal melting, scleral ischemia, and corneal and scleral infections, are higher than those with intraoperative use.⁽⁸⁾ Therefore, the use of mitomycin C should be performed with extreme caution, especially in the postoperative period. Although, in this case, the patient had a good evolution, they usually have unfavorable outcomes.

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