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**Case Report Article**

# Severe Corneal Abscesses: Diagnostic and Therapeutic difficulties about 180 cases

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## Abstract

Corneal abscesses, whether bacterial, fungal or viral in origin, represent a major public health challenge, and can lead to significant vision loss through corneal scarring or surface irregularities. If left untreated, they can even lead to corneal perforation and endophthalmitis, resulting in permanent ocular damage. Our retrospective, descriptive and analytical study of 180 patients hospitalized for severe corneal abscess revealed risk factors such as ocular trauma, contact lens wear, ocular surgery and underlying medical conditions.

## Introduction

Ocular abcess remains a major cause of blindness worldwide, and represents a difficult public health challenge. Whether fungal, bacterial or viral in origin, it can lead to significant vision loss due to scarring of the cornea or irregularities in its surface. If left untreated, corneal perforation and endophthalmitis can occur, leading to permanent eye damage. Our study will analyze the clinical, microbiological and therapeutic aspects of abces.

## Materials and Methods

A retrospective, descriptive and analytic study of patients presenting severe corneal abscess was conducted over 4 years, from June 1st of 2019 to December 30th of 2023. In the ophthalmology B department of hospital specialty Rabat. The epidemiological, clinical and microbiological aspects, were analyzed.

## Results

In our series, 180 patients were hospitalized for corneal abscesses during the study period. The sex ratio was 2.21 (69% female/ 31% male) and the mean age was 39 years. The average hospital stay was 15 days. The mean duration of consultation was one week. All patients were unilateral. Ocular trauma was the most frequent risk factor in our series, with 100 cases (55.5%); contact lens wear in 40 cases (22%), ocular surgery in 16 cases (9%), the presence of ciliated trichiasis in 4 cases (2%), 9 patients had unbalanced diabetes with a mean hemoglobin of 9% (5%), 5 cases of ocular rosacea (3%) and one case of lagophthalmos (2%). 90% of patients had visual acuity ≤ 2/10 (Figure 1).

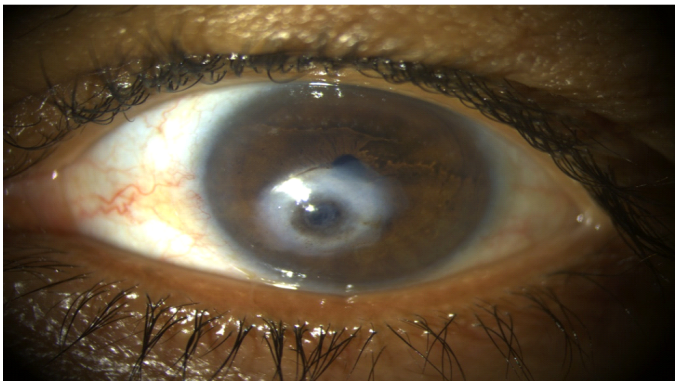

**Figure 1:** Pseudomonas Bacterial Keratitis in a contact lens wearer with descemetocele

The site was central in 74% of cases, paracentral in 15% and peripheral in 11%. A hypopyon was present in 20% of cases. 20 cases of corneal ulcer were identified using fluorescein. A pre-perforative state was found in 11 cases. Corneal abscess scraping was performed in all patients. The microbiological study was positive in 30 cases, identifying streptococci after culture in 10 cases, staphylococci in 6 cases, Neisseria in 4 cases and suspecting fungal involvement after direct examination in 6 cases, and positive HSV PCR in 4 cases. The majority of patients received empirical broad-spectrum antibiotic therapy with vancomycin and ceftazidime, ciprofloxacin, and hexamidine. Systemic antifungals were indicated in 6 cases, given the lack of improvement with antibiotic therapy and the unavailability of amphotericin B in Morocco. Oral or intravenous antiviral therapy was administered in 4 patients. Progression was favorable in 46% of cases (Figure 2).

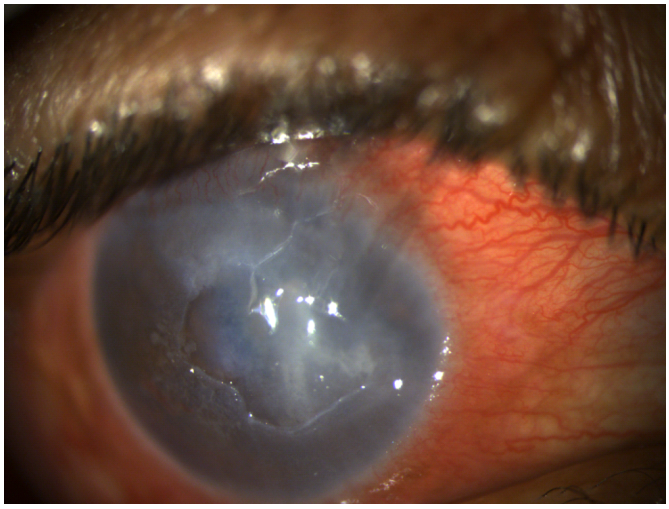

**Figure 2:** Pseudomonas Bacterial Keratitis in a contact lens wearer with descemetocele

## Discussion

Corneal abscesses are serious eye infections that can occur at any age. Elderly people with diabetes or immunodepression, and young patients suffering from eye trauma, are particularly prone. All these risk factors weaken the cornea's defenses, making it vulnerable to bacterial infections, as well as the unsatisfactory quality of samples taken from the cornea or conjunctiva in some cases [1].

Only four groups are identified in 90% of CA [2]: staphylococci, streptococci, Pseudomonas, and enterobacteria.

In our study, corneal abscesses affected all age groups, but young adults were the most affected, with a male predominance. This is in line with the literature [3, 4]. Individuals suffering from ocular trauma or ocular surface disease are the most frequently affected, as is the case in our situation [5, 6].

In our study, we observed a 17% positivity rate for microbiological samples. This result is similar to that of the study carried out by Seck et al [7] in Dakar.

They are mainly due to bacterial, fungal, amoebic, and herpetic infections. The most common bacteria associated with the induction of abscesses are Pseudomonas aeruginosa, Streptococcus pneumonia, Staphylococcus aureus, Enterobacteriaceae, Nocardia sp., Diphtheroids, Moraxella, Serratia sp [8].

Abscesses are treated according to their clinical severity, as well as ophthalmological and general conditions [9].

The treatment of infectious keratitis of bacterial and fungal origin is based on the use of antibiotics and antifungals such as gentamycin, ciprofloxacin, rifamycin, and amphotericin B [3]. In the 1970s, amoebic keratitis was discovered due to the frequent use of contact lenses. Since then, progress has been made in understanding and treating this pathology [10].

When abscesses are not severe, microbiological diagnosis is generally unnecessary. Patients can be treated at home with commercially available antibiotic eye drops, such as a fluoroquinolone and/or an aminoglycoside [11]. However, in the case of severe abscesses, it is necessary to go to the hospital for broad-spectrum probabilistic antibiotic treatment, using fortified eye drops such as amikacin, ceftazidime, and vancomycin. Before initiating this treatment, a microbiological sample is taken by scraping the cornea. Some authors recommend switching to specific antibiotics once the antibiogram has been established, to reduce the risk of local toxicity. Others, however, suggest a gradual reduction in dosage depending on tolerance and clinical efficacy [12].

To date, no single effective treatment has been described for Acanthamoeba infection, whatever the strain or genotype responsible. Given the small number of reported cases, the pathogenic variability of different strains, and the inherently fluctuating nature of the disease process, it is difficult to establish a universal treatment regimen [13].

Therapy is generally initiated using a biguanide and a diamidine , although there is no clinical evidence to suggest that this is more effective than PHMB monotherapy alone. Drops of PHMB 0.02% and hexamidine are taken daily, day and night, for an initial period of 48 hours, followed by hourly treatment for a further 72 hours during waking hours [14].

Fungal abscesses remain difficult to treat despite the use of topical and systemic antifungal agents and adjuvant surgery, such as corneal transplantation [15].

Treatment of viral corneal abscesses involves a combination of antiviral and anti-inflammatory therapies [16].

If medical treatment fails, surgical approaches such as partial conjunctival flaps may effectively resolve infection and maintain graft clarity. Furthermore, in cases of corneal infiltrates, prolonged anti-inflammatory therapy combining corticosteroids and 0.05% cyclosporine A has shown positive clinical results, leading to improved visual acuity and complete resolution of corneal opacities [17].

## Conclusion

Corneal abscesses are serious eye infections that can occur across all age groups, with various risk factors. Microbiological samples typically show positivity rates around 17%, with streptococcus being the most frequent bacteria. Treatment varies based on severity, with options including antibiotics, antifungals, and sometimes surgical intervention.

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