



## MODERN PROBLEMS IN EDUCATION AND THEIR SCIENTIFIC

SOLUTIONS

### KERATITIS: ETIOLOGY, CLINICAL FEATURES, AND MANAGEMENT STRATEGIES

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**Abstract:** Keratitis is an inflammatory disorder of the cornea, which may result from infectious or non-infectious causes. It represents one of the leading causes of corneal blindness worldwide if left untreated. This article discusses the etiology, pathogenesis, clinical manifestations, diagnostic methods, and management of keratitis, emphasizing recent advances in treatment and prevention.

#### Introduction

The cornea is a transparent, avascular structure essential for maintaining visual acuity. Inflammation of the cornea, known as keratitis, may compromise its transparency and structural integrity. Keratitis remains a major ophthalmic concern, especially in developing countries where access to prompt medical care is limited. It can arise due to microbial infections (bacterial, viral, fungal, or parasitic) or non-infectious causes such as trauma, contact lens misuse, or autoimmune conditions.

#### Etiology

Keratitis can be classified based on its underlying cause:

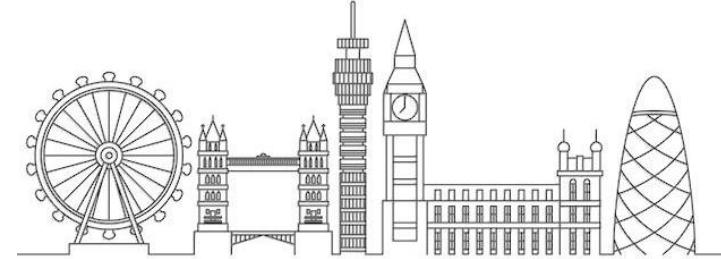
1. **Bacterial Keratitis:** Commonly caused by *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Streptococcus pneumoniae*. It is frequently associated with contact lens wear.
2. **Viral Keratitis:** Typically caused by *Herpes simplex virus (HSV)* and *Varicella-zoster virus (VZV)*, leading to recurrent infections and corneal scarring.
3. **Fungal Keratitis:** Caused by filamentous fungi (*Aspergillus*, *Fusarium*) or yeasts (*Candida* species), often following corneal trauma with vegetative matter.
4. **Acanthamoeba Keratitis:** A rare but severe form associated with contaminated contact lenses and poor hygiene practices.
5. **Non-infectious Keratitis:** Results from dry eye disease, ultraviolet light exposure, autoimmune disorders, or trauma.

#### Clinical Features

Patients with keratitis usually present with eye pain, redness, photophobia, decreased vision, excessive tearing, discharge, and corneal opacity or ulceration visible upon slit-lamp examination. Severe cases may lead to corneal perforation and permanent vision loss if not treated promptly.

#### Diagnosis

Diagnosis is based on clinical examination and laboratory findings. Key diagnostic tools include slit-lamp biomicroscopy, corneal scraping and microbial culture, polymerase chain reaction (PCR), and confocal microscopy for Acanthamoeba or fungal keratitis.





## Management

Treatment depends on the underlying cause: bacterial keratitis is treated with topical broad-spectrum antibiotics, viral keratitis with antivirals, fungal keratitis with antifungal agents, and Acanthamoeba keratitis with biguanides and diamidines. Corticosteroids may be used cautiously, and surgical options like corneal transplantation are considered for severe cases.

## Prevention

Preventive strategies include maintaining proper contact lens hygiene, protecting eyes from trauma, and prompt treatment of ocular surface diseases. Public awareness programs are vital in reducing keratitis incidence in developing regions.

## Conclusion

Keratitis remains a significant public health issue with potentially sight-threatening consequences. Early diagnosis, proper etiological identification, and timely intervention are essential for preserving vision. Continued research and education are necessary to improve preventive and therapeutic outcomes, particularly in low-resource settings such as Uzbekistan.

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