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Editorial

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Corneal Diseases: Causes, Pathology and Clinical Significance

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Introduction

The cornea is the transparent, avascular structure forming the anterior part of the eye and plays a crucial role in vision by refracting light onto the retina. Its clarity and integrity are essential for normal visual function. Corneal diseases encompass a wide range of conditions that affect the structure or transparency of the cornea, leading to visual impairment or blindness. These disorders may be congenital or acquired and can result from infections, inflammation, trauma, degenerative changes, or systemic diseases. Understanding corneal diseases is vital for early diagnosis, appropriate management, and prevention of long-term visual loss [1,2].

Discussion

Corneal diseases can be broadly classified into infectious, inflammatory, degenerative, dystrophic, and traumatic conditions. Infectious keratitis is one of the most serious corneal disorders and may be caused by bacteria, viruses, fungi, or parasites. Bacterial keratitis often presents acutely with pain, redness, and corneal ulceration, while viral infections such as herpes simplex keratitis are characterized by recurrent episodes and characteristic dendritic ulcers. Fungal and parasitic keratitis, although less common, are often severe and difficult to treat, especially in tropical regions or following ocular trauma [3,4].

Inflammatory corneal conditions include non-infectious keratitis and peripheral ulcerative keratitis, which are frequently associated with autoimmune or systemic inflammatory diseases. These conditions can cause progressive corneal thinning and perforation if not adequately managed. Degenerative disorders such as keratoconus involve progressive thinning and protrusion of the cornea, resulting in irregular astigmatism and visual distortion. Early detection is important, as newer treatments such as corneal collagen cross-linking can slow disease progression [5].

Corneal dystrophies are inherited, bilateral, and usually progressive conditions characterized by abnormal deposition of material within corneal layers. Examples include Fuchs endothelial dystrophy and lattice dystrophy, which may lead to corneal edema or opacification over time. Traumatic corneal injuries, including abrasions and chemical burns, can disrupt the epithelial barrier and predispose the cornea to infection and scarring.

Advances in diagnostic techniques such as corneal topography, confocal microscopy, and optical coherence tomography have improved the evaluation of corneal diseases. Therapeutic options range from medical management with antimicrobial and anti-inflammatory agents to surgical interventions such as keratoplasty.

Conclusion

Corneal diseases are a significant cause of visual morbidity worldwide. Prompt recognition and appropriate treatment are essential to preserve corneal transparency and visual function. Ongoing advances in diagnostic tools and therapeutic strategies continue to improve outcomes for patients with corneal disorders.

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