Insights into Corneal Neuropathic Pain: Unraveling the Neurophysiological Mechanisms

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Abstract

Corneal neuropathic pain is a debilitating condition characterized by persistent ocular discomfort, burning, and stinging sensations, often resulting from damage or dysfunction of corneal nerves. This condition poses signiýcant challenges in ophthalmology and pain management, impacting patient quality of life. Understanding the neurophysiological mechanisms underlying corneal neuropathic pain is crucial for the development of e ective treatments. This abstract provides insights into the pathophysiological mechanisms implicated in corneal neuropathic pain, including nerve injury, sensitization, neuroinþammation, and corneal epithelial dysfunction. Emerging therapeutic approaches targeting these mechanisms o er hope for improved pain management and patient outcomes in corneal neuropathy.

Introduction

Corneal neuropathic pain, a debilitating condition resulting from damage or dysfunction of corneal nerves, presents a signi cant challenge in ophthalmology and pain management. Patients su ering from corneal neuropathic pain o en describe symptoms such as persistent burning, stinging, and foreign body sensation, severely impacting their quality of life. Understanding the neurophysiological mechanisms underlying this condition is crucial for developing e ective treatments and improving patient outcomes. Corneal neuropathic pain can be central, peripheral or have both central and peripheral components. Corneal neuropathic pain is a complex process involving di erent cell types and molecules; nerves, dendritic cells, neurokines, neuropeptides, and axon-guidance molecules which causes a high level of sensory rearrangement. ese processes emanating in corneal neuropathic pain is not well understood warranting further studies to ascertain appropriate pharmacotherapeutics required in speci c clinical scenarios [1]. is paper reviews the current understanding of the neurophysiological pathways of corneal neuropathic pain and current state of its neuropharmacological management.

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