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Commentary

Low Vision Rehabilitation in Macular Neovascularization

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DESCRIPTION

Inherited Retinal Diseases (IRDs) encompass a diverse group of genetic disorders that affect the structure and function of the retina, leading to progressive vision loss. One of the devastating complications that can arise in IRDs is Macular Neovascularization (MNV). MNV is characterized by the abnormal growth of new blood vessels beneath the macula, a crucial part of the retina responsible for central vision. This review provides a comprehensive overview of the occurrence, pathogenesis, clinical implications, and management of macular neovascularization in inherited retinal diseases. IRDs are genetic disorders that primarily affect the photoreceptor cells or the Retinal Pigment Epithelium (RPE) in the retina. These conditions are often caused by mutations in various genes responsible for maintaining retinal function. Common IRDs include Retinitis Pigmentosa (RP), Stargardt disease, Best disease, and Usher syndrome, among others. Although the genetic basis of these diseases varies, they share the common feature of progressive retinal degeneration. Macular neovascularization refers to the formation of abnormal blood vessels that grow beneath the macula, a region essential for central vision. These aberrant vessels can leak blood and fluid, leading to swelling and damage in the macular area. As a result, individuals with MNV often experience a rapid decline in central vision, which can severely impact their daily activities, including reading and recognizing faces. Dysregulation of Vascular Endothelial Growth Factor (VEGF) a growth factor that stimulates the formation of new blood vessels, is a key driver of MNV in IRDs. Overexpression of VEGF can promote the growth of abnormal vessels in the macula. Chronic inflammation within the retina may contribute to the development of MNV. Inflammatory cytokines and immune cells can disrupt the delicate balance of angiogenesis (blood vessel growth) and vessel maintenance. MNV poses significant challenges in the management of IRDs, as it can lead to rapid and severe vision loss. Patients with IRDs may already have compromised vision due to the underlying genetic mutations, and MNV further exacerbates their visual impairment. Early detection and timely intervention are crucial to preserving as much vision as possible. Intravitreal injections of anti-VEGF agents like bevacizumab or ranibizumab can help reduce abnormal blood vessel growth and fluid leakage, slowing down vision loss. Photodynamic Therapy (PDT) involves the use of a photosensitizing drug and laser therapy to selectively target and close abnormal blood vessels in the macula. Emerging gene therapy approaches aim to address the underlying genetic mutations responsible for IRDs, potentially preventing the development of MNV in the first place. For individuals with advanced MNV-related vision loss, low vision rehabilitation programs can help optimize their remaining vision and enhance their quality of life. Macular neovascularization is a serious complication that can occur in inherited retinal diseases, further compromising the already compromised vision of affected individuals. Understanding the pathogenesis of MNV and its clinical implications is essential for early detection and effective management. Ongoing research into gene therapies and other novel interventions offers hope for preserving and restoring vision in individuals with MNV and inherited retinal diseases, emphasizing the importance of continued advancements in the field of ophthalmology.

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