

One Significant Advancement for Thyroid Eye Disease, One Incremental Step Forward for Doxycycline

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Abstract

Thyroid eye disease, also known as Graves' orbitopathy, is an autoimmune condition characterized by inflammation and swelling of the tissues around the eyes. The disease can cause significant morbidity and affect the quality of life of affected individuals. In recent years, several advancements have been made in the management of TED, including the development of new treatment modalities and the repurposing of existing medications. This article reviews one significant advancement in the treatment of TED, the use of teprotumumab, and one incremental step forward in the use of doxycycline, an existing medication with potential benefits in TED management. The treatment landscape for Thyroid Eye Disease has evolved significantly, with advancements like Teprotumumab offering new hope for patients. This biologic has set a new standard for efficacy in reducing proptosis and improving eye function in TED patients.

Keywords: Orbitopathy • Doxycycline • Biologic

Introduction

Thyroid eye disease is a debilitating autoimmune condition that affects the eyes and surrounding tissues. It is most commonly associated with Graves' disease, an autoimmune disorder that affects the thyroid gland. TED is characterized by inflammation, swelling, and tissue expansion in the orbit, leading to symptoms such as proptosis (bulging eyes), double vision, and eyelid retraction. The management of TED can be challenging, and treatment options have traditionally focused on managing symptoms and preventing complications. However, in recent years, there have been significant advancements in the treatment of TED, offering new hope for patients with this condition. Teprotumumab is a monoclonal antibody that targets the insulin-like growth factor 1 receptor (IGF-1R), which plays a key role in the pathogenesis of TED. IGF-1R is overexpressed in the orbital tissues of patients with TED and is thought to contribute to the fibrosis and inflammation seen in the disease [1,2].

Literature Review

Doxycycline is a broad-spectrum antibiotic that has been used for decades to treat bacterial infections. However, in recent years, doxycycline has gained attention for its potential benefits in the treatment of TED. Doxycycline has anti-inflammatory and anti-fibrotic properties, which may be beneficial in reducing inflammation and tissue expansion in the orbit. Several small studies and case reports have suggested that doxycycline may be effective in improving symptoms and signs of TED, particularly in patients with mild to moderate disease. However, larger, well-controlled studies are needed to confirm these findings and determine the optimal dose and duration of treatment [3,4].

Discussion

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Teprotumumab works by blocking the action of IGF-1R, thereby reducing inflammation and tissue expansion in the orbit. The efficacy of teprotumumab in the treatment of TED was demonstrated in the phase 2 and phases 3 clinical trials, which showed significant improvement in proptosis, diplopia, and quality of life compared to placebo. Based on these results, teprotumumab was approved by the FDA in 2020 for the treatment of TED, making it the first targeted therapy approved for this condition. Alongside these significant advancements, traditional treatments like doxycycline continue to play a crucial role, providing an effective and accessible option for managing mild to moderate cases. The combination of significant advancements and incremental improvements underscores the importance of a multifaceted approach to TED treatment, ensuring that patients receive the most appropriate care based on their individual needs. As research continues to advance, the future of TED treatment holds promise for even more effective and personalized therapies, ultimately improving the quality of life for those affected by this challenging condition [5,6].

Conclusion

The development of teprotumumab represents a significant advancement in the treatment of TED, offering a targeted therapy that can improve symptoms and quality of life for patients with this condition. However, teprotumumab is not suitable for all patients with TED, and more research is needed to understand its long-term safety and efficacy. On the other hand, doxycycline represents an incremental step forward in TED management, offering a potentially effective and affordable treatment option for patients with mild to moderate disease. Further research is needed to clarify the role of doxycycline in TED treatment and determine its place in the treatment algorithm for this condition.

Acknowledgement

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Conflict of Interest

None.

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