Review Article

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Long-Term Outcomes of Biologics vs. Traditional DMARDs in Ankylosing Spondylitis

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Abstract

Ankylosing spondylitis (AS) is a chronic inflammatory arthritis primarily affecting the axial skeleton, often leading to significant disability if not adequately managed. Traditional disease-modifying antirheumatic drugs (DMARDs) have been used for treatment, but biologic agents have emerged as effective alternatives. Long-term data comparing the outcomes of biologics versus traditional DMARDs are crucial for optimizing treatment strategies. This study aims to compare the long-term outcomes of biologic therapies versus traditional DMARDs in patients with ankylosing spondylitis, focusing on disease activity, functional status, and quality of life. We conducted a systematic review and meta-analysis of studies comparing long-term outcomes of biologics and traditional DMARDs in AS. Data were extracted from randomized controlled trials (RCTs), cohort studies, and observational studies, assessing measures such as disease activity scores, functional indices, and quality of life assessments. Biologic therapies, particularly tumor necrosis factor-alpha (TNF-α) inhibitors, demonstrated superior long-term outcomes compared to traditional DMARDs. Patients receiving biologics showed significant improvements in disease activity, spinal mobility, and quality of life. Traditional DMARDs, while beneficial, were less effective in controlling disease over the long term. Biologic therapies offer enhanced long-term outcomes in ankylosing spondylitis compared to traditional DMARDs. They provide more effective disease control, better functional outcomes, and improved quality of life. These findings support the use of biologics in the long-term management of AS, although treatment decisions should consider individual patient characteristics and preferences.

Keywords: Ankylosing spondylitis • Biologics • Traditional DMARDs • Long-term outcomes • Disease progression

Introduction

Ankylosing spondylitis (AS) is a chronic, progressive inflammatory disease primarily affecting the axial skeleton, including the spine and sacroiliac joints. It is characterized by pain, stiffness, and reduced spinal mobility, which can lead to significant functional impairment and reduced quality of life. The management of AS has traditionally involved the use of disease-modifying antirheumatic drugs (DMARDs) such as sulfasalazine and methotrexate, which aim to control inflammation and slow disease progression [1,2].

In recent years, biologic therapies have emerged as a significant advancement in the treatment of AS. These agents, including tumor necrosis factor-alpha (TNF-α) inhibitors (e.g., etanercept, infliximab) and interleukin-17 (IL-17) inhibitors (e.g., secukinumab), target specific pathways in the inflammatory process and have shown efficacy in reducing disease activity and improving functional outcomes. Given their mechanism of action and effectiveness, biologics are often considered for patients with moderate to severe disease who have not responded

adequately to traditional DMARDs. The long-term management of AS requires ongoing evaluation of treatment efficacy and safety. While short-term studies have demonstrated the effectiveness of biologics, long-term data comparing biologics with traditional DMARDs are essential to understanding their relative benefits and risks over extended periods. This study aims to review and compare the long-term outcomes of biologic therapies versus traditional DMARDs in patients with AS, focusing on disease activity, functional status, and overall quality of life [3-5].

Discussion

Long-term efficacy of biologics vs. traditional DMARDS

The comparative effectiveness of biologic therapies versus traditional DMARDs in ankylosing spondylitis (AS) reveals several key differences in long-term outcomes. Biologics, particularly TNF-α inhibitors, have demonstrated superior efficacy in controlling disease activity and improving functional status compared to traditional DMARDs [6].

Clinical trials and observational studies have consistently shown that TNF-α inhibitors lead to greater reductions in disease activity scores, such as the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and the Ankylosing Spondylitis Disease Activity Score (ASDAS). These agents have also been associated with significant improvements in spinal mobility and reductions in inflammatory markers [7].

Interleukin-17 (IL-17) inhibitors, another class of biologics, have also shown promising results. Studies indicate that IL-17 inhibitors can provide substantial and sustained improvements in disease activity and quality of life. The long-term benefits of these biologics include improved spinal mobility, reduced pain, and enhanced functional capacity. In contrast, traditional DMARDs, while effective for some patients, generally offer less dramatic improvements in disease control and functional outcomes. Sulfasalazine and methotrexate are commonly used in AS treatment, but their impact on long-term disease progression is less pronounced compared to biologics. These DMARDs may provide some benefit in controlling peripheral joint symptoms but are less effective in addressing the axial symptoms that are central to AS [8].

Functional status and quality of life

Biologics not only improve disease activity but also positively impact patients' functional status and quality of life. Measures such as the Bath Ankylosing Spondylitis Functional Index (BASFI) and the Short Form-36 (SF-36) health survey demonstrate significant improvements in physical function and overall health-related quality of life for patients receiving biologics. The enhanced efficacy of biologics in reducing pain and improving mobility contributes to better daily functioning and overall well-being. Patients on biologics often report higher levels of satisfaction with their treatment and an improved ability to perform routine activities. Traditional DMARDs, while beneficial, generally result in more modest improvements in functional status and quality of life. The slower onset of action and less pronounced effects on axial symptoms can limit the overall impact of these treatments on patients' daily lives [9].

Safety and long-term considerations

The long-term safety profiles of biologics are an important consideration in their use for AS. Biologics have generally been well-tolerated, but they are associated with certain risks, including infections, malignancies, and autoimmune phenomena. Long-term monitoring is essential to manage these risks and ensure patient safety. Traditional DMARDs also have safety considerations, including potential liver toxicity, gastrointestinal issues, and bone marrow suppression. While these risks are well-known, they may be less severe compared to some of the risks associated with biologics [10]. Ongoing research is needed to further refine treatment strategies for AS. Studies focusing on the comparative long-term efficacy of different biologic agents, head-to-head trials of biologics versus traditional DMARDs, and the exploration of biomarkers to predict treatment response will enhance understanding and guide clinical decision-making. Personalized treatment approaches, considering individual patient characteristics and preferences, will be crucial in optimizing outcomes. Research into combination therapies and the development of new therapeutic agents may also contribute to improved management of AS.

Conclusion

In conclusion, biologic therapies, particularly TNF-α inhibitors and IL-17 inhibitors, offer superior long-term outcomes compared to traditional DMARDs in the management of ankylosing spondylitis (AS). They provide more effective disease control, greater improvements in functional status, and enhanced quality of life for patients. While traditional DMARDs remain a valuable part of AS treatment, especially for patients with less severe disease or as part of a combination therapy approach, biologics represent a significant advancement in managing more challenging cases. The choice of therapy should be individualized, taking into account disease severity, patient preferences, and potential risks. The integration of long-term data into clinical practice supports the use of biologics for better disease management and improved patient outcomes in AS. Continued research and development will be key to refining treatment strategies and further enhancing the quality of care for individuals with ankylosing spondylitis.

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