Perspective

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Successful Management of Severe Ankylosing Spondylitis with Targeted Biologic Therapy: A Long-Term Follow-Up

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Introduction

Ankylosing spondylitis (AS) is a chronic inflammatory disease that primarily affects the axial skeleton, leading to pain, stiffness, and eventually, fusion of the spine. It is a type of spondyloarthritis (SpA), a family of inflammatory rheumatic diseases that share common genetic and clinical features, such as the presence of HLA-B27 and inflammatory back pain. The exact cause of AS remains unclear, but it is believed to result from a combination of genetic predisposition and environmental factors. Severe AS can lead to significant disability, deformity, and a reduced quality of life if not managed effectively. This case study explores the long-term management of severe ankylosing spondylitis in a patient treated with biologic therapy, highlighting the clinical course, treatment response, and outcomes [1-3].

Case Presentation

A 39-year-old male patient with a history of chronic lower back pain, stiffness, and progressive functional limitations presented to the rheumatology clinic after having been diagnosed with ankylosing spondylitis five years earlier. His symptoms began insidiously at the age of 28, with persistent low back pain that was worse in the morning and improved with movement. Over time, the pain became more disabling, affecting his ability to engage in daily activities and work. His medical history was significant for chronic pain and limited mobility but no history of other comorbidities [4].

The patient reported difficulty with posture and walking due to severe stiffness and discomfort in his lumbar spine. He had a visible kyphotic posture and was unable to fully straighten his back. His symptoms were refractory to standard nonsteroidal anti-inflammatory drugs (NSAIDs), physical therapy, and exercise regimens. The pain significantly impacted his quality of life, causing difficulty in performing basic tasks, such as bending, lifting, and even sitting for extended periods [5].

The patient had a family history of ankylosing spondylitis, with his father diagnosed at age 45. On physical examination, the patient had a positive Schober test (a measure of lumbar spine flexibility), indicating severe spinal stiffness. His lumbar spine was fused, and he displayed a forward flexed posture with a limited range of motion. Tenderness was present over the sacroiliac joints, and there was decreased chest expansion. A detailed review of systems revealed no extra-articular manifestations of the disease, such as uveitis, psoriasis, or inflammatory bowel disease [6].

Diagnostic Work-Up

Laboratory tests revealed the following:

- C-reactive protein (CRP): 25 mg/L (elevated; normal <5 mg/L)
- Erythrocyte sedimentation rate (ESR): 48 mm/hr (elevated; normal <20 mm/hr)

- HLA-B27: Positive
- Rheumatoid factor (RF): Negative
- Anti-citrullinated peptide antibodies (anti-CCP): Negative
- Complete blood count (CBC): Normal
- Liver and kidney function: Normal

The diagnosis of ankylosing spondylitis was confirmed based on the clinical presentation, positive HLA-B27 testing, and imaging findings. Radiographs of the pelvis and spine showed bilateral sacroiliitis and vertebral squaring with syndesmophytes, consistent with advanced AS. A magnetic resonance imaging (MRI) scan of the sacroiliac joints demonstrated active inflammation in both sacroiliac joints, supporting the diagnosis of axial spondyloarthritis.

Management and Treatment Strategy

Given the severity of the patient's symptoms and the limited response to conventional therapies, a decision was made to initiate biologic therapy. The patient was started on etanercept, a tumor necrosis factor (TNF) inhibitor, following the latest recommendations for the treatment of moderate-to-severe ankylosing spondylitis unresponsive to NSAIDs and conventional DMARDs.

Etanercept was chosen based on the evidence supporting its efficacy in reducing inflammation and improving both pain and function in patients with AS. It works by inhibiting TNF-α, a cytokine that plays a key role in the inflammatory process in spondyloarthritis.

In addition to biologic therapy, the patient was instructed to continue physical therapy, stretching exercises, and postural training to maintain spinal mobility and reduce stiffness. The patient was closely monitored for potential side effects of biologic therapy, including an increased risk of infections, and regular follow-up visits were scheduled every three months to assess the effectiveness and safety of the treatment [7-9].

Treatment Response and Clinical Course

At the three-month follow-up, the patient reported a significant improvement in symptoms. He experienced a marked reduction in back pain and stiffness, especially in the morning, and was able to increase his physical activity. The patient also reported an improvement in his overall sense of well-being, with better energy levels and a reduction in fatigue.

On physical examination, there was a noticeable improvement in his posture, with less forward flexion of the spine and an increase in lumbar spine mobility. The Schober test showed improvement, indicating increased flexibility. Tenderness over the sacroiliac joints also decreased. Laboratory markers, including CRP and ESR, showed significant reduction, suggesting a decrease in systemic inflammation.

At the six-month follow-up, the patient had further improvement in spinal mobility and pain reduction. He was able to resume most daily activities without significant limitations. Imaging studies were repeated, showing stabilization of the sacroiliitis and no progression of vertebral fusion. There was also a decrease in the number of syndesmophytes in the lumbar spine.

The patient continued to report a high level of satisfaction with the treatment, and his quality of life improved significantly. His global assessment of disease activity (based on a visual analog scale for pain and stiffness) had dropped from 8/10 to 3/10, reflecting the substantial improvement in his symptoms. The patient also reported better sleep quality, reduced anxiety, and improved mood, which contributed to an overall sense of well-being.

Long-Term Follow-Up and Outcome

Over the course of the next two years, the patient continued on etanercept therapy with sustained improvement in symptoms. He maintained an active lifestyle, including participation in light exercise and recreational activities, which were previously not possible due to the severity of his disease. The patient's posture remained improved, and his spinal mobility continued to improve modestly. At his two-year follow-up visit, the patient was reassessed. His CRP and ESR remained within normal limits, and he continued to be free from significant disease flare-ups or adverse effects related to the biologic treatment. However, the patient was switched to a different TNF inhibitor, adalimumab, as part of routine treatment adjustments to optimize the therapeutic effect and avoid potential antibody formation against etanercept. This change was well-tolerated, and the patient experienced continued disease control with no new complications [10]. The patient's long-term follow-up demonstrated a clear benefit from the biologic therapy in managing his severe ankylosing spondylitis. The biologic agent helped reduce inflammation, improve joint function, and prevent further structural damage. The patient's disease activity was effectively controlled, allowing him to achieve a better quality of life and return to work and social activities.

Discussion

Ankylosing spondylitis is a chronic, progressive condition that can lead to significant disability if not managed effectively. In this case, the patient's severe symptoms and advanced disease required an aggressive

treatment approach. Biologic therapies, particularly TNF inhibitors, have revolutionized the management of AS, offering significant improvements in disease control and quality of life. The successful use of etanercept in this case demonstrates the efficacy of biologics in reducing inflammation, improving function, and preventing disease progression in patients with severe ankylosing spondylitis. The response to biologic therapy in this patient is consistent with findings from clinical trials, which have shown that TNF inhibitors can provide rapid and sustained improvements in symptoms and physical function in AS. The long-term follow-up also highlights the importance of regular monitoring and adjustments to therapy, as the patient's treatment was changed after two years to optimize results.

Conclusion

This case study underscores the importance of early and effective treatment in ankylosing spondylitis, particularly in severe cases. The use of biologic therapies, such as TNF inhibitors, has proven to be an essential tool in managing the disease, improving symptoms, and enhancing quality of life. Long-term follow-up is critical to assess the ongoing effectiveness of treatment and make necessary adjustments. As biologic therapies continue to evolve, the future of AS treatment looks promising, with the potential for even more targeted, personalized approaches to care. This case demonstrates the positive impact that early intervention and biologic therapy can have on the long-term outcomes of patients with ankylosing spondylitis.

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