

Successful Tumor Necrosis Factor (TNF) Inhibitor Therapy in Patients with Ankylosing Spondylitis: A Case Report

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ABSTRACT

Introduction: Axial spondyloarthritis is a chronic inflammatory disease that mainly affects the axial skeleton. Anti-TNF can be a therapy of choice for ankylosing spondylitis.

Case Illustration: A 33-year-old male patient complained of chronic low back pain. The patient is diagnosed with ankylosing spondylitis based on New York Criteria 84. Initial therapy included NSAIDs for six months but showed no response. After we initiated the TNF inhibitor therapy, patients showed significant clinical improvement: BASDAI scores improved from 4.9 to 1.1, BASFI from 3.1 to 1.0, and ASDAS-CRP from 3.2 to 2.0.

Conclusions: Patient with ankylosing spondylitis who have no response to NSAIDs should be considered for TNF inhibitor administration. After six months of TNF inhibitor therapy, the patient responded well.

Keywords: Axial spondyloarthritis, ankylosing spondylitis, NSAIDs, Tumor Necrosis Factor.

INTRODUCTION

Ankylosing Spondylitis is a chronic inflammatory disease characterized by inflammation on the sacroiliac or spinal joints.[1,2] Ankylosing Spondylitis usually appears in the third decade of life and five years earlier in patients with positive human leukocyte antigen (HLA)-B27. [3,4] Male patients have a higher ratio than female patients, with a ratio of 2-3:1. [5] The combined prevalence of all types of

spondyloarthritis (including peripheral forms) ranges from 0-20% in Southeast Asia to 1-61% in the northern Arctic.[6]

The cause of ankylosing spondylitis is unknown, it is believed to involve combination of genetic and environment factors. Ankylosing spondylitis is caused by a genetic predisposition, such as major histocompatibility complex (MHC) variants and endoplasmic reticulum aminopeptidase (ERAP), which produce proinflammatory cells like interleukin-17, that are responsible for AS. Treatment may include medication and exercise. Medication used include NSAID, DMARD and biologic agent. The basis for the success of Ankylosing Spondylitis therapy involves two inflammatory pathways, namely the tumor necrosis factor (TNF)- α axis and interleukin-23/interleukin-17.[7,8]

This case report aims to show the success of anti-TNF alpha therapy in AS patients who do not respond to conventional treatment. The patient's clinical condition has shown promising results.

CASE ILLUSTRATION

A 33-year-old man came to the rheumatology clinic complaining of pain in the lower back that he had felt for one year. Low back pain is like stiffness that arises in the early morning and lasts almost 2 hours, spreading to the hamstrings, knees, and heels. The pain is severe enough, and the

patient has difficulty bending his knees, squatting, and climbing stairs. The pain improves temporarily with analgesics or with activity. The pain is repeatedly felt, comes, goes, and has worsened in the last month.

On physical examination, the patient was well conscious, looked moderately ill, and the vital signs were within normal limits. On Schober's examination, an abnormal result

of 12 cm from 10 cm was obtained during forward flexion.

Complete blood count within normal limits. Increase of inflammatory markers such as erythrocyte sedimentation rate (35.2 mm/hour) and CRP (17.71 mg/L). The rheumatoid factor was negative. The pelvic radiograph showed bilateral grade II sacroiliitis (Figure 1).



Figure 1. X-ray of the pelvis supports the appearance of bilateral sacroiliitis

Based on the ASAS criteria, the patient met the criteria for axial spondyloarthritis. Moreover, based on the New York criteria of 1984, the patient was diagnosed with ankylosing spondylitis. He has been take NSAID for six month and the ankylosing spondylitis activity still high, the patient was then given a TNF inhibitor class of drug (adalimumab) at a dose of 40 mg every two weeks for six months. After six months of therapy, the patient reported improving his symptomatic condition. BASDAI (Bath Ankylosing Spondylitis Disease Activity Index) score improved from 4.9 to 1.1. Bath Ankylosing Spondylitis Functional Index (BASFI) from 3.1 to 1.0, global patient assessment of disease from 5 to 2, and Ankylosing Spondylitis Disease Activity Score CRP (ASDAS-CRP) from 3.2 (high disease activity) to 2.0.

DISCUSSION

The patient complains of chronic low back pain and stiffness in the pelvis and lower back which gets better with activity but not

with rest. [14,15] HLA-B27 is a gene that is found in 89% of people with AS. It is linked to a group of diseases called spondyloarthropathies. So far, the exact mechanism by which HLA-B27 plays a role in AS has yet to be elucidated. However, it is thought to trigger an inflammatory cascade. [9] The initial diagnosis of axial spondyloarthritis depends on the results of a radiological examination. [10] The definite radiographic features of sacroiliitis may be seen in 30–50% of patients with an onset of less than three years. [11]

Treatment of axial spondyloarthritis uses ACR recommendations (Figure 2.) [15] The target of therapy is remission and low disease activity. Patients are in remission when their BASDAI score is low, and their CRP or ASDAS score is low. [12]

Non-pharmacological therapy includes lifestyle changes, physiotherapy, exercise, hydrotherapy, and smoking cessation. Pharmacological therapy can be given as non-steroidal anti-inflammatory drugs and intra-articular injections of steroids. Non-

steroidal anti-inflammatory drugs (NSAIDs) are recommended as first-line therapy because they effectively reduce low back pain and stiffness in patients with axial spondyloarthritis.

Disease-modifying antirheumatic drugs (DMARDs) like methotrexate, sulfasalazine, or leflunomide are also used. Biologic DMARDs like anti-TNF-alpha and anti-IL-17 may also be used. Most of the time, traditional disease-modifying antirheumatic drugs (DMARDs) don't work

to treat the axial symptoms of spondyloarthritis. However, if there is also an axial disease, they may not be able to treat peripheral symptoms well. Systemic glucocorticoid therapy should not be used for a long time because it takes high doses to reduce the activity of the disease. When conventional NSAID therapy did not work, treatment with TNF inhibitors improved all joint symptoms, CRP levels, and inflammation in the sacroiliac joint.

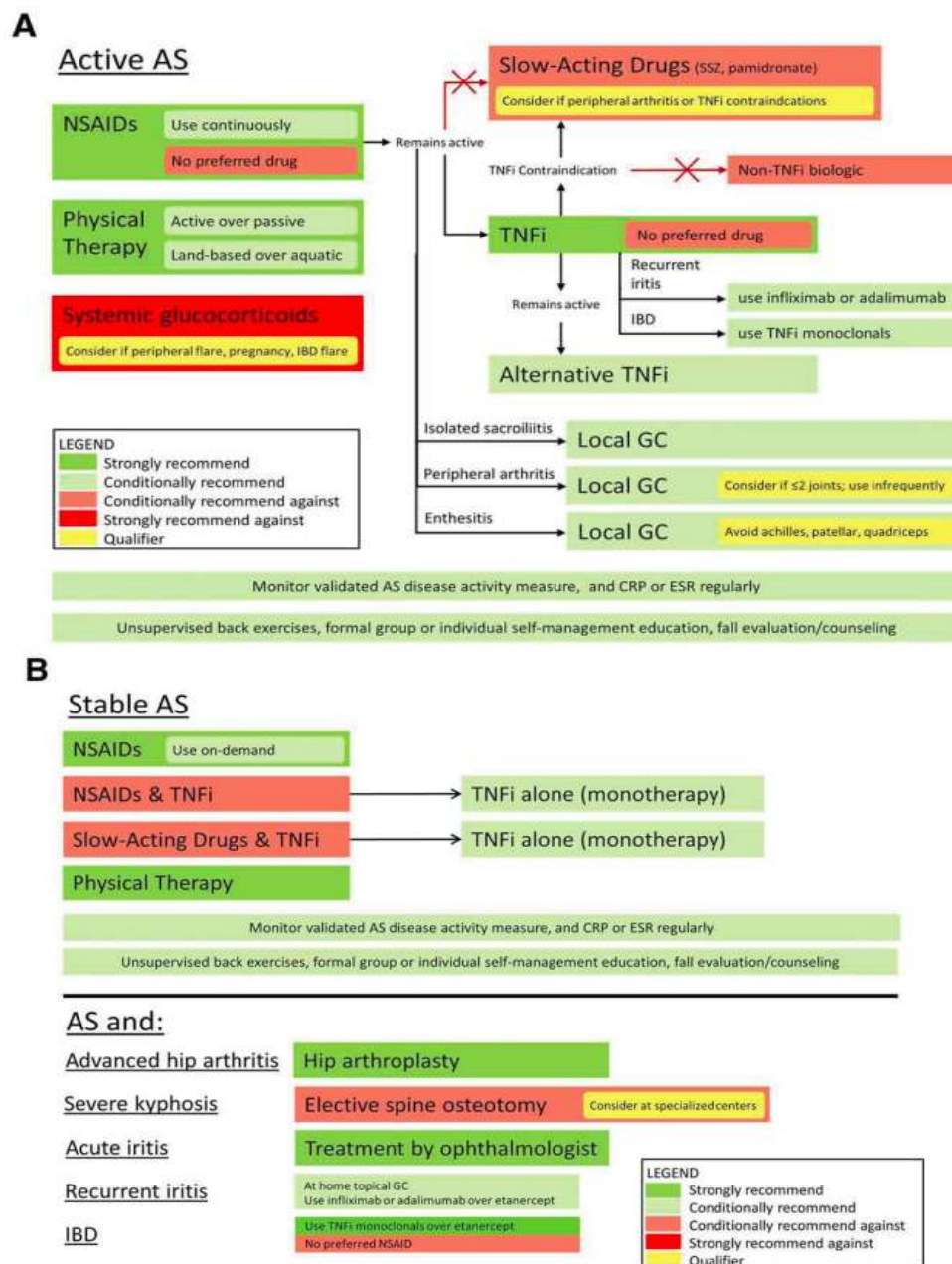


Figure 2. Summary of the main recommendations for the treatment of patients with active ankylosing spondylitis (AS) (A) or stable AS (B). NSAIDs 5 nonsteroidal antiinflammatory drugs; SSZ 5 sulfasalazine; TNFi 5 tumor necrosis factor inhibitors; IBD 5 inflammatory bowel disease; GC 5 glucocorticoid; CRP 5 C-reactive protein; ESR 5 erythrocyte sedimentation rate. [15]

Patients with axillary spondyloarthritis who went into remission after TNF inhibitor therapy had a higher CRP, less time with symptoms (or were younger), and active inflammation on MRI. Stopping TNF inhibitors in patients with spondyloarthritis who respond well usually causes relapses in 75–90% of cases, but reduced doses of TNF inhibitors in responders are tolerated in 52–86% of patients. [13,14]

The patient had been given a TNF inhibitor class drug (adalimumab) at a dose of 40 mg every two weeks for six months of treatment because the initial treatment with NSAIDs did not respond well. After six months of therapy, the patient showed a reduction in AS symptoms and signs; BASDAI, BASFI, and ASDAS scores significantly improved after being given adalimumab. Patients can also tolerate adalimumab without adverse events. The TNF inhibitors can be used in patients with diseased AS who do not respond adequately to at least two NSAIDs and physiotherapy. Baseline BASDAI and CRP scores appear to predict the clinical response to TNF inhibitors.

Several cases have been found that have proven the success of anti-TNF, one of which is from Man R Shim 2019 with the Efficacy of TNF inhibitors in advanced ankylosing spondylitis with total spinal fusion [16], a case report from Gabriel Ceobanu in 2020 with ankylosing spondylitis [17] and a case report from Azizah Mounach in 2014 with the efficacy and safety of adalimumab in ankylosing spondylitis [18].

CONCLUSION

A 33-year-old male with ankylosing spondylitis who has no response to NSAIDs should be considered for TNF inhibitor administration. After six months of TNF inhibitor therapy, the patient responded well. The BASDAI score shows improvement from 4.9 to 1.1, BASFI from 3.1 to 1.0, and ASDAS-CRP from 3.2 to 2.0.

Declaration by Authors

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