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EFFECTIVENESS OF FOLK MEDICINE METHODS IN ANKYLOSING SPONDYLOARTHRITIS

Muzaffarova L. A
Pulatova Sh. B.
Tashkent Medical Academy, Tashkent, Uzbekistan

Abstract
Ankylosing spondylitis (AS) is a chronic inflammatory autoimmune disease primarily affecting the spine and sacroiliac joints, leading to significant pain, stiffness, and potential disability. The condition, which has a notable male predominance, often presents with severe, persistent inflammatory pain and restricted movement. Current pharmacological therapies include non-steroidal anti-inflammatory drugs (NSAIDs), disease-modifying antirheumatic drugs (DMARDs), and biologics such as TNF inhibitors; however, many patients continue to experience inadequate relief or adverse effects. As a result, there is growing interest in complementary and alternative medicine (CAM), which encompasses various natural healing practices, including traditional herbal treatments and physical therapy. Folk medicine methods, particularly those rooted in traditional practices such as Traditional Chinese Medicine (TCM), offer promising adjunct therapies for managing AS. These approaches often focus on holistic patient care, utilizing natural remedies with fewer side effects compared to conventional medications. Additionally, the integration of non-pharmacological strategies, including supervised exercise programs, plays a critical role in managing symptoms and maintaining functional and physical well-being. Ultimately, ongoing research into the effectiveness of folk medicine methods, particularly within the context of AS management, may provide valuable insights into comprehensive treatment strategies that enhance patient quality of life and reduce reliance on conventional pharmacological therapies.

Keywords: Ankylosing spondylitis, folk medicine, alternative medicine, traditional Chinese medicine, complementary medicine, physical therapy, exercise programs, pain relief, integrative treatment strategy.

Introduction

Ankylosing spondylitis (AS) is a type of spinal arthritis that primarily affects the spine, sacroiliac joints, spinal attachment sites, and other axial bones, leading to chronic inflammatory damage and loss of joint function. AS is a chronic inflammatory autoimmune disease clinically characterized by severe pain, limited movement and spinal mobility abnormalities, and extra-skeletal organ consequences. AS often affects young adults and is more common in men, with HLA-B27 positivity significantly correlated with more frequent attacks. The incidence and prevalence estimates vary from 0.05 to 1.4 per 10,000 people per year and from 0.1 to 1.4%, respectively.

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NSAIDs, methotrexate, azathioprine, and biosynthetic disease-modifying anti-rheumatic medications (bDMARDs) are currently effective therapies for systemic AS symptoms. AS has a significant impact on patients' physical and mental health, leading to enormous social costs; however, early diagnosis and active intervention can delay and lessen the incidence of complications, as well as help improve the prognosis of AS. AS is part of a group of disorders known as seronegative spinal arthritis (SpA), the origin of which is unknown. Existing epidemiological data indicate that inflammation plays a critical role in AS's etiology, primarily due to the interaction of hereditary and environmental factors that promote inflammation. MHC-encoded class I alleles, HLA-B27, endoplasmic reticulum aminopeptidase 1 (ERAP1), and IL-23R have all been linked to increased risk. The immune system comprises various immune cells, cytokines, and markers regulating the immune response and inflammation. SpA is now described as a polygenic autoinflammatory illness in which innate immune abnormalities may play a significant role, characterized by the aberrant activation of innate and innate-like immune cells. With advances in high-throughput sequencing technology, there is growing awareness of the immune system's role and essential cell types in AS's pathogenesis. However, effective medications have yet to be developed, leaving many patients facing complications or becoming unresponsive to existing therapeutic interventions [1].

Rheumatic diseases encompass a wide range of musculoskeletal, arthritic, connective tissue, and vasculitic diseases. They are associated with adverse effects on daily living activities, decreased productivity and work efficiency, varying levels of disability, and deterioration in quality of life. In recent years, significant progress has been made in the pharmacological management of rheumatic diseases. However, some patients do not respond adequately to the standard medical treatments, leading many to explore alternative options, such as complementary and alternative medicine (CAM) methods. CAM encompasses a wide range of health practices not integrated into mainstream healthcare systems. Major categories of CAM methods include alternative medical systems, biologics, manipulative interventions, mind-body and cognitive techniques, and energy-based healing practices. Patients with rheumatic diseases often resort to CAM methods for several reasons, such as limited access to certain drugs due to high costs and strict regulations, concerns about drug side effects, and persistent symptoms despite medication. As CAM methods are perceived as more natural, they are often regarded as well-tolerated with minimal adverse effects. Exercise interventions have been suggested as an essential component of routine care for individuals with various forms of inflammatory arthritis, osteoarthritis, and fibromyalgia syndrome (FMS). Therefore, exercise and physical medicine practices are invaluable in managing rheumatic diseases. This comprehensive review focuses on three major rheumatic diseases: ankylosing spondylitis (AS), rheumatoid arthritis (RA), and FMS. We aim to summarize the non-traditional physical medicine and CAM methods that can be employed to manage these diseases. Additionally, we discuss the importance of collaboration between physical medicine-rehabilitation and rheumatology clinics [2].

Arthritis is a general term for various types of arthritic diseases related to various factors such as degenerative diseases and autoimmunity. It is characterized by chronic inflammation of one or more joints, typically resulting in pain and often leading to disability. The primary clinical symptoms include joint pain, swelling, stiffness, and limited mobility. Epidemiological studies

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indicate that arthritis is most common in women, with its incidence increasing with age. Research shows that there are more than 100 different forms of arthritis, with osteoarthritis (OA) and rheumatoid arthritis (RA) being the most prevalent; other types primarily encompass arthritis associated with autoimmune diseases. Although these disorders have different etiologies, they are unified by symptoms of pain and restricted mobility due to joint inflammation. Currently, treatment options for arthritis consist mainly of medications and non-drug methods aimed at addressing joint pain and tissue inflammation, especially in pain management, where drug types are largely similar. OA is a degenerative joint disease whose prevalence is increasing alongside an aging population. According to the World Health Organization (WHO), there are currently over 400 million patients with osteoarthritis globally. In Asia, 1 in 6 people will develop OA at some point in their lives. OA predominantly affects middle-aged and elderly individuals, with women being more commonly affected than men. Market research indicates that the OA therapeutics market was valued at USD 6.8 billion in 2019 and is projected to reach USD 10.1 billion by 2024, growing at a CAGR of 8.1% from 2019 to 2024. The report illustrates that this growth is partly attributed to the rising elderly and obese population, which contributes to the increasing prevalence of OA. Rheumatoid arthritis (RA) is an autoimmune disease primarily characterized by erosive arthritis. Its main symptoms include morning joint pain, swelling, and dysfunction. As a systemic inflammatory and destructive joint disease, the prevalence among the adult population worldwide is approximately 1–2%. Currently, RA remains challenging to cure; yet standard diagnosis and treatment can achieve optimal management. However, without regular treatment, it can lead to joint deformity and functional loss. Other forms of arthritis are similarly linked to inflammation and pain, imposing a significant burden on patients, with no existing treatments addressing the underlying causes. The primary goal of current arthritis treatment is to alleviate joint pain resulting from inflammation, wear and tear, and muscle strain. Available medications for arthritis include analgesics, steroids, non-steroidal anti-inflammatory drugs (NSAIDs), and biologically targeted drugs that reduce severe pain and inflammation symptoms. However, these medications often produce a myriad of side effects, hindering their capacity to sustain relief of disease symptoms and progression over extended periods. For instance, NSAIDs can induce severe gastrointestinal issues and inadequately alleviate pain. Biologically targeted medications may lead to immune disorders and cardiovascular events. Consequently, arthritis management has advanced into a phase of comprehensive care, with alternative therapies gradually becoming vital in the comprehensive management model. Curcuma longa L. is recognized as a promising alternative medicine for arthritis treatment and has been utilized as both traditional medicine and culinary spice in several countries, including China, Bangladesh, India, and Pakistan. It has long been employed in traditional Chinese medicine (TCM) and Ayurvedic practices for its anti-inflammatory properties. The primary active components of turmeric include curcumin, demethoxycurcumin, bisdemethoxycurcumin, and turmeric essential oil. Curcumin, a natural compound, has demonstrated significant anti-inflammatory, immunosuppressive, and anticancer effects in current studies. Evidence from multiple clinical trials indicates that curcumin can alleviate pain experiences in patients with systemic-related muscle disorders. Hence, systematically reviewing the effects of Curcuma longa L. and curcumin on arthritis patients is of great importance [3].

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Spondyloarthropathies (SpA) constitute a group of inflammatory rheumatic diseases that traditionally include ankylosing spondylitis (AS), psoriatic arthritis (PsA), reactive arthritis (ReA), arthritis linked with Crohn's disease and ulcerative colitis, as well as undifferentiated spondyloarthropathies. Beyond typical locomotor system symptoms, such as chronic inflammation of spinal joints, enthesitis, and peripheral joint inflammation, the complex clinical profile of SpA encompasses various non-articular manifestations, including skin, intestinal, and ocular symptoms. Local inflammatory changes in the skeletal system associated with SpA lead to bone tissue loss and erosions alongside new bone formation, resulting in severe joint destruction and impairment. Significant advancements have been made in treating SpA in recent years due to the development of tumor necrosis factor (TNF) inhibitors and interleukin 17 (IL-17) and interleukin 12/23 (IL-12/23) inhibitors. Modern biological therapies can effectively control non-articular symptoms and significantly slow the progression of destructive processes in the musculoskeletal system; however, they do not reverse existing changes in the osteoarticular system or inhibit bone formation processes related to SpA. Thus, mesenchymal stromal cells (MSC), known for their immunomodulatory and regenerative potential, are being explored [4].

Ankylosing spondylitis is a chronic inflammatory disease primarily affecting large joints, including the sacroiliac joint and the spine, but it can also impact smaller surrounding joints. This condition can lead to spinal stiffness and deformity, with a disability rate of up to 30%, substantially impairing patients' quality of life. Currently, there is no cure for this disease. Treatment primarily focuses on controlling clinical symptoms, slowing disease progression, and improving patient prognosis. Western medicine treatments mainly consist of anti-rheumatic drugs, such as NSAIDs and glucocorticoids. However, prolonged use of Western medications has drawbacks, including gastrointestinal issues, liver and kidney damage, worsening conditions upon drug withdrawal, and high costs. Ankylosing spondylitis is categorized as "nephroparalysis" and "bone impediment" in traditional Chinese medicine (TCM). TCM treatment for ankylosing spondylitis primarily focuses on nourishing the liver and kidneys, replenishing qi and blood, dispelling rheumatism, and alleviating arthralgia. The clinical use of TCM in treating ankylosing spondylitis is based on extensive experience, highlighting its potential for effective outcomes with minimal adverse reactions, thus indicating favorable application prospects. Duhuo Jisheng Decoction (DHJSD) is a classic prescription commonly utilized for treating liver and kidney deficiencies, essence and blood insufficiency, and chronic arthralgia, offering functions such as nourishing the liver and kidneys, enhancing essence and blood, strengthening muscles and bones, dispelling dampness, and alleviating arthralgia [5].

The diagnosis of ankylosing spondylitis (AS) can lead to decades of disease management for affected patients. Various treatment modalities are employed throughout this chronic, progressive condition, including pharmacological therapy, physical therapy, and occasionally, surgery. Comprehensive patient education is a crucial adjunct to successful treatment. For any progressive disease, the goals of treatment include not just relieving clinical symptoms but also preventing or slowing disease advancement. In the case of AS, treatment aims to alleviate pain and stiffness associated with the inflammatory process and ideally to block the underlying inflammatory mechanisms to avoid or delay permanent structural damage that can lead to severe deformities and ankylosis. Currently, treatments for AS primarily focus on symptomatic relief, with no established

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therapies that arrest bone demineralization or the ossification of ligaments and tendons characteristic of advancing disease. A review of the current status of conventional treatments for AS and the key issues surrounding their use is warranted.

As the cornerstone of pharmacological intervention for spondyloarthropathies (SpAs), non-steroidal anti-inflammatory drugs (NSAIDs) provide a rapid reduction of signs and symptoms in patients with spinal involvement. Studies show that NSAIDs can offer rapid and significant relief from inflammatory back pain in patients with AS, leading to the recognition of NSAID response as a helpful diagnostic feature of AS. However, rebound inflammatory symptoms (such as joint pain, swelling, and stiffness) typically manifest a few days after discontinuing NSAID treatment. Moreover, NSAIDs do not appear to alter the underlying pathogenic mechanisms of inflammation inherent in rheumatoid arthritis (RA) and other forms of arthritis, allowing structural damage to persist despite symptomatic relief. Phenylbutazone, one of the first NSAIDs available, is considered highly effective but carries significant toxicity risks. Although newer generation NSAIDs demonstrate less toxicity, their use is often limited by gastrointestinal side effects due to inhibition of cyclooxygenase 1 (COX-1), which is critical for the production of protective prostaglandins in the gastric mucosa. Approximately 10–60% of patients receiving these NSAIDs experience mild gastrointestinal symptoms such as nausea, dyspepsia, abdominal pain, and diarrhea, while more severe effects—including symptomatic ulcers and life-threatening complications like gastrointestinal bleeding—occur in about 1–2% of patients using these NSAIDs over three months, rising to 2–4% over 12 months. Prospective controlled studies indicate that older patients and those with a history of peptic ulcers or gastrointestinal bleeding face a 2- to 2.5-fold higher risk of severe gastrointestinal complications, including bleeding, perforation, or obstruction [6].

Ankylosing spondylitis is a chronic condition that affects the sacroiliac joints and also the joints of the spine and pelvic limbs, potentially leading to deformity and ankylosis. The disease often involves the hip and shoulder joints, which may necessitate surgical intervention in cases of severe joint contracture. Assessing the range of movement in the hip joint is crucial for comprehending disease progression, particularly as up to one-third of patients experience hip symptoms. Both hips are often affected, making them particularly susceptible to serious damage compared to other joints. Flexion contracture of the hip joint, commonly seen in the advanced stages of the disease, results in a rigid gait with knee flexion to maintain an upright posture. In addition to musculoskeletal symptoms, ankylosing spondylitis affects other organs and compromises patients' quality of life through conditions such as dactylitis (25-50%), uveitis (25-40%), inflammatory bowel disease (26%), and psoriasis (10%). While the exact etiology remains unclear, human leukocyte antigen (HLA) B27 is one of the most significant risk factors; the prevalence of HLA-B27 positivity fluctuates from 0.4% to 1.4% based on ethnic background. The onset of ankylosing spondylitis primarily occurs between the ages of 20 and 30, and diagnosis can be delayed by 5-6 years. Currently, ankylosing spondylitis diagnoses are mainly made using modified New York criteria; however, there is a pressing need for new diagnostic criteria as advanced imaging technologies (such as magnetic resonance imaging [MRI]) now facilitate early detection of sacroiliac joint inflammation, which is not achievable through traditional x-ray examinations. Abnormalities in the sacroiliac joint observed via x-ray are essential for meeting modified New

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York criteria. Additionally, with the advent of potent biological agents for early treatment, the creation of new diagnostic criteria has become crucial. Recognizing this necessity, the Assessment of Ankylosing Spondylitis (ASAS), a group of experts, provided diagnostic criteria and treatment guidelines in 2010. The most common early symptom of ankylosing spondylitis is pain in the sacroiliac joint; frequently, patients initially consult specialists for hip joint issues, knowing that early diagnosis and treatment are vital. Therefore, the authors of the present study aim to introduce innovative diagnostic criteria along with treatment guidelines and discuss the long-term outcomes of TNF-α inhibitors, which will be valuable for hip joint specialists treating ankylosing spondylitis patients [7].

The goal of ankylosing spondylitis management is to improve and maintain spinal flexibility and normal posture, relieve symptoms, reduce functional limitations, and minimize complications. In 2011, ASAS and EULAR (European League Against Rheumatism) revised the existing management recommendations for AS. A combination of non-pharmacological and pharmacological treatments is recommended to alleviate patients' discomfort. The primary components of pharmacological treatment involve non-steroidal anti-inflammatory medications (NSAIDs) and TNF inhibitors (TNFis). Other treatments include non-TNF biologics (such as secukinumab), methotrexate, and sulfasalazine. Approximately 20-40% of patients do not respond adequately to pharmacological therapies. Regular exercise and patient education are fundamental aspects of non-pharmacological treatment to lessen symptoms. The effectiveness of exercise may depend on individual adherence to prescribed programs, given the dose-response relationship between exercise and health outcomes. Consequently, physiotherapy plays a crucial role in managing AS. Patient training and exercise regimens supervised by physiotherapists can enhance symptoms and empower patients to effectively manage AS independently throughout their lives, thus reducing the financial impact of physiotherapy. To date, a specific non-pharmacological protocol has not yet been established, and the effects of various exercise programs remain uncertain. Numerous systematic reviews with meta-analysis have been conducted exploring the role of exercise programs in alleviating AS symptoms, including randomized controlled trials (RCTs) or uncontrolled studies; however, none have thoroughly examined the role of supervised physiotherapy, which is essential in the non-pharmacological management of AS. Supervised physiotherapy involves knowledge transfer through instruction, demonstration, and reflection. This process allows patients to learn the correct execution of exercises while sharing experiences and concerns with their physiotherapist, fostering a unique trust-based relationship that can positively influence patients' perceptions of exercise programs' effectiveness [8].

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