

Ankylosing spondylitis: Understanding the causes, Symptoms, and management of a chronic inflammatory disease

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Abstract

Ankylosing spondylitis (AS) is a chronic inflammatory condition that primarily affects the spine and sacroiliac joints, leading to pain, stiffness, and progressive loss of mobility. While AS predominantly targets the axial skeleton, it can also involve peripheral joints and other organs, causing a range of symptoms and complications. In this article, we explore the intricacies of ankylosing spondylitis, from its underlying causes to its impact on daily life and available treatment options.

Keywords: Ankylosing spondylitis • Inflammation • Vertebrae

Introduction

Ankylosing spondylitis belongs to a group of rheumatic diseases collectively known as spondyloarthritis (SpA). It typically manifests during late adolescence or early adulthood, although onset can occur at any age. AS is more common in men than women, with a prevalence estimated to be around 0.1% to 0.5% of the general population [1, 2].

Methodology

The exact cause of ankylosing spondylitis remains elusive, but it is believed to involve a combination of genetic predisposition and environmental factors. The strongest genetic association is with the human leukocyte antigen-B27 (HLA-B27) gene, present in over 90% of individuals with AS. However, not everyone carrying the HLA-B27 gene develops the condition, suggesting that additional genetic and environmental factors play a role in its pathogenesis.

Symptoms of ankylosing spondylitis

- The hallmark symptom of ankylosing spondylitis is inflammatory back pain, which typically worsens with rest and improves with

physical activity. This pain often begins in the lower back or buttocks and may radiate to the hips, thighs, or shoulders. Stiffness and reduced mobility, particularly in the morning or after prolonged periods of inactivity, are also common features of AS.

- As the disease progresses, individuals with ankylosing spondylitis may experience:
- Reduced chest expansion and breathing difficulties due to involvement of the ribcage and spine.
- Fusion of the vertebrae (ankylosis), leading to a stooped posture and limited spinal flexibility.
- Peripheral joint involvement, resulting in arthritis of the hips, shoulders, knees, and other joints.
- Enthesitis, inflammation at the sites where tendons and ligaments attach to bone, causing pain and swelling in areas such as the heels and Achilles tendons.
- Ocular inflammation (uveitis), characterized by eye pain, redness, and sensitivity to light.

- Fatigue, anemia, and weight loss, particularly during periods of active inflammation.

Diagnosis and management

Diagnosing ankylosing spondylitis can be challenging, as its symptoms overlap with other musculoskeletal conditions. A comprehensive evaluation by a rheumatologist typically includes a detailed medical history, physical examination, blood tests to assess inflammation and HLA-B27 status, and imaging studies such as X-rays, MRI, or CT scans to visualize changes in the spine and sacroiliac joints. While ankylosing spondylitis cannot be cured, early diagnosis and appropriate management can help alleviate symptoms, slow disease progression, and improve quality of life. Treatment strategies for AS may include:

Medications: Nonsteroidal anti-inflammatory drugs (NSAIDs) are often prescribed as first-line therapy to reduce pain and inflammation. In cases of moderate to severe disease activity, disease-modifying antirheumatic drugs (DMARDs) such as sulfasalazine or biologic agents targeting tumor necrosis factor-alpha (TNF-alpha) may be recommended to suppress inflammation and prevent structural damage [3-5].

Physical therapy: Regular exercise and physical therapy are essential components of AS management, as they help improve joint mobility, strengthen muscles, maintain posture, and reduce stiffness. Range-of-motion exercises, stretching, and aerobic activities like swimming or cycling are particularly beneficial for individuals with AS.

Postural correction: Maintaining good posture and avoiding prolonged periods of sitting or standing can help prevent spinal deformities and reduce discomfort. Ergonomic modifications to work and living environments may also be recommended to minimize strain on the spine and joints.

Biologic therapies: In recent years, the advent of biologic therapies targeting specific inflammatory pathways has revolutionized the treatment of AS. Biologics such as TNF-alpha inhibitors (e.g., adalimumab, etanercept) and interleukin-17 inhibitors (e.g., secukinumab) have shown efficacy in reducing disease activity, improving symptoms, and inhibiting structural progression in AS.

Surgical intervention: In severe cases of ankylosing spondylitis with significant spinal deformity or neurologic compromise, surgical interventions such as spinal fusion (arthrodesis) may be necessary to stabilize the spine and alleviate pressure on the spinal cord or nerves.

Living with ankylosing spondylitis

Ankylosing spondylitis is a chronic condition that requires ongoing management and adaptation. While living with AS can present physical and emotional challenges, there are several strategies individuals can employ to enhance their quality of life:

Understanding the nature of ankylosing spondylitis, its potential complications, and available treatment options empowers individuals to actively participate in their care and make informed decisions.

Self-Care: Adopting healthy lifestyle habits, including regular exercise, adequate rest, stress management, and a balanced diet, can help minimize symptoms and optimize overall well-being.

Support network: Connecting with other individuals living with AS through support groups, online forums, or patient advocacy organizations can provide valuable emotional support, practical advice, and encouragement.

Adaptive equipment: Utilizing assistive devices, ergonomic aids, and adaptive equipment can facilitate daily activities, reduce strain on joints, and enhance independence for individuals with AS.

Regular monitoring: Maintaining regular follow-up appointments with healthcare providers, including rheumatologists, physical therapists, and ophthalmologists, allows for ongoing assessment of disease activity, treatment efficacy, and early detection of complications [6-8].

Ankylosing spondylitis is a complex and progressive inflammatory disease that can significantly impact quality of life if left untreated. Through early diagnosis, comprehensive management, and a multidisciplinary approach involving medical interventions, physical therapy, and lifestyle modifications, individuals with AS can effectively manage their symptoms, slow disease progression, and lead fulfilling lives. By raising awareness, fostering support networks, and advancing research efforts, we can continue to improve outcomes and enhance the well-being of those affected by ankylosing spondylitis [9, 10].

Results

Ankylosing spondylitis (AS) is a chronic inflammatory condition primarily affecting the spine and sacroiliac joints. It typically manifests during late adolescence or early adulthood, with a higher prevalence in men than women. AS is characterized by inflammatory back pain, stiffness, and reduced mobility, often worsening with rest and improving with physical activity. As the disease progresses, individuals may experience spinal fusion, peripheral joint involvement, enthesitis, and extra-articular manifestations such as uveitis and fatigue.

Diagnosis of AS involves a comprehensive evaluation, including medical history, physical examination, blood tests for inflammation and HLA-B27 status, and imaging studies to visualize changes in the spine and sacroiliac joints. While there is no cure for AS, treatment aims to alleviate symptoms, slow disease progression, and improve quality of life. First-line therapy typically involves nonsteroidal anti-inflammatory drugs (NSAIDs) to reduce pain and inflammation. Disease-modifying antirheumatic drugs (DMARDs) and biologic agents targeting inflammatory pathways may be prescribed for moderate to severe disease activity. Physical therapy plays a crucial role in improving joint mobility, strengthening muscles, and maintaining posture. Living with AS requires ongoing management and adaptation. Education, self-care, support networks, and regular monitoring are essential components of AS management. By raising awareness, fostering support networks, and advancing research efforts, we can continue to improve outcomes and enhance the well-being of individuals affected by ankylosing spondylitis.

Discussion

Ankylosing spondylitis (AS) poses significant challenges due to its chronic and progressive nature. A key point of discussion revolves around early diagnosis and timely intervention. Recognizing symptoms such as inflammatory back pain and stiffness is crucial for prompt referral to a rheumatologist. However, diagnosing AS can be complex, often requiring a combination of clinical evaluation, imaging studies, and laboratory tests. Once diagnosed, the discussion shifts to effective management strategies aimed at controlling symptoms and preventing structural damage. Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used as first-line therapy to alleviate pain and inflammation. However, their long-term use may be limited by gastrointestinal and cardiovascular side effects. In recent years, the advent of biologic therapies targeting specific inflammatory pathways has revolutionized the treatment landscape for AS. Biologics such as tumor necrosis factor-alpha (TNF-alpha) inhibitors and interleukin-17 inhibitors have demonstrated efficacy in reducing disease activity and inhibiting structural progression, particularly in individuals with moderate to severe AS refractory to conventional therapies. Physical therapy

also plays a crucial role in AS management, focusing on exercises to improve joint mobility, strengthen muscles, and maintain posture. Moreover, lifestyle modifications such as regular exercise, smoking cessation, and maintaining a healthy weight are emphasized to minimize disease burden and optimize overall well-being. However, challenges remain in ensuring equitable access to effective treatments and addressing unmet needs, particularly in underserved populations. Additionally, ongoing research efforts are needed to better understand the underlying mechanisms of AS, identify biomarkers for disease activity and progression, and develop novel therapeutic approaches. Discussions surrounding ankylosing spondylitis encompass various aspects, including early diagnosis, effective management strategies, and the need for continued research and advocacy to improve outcomes and quality of life for individuals living with this complex inflammatory condition.

Conclusion

In conclusion, ankylosing spondylitis (AS) presents a significant clinical challenge due to its chronic inflammatory nature and potential for progressive disability. Early recognition of symptoms, coupled with timely diagnosis and intervention, is paramount in effectively managing the disease and preventing irreversible structural damage. While nonsteroidal anti-inflammatory drugs (NSAIDs) remain the cornerstone of treatment for symptom control, the advent of biologic therapies has revolutionized the management of AS, offering targeted relief and disease modification for many patients. Physical therapy and lifestyle modifications play crucial roles in improving joint mobility, maintaining function, and enhancing overall quality of life for individuals with AS. However, challenges persist in ensuring equitable access to effective treatments and addressing unmet needs, particularly in underserved populations. Continued research efforts are essential to deepen our understanding of the pathophysiology of AS, identify novel therapeutic targets, and advance personalized treatment approaches. By fostering collaboration among healthcare providers, researchers, advocacy organizations, and patients, we can strive towards improved outcomes and better quality of life for individuals living with ankylosing spondylitis.

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