

## Ankylosing Spondylitis: A Review

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### ABSTRACT:

The disease in which inflammation in spinal cord and large joint cause is called as Ankylosing spondylitis.

The term spondyloarthritis is defined as the group of immune-mediated diseases that can cause the inflammation to the axial skeleton as well as some joint of the body like peripheral joints. Earlier 2 centuries ago these Ankylosing spondylitis (AS) disease was firstly described in India, for the reason of digestion of these disease, and the mechanism of action or pathophysiology of these disease is not entirely found.

The people who are 50 year or around 50 year old, in those people these Ankylosing disease mainly observed.

Mostly severe, chronic pain, and in more advanced cases, spine fusion can cause when these disease affect on the spinal joint. In the last decade of the disease significant progress in its pathophysiology and treatment of these diseases has been achieved.

In all over India around half percent of patients which is affected by these disease they shows the bowel inflammation in bowel and hence it is confirmed that the real origin of the disease could be in these stomach of our body. Finally in this review, we conclude that the newly found treatment for spondyloarthritis as well as the most related discoveries over the last 3 years, jointly with their proposal for different feature of the disease. The treatment of AS includes Non-steroidal anti-inflammatory drugs which importantly reduced inflammatory indication as well as are present initial drug treatment for these disease. Still and all, NSAID treatment has only a characteristic effect and probably does not change the disease course.

**KEYWORDS:** Spondylitis, Inflammation, B27, ankylosing spondylitis, Functional liminatin.

### I. INTRODUCTION:

Inflammatory stiffening of the spinal cord, affecting in particular the cartilaginous joints of the spinal cord and the sacro-iliac joints of body this disease is done. In the advanced form there is ligaments become stiff and fusion of spinal cord with a bending of these part of spinal cord.

In Ankylosing spondylitis it is found that it has been trouble humidity as far back as ancient Egypt country. All over the 1900s, further understanding about the disease was popular including its hereditary nature. It firstly affects on the young adults, with a higher incidence in patients who are younger than 45 years old. As the disease. It can result in total fusion of the axial skeleton, can reduced the physical function and movement of spinal cord if disease can shows the progress. In this disease Long time pain, this can show restrictive lung function and can cause the respiratory failure. Ankylosing spondylitis is not only specific for the spinal cord in that the peripheral joints of body can be affected, and in organs such as the eyes, heart, and lungs can be shows symptoms. Patients can also accuse of symptoms like fatigue or weight problems in body.

In latest medicine AS is a long time occurred systemic, inflammatory, rheumatic disease of uncertain etiology it can primarily affecting the axial skeleton. In latest medicine related to these disorder is long-term use of nonsteroidal anti-inflammatory drugs and a life-long program of property or daily, regular exercises has been the mainstay of these symptom reduced for almost six decades. In Several clinical result of these disease indicate that the large size of hip can increases the burden of AS and not positively impacts on its prognosis. The hip arthritis can be associated with the more severe spinal involvement. If the mainly basic and central function of the hip, impairment of hip-function is

shown, then it is related to functional impairment in patients with these disease. This type of diseases shares the genetic, radiographic as well as clinical features which may be increased prevalence of acute anterior uveitis (AAU), the psoriasis and inflammatory bowel disease , the so-called extra-articular manifestations .

On the basis of result by Vladimir Bekhterev, Adolph Strum Pell, and Pierre Marie these scientists, until 19<sup>th</sup> century that the disease could be perfectly diagnosed , these is the time of Galen who is 1st pharmacist. The HLA-B27 allele is having a strong association with these disease when any other genes of body play a parts in its development. Among these study of disease it is result that the, may be heterogeneity in the patients examine. In specific, risk factors for functional limitation able to differ on the basis of the duration of AS. Functional limitations in initial stages of these AS disease may be closely related to the symptom severity and factors that modify the symptoms of AS. When functional limitations in long-standing AS can be more related to the factors whose effects cumulate over time and that reflect fusion of spinal cord and long-term structural damage. Finally when complete these study which is cross- Sectional study, we conclude that demographic as well as clinical risk factors for functional limitations in the lots of patients which having the AS symptoms for 20 years.

Ankylosing spondylitis is not like as rheumatoid arthritis, when they do have

similarities in symptoms or any other part of AS. Ankylosing spondylitis exists a a spectrum of clinical presentations both axial as well as appendicular skeletons of human body.

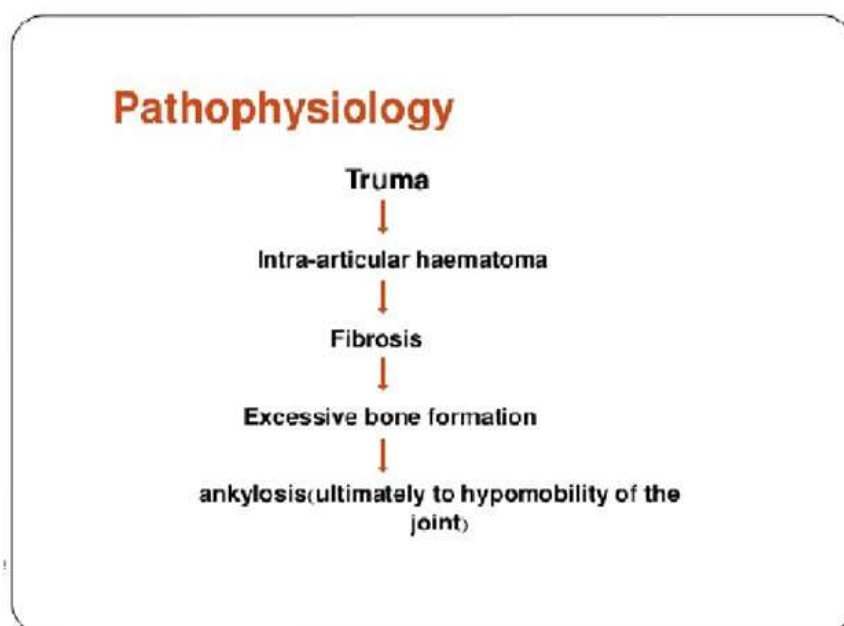
#### ETIOLOGY:

As an autoimmune disease, AS develops through complex interactions between genetic background and environmental factors. Although significant progress has been achieved in the past decades, the etiology of AS remains unclear to some extent. To date, studies have revealed some factors that may be related to the occurrence of AS, including genetic background, immune reaction, microbial infection, and endocrinal abnormality.

#### HISTORY:

Around the 21-year-old male patient, who was perfectly normal previously one month and before 15 days of disease, suddenly in body developed back pain at lower side of spinal cord and particularly on the left side of body which progressively worsened over the following 2 days. On the third day he was not able to get up from bed, and was taken to an orthopedic surgeon who diagnosed the disease and injury related to the musculoskeletal system. There were no any other features in history like a vomiting, pain in abdominal cavity, or skin problem of trauma or other major medical or surgical conditions. The patient's hunger was reduced and was shown by constipation.

#### PATHOPHYSIOLOGY:



The pathogenesis of AS is not clearly understood by scientists. The Immune related mechanisms are guide by inflammatory histology, increased the level of serum of IgA antibody and acute phase reactants, and the close relationship between HLA-B27 and Ankylosing spondylitis . No any single agent has been identified as the cause of the disease, but there is shows the interrelationship between AS, ReA, and IBD which says that enteric bacteria may play a important role in these pathogenesis of the disease. HLA-B27, a surface antigen included in class 1, is found in  $\leq 89\%$  of AS patients. HLA-B27 binds to the antigenic peptides for presentation to cytotoxic T cells, thus enabling normal function of the immune response in targeting pathogens like a the influenza virus. syndesmophytes develop inside ligaments ,as a consequences of new bone groth which are considered a hallmark radiological feature of these disease. In these disease at final stage observed that there is complete fusion of the axial skeleton.

#### PHYSICAL EXAM:

A physical examination for ankylosing spondylitis often includes the following:

- **Schober Test:** - The Schober test is used to measures the degree of lumbar forward flexion as the patient bends over as though touching their toes. Limited motion in the lumbar spine is symptomatic of AS. Progressive loss of spinal motion is correlated with x-ray findings.
- **Range of Motion:** To test how well and far your joints allow you to move, the doctor measures the degree to which you can perform movements of flexion, extension, lateral bending, and spinal rotation. Asymmetry may also be noted.
- **Gaenslen Test:** In that test Sacroiliac pain is often found in the early stage of AS. Increased pain during this maneuver could of be indicative joint disease.
- **Chin-Brow Measurement:** This is a method used to measure the spine's curve in the neck. Patient with AS often have necks that angle forward sharply as the spine stiffens. If the doctor is going to use the chin-brow measurement to monitor your angle, the first time he or she takes the measurement will be called your "baseline." After that, the doctor will compare each successive chin-brow measurement to the baseline to see if the angle is getting worse.
- **Chest Expansion:** When ankylosing spondylitis affects the mid-back region normal chest expansion may be compromised. The amount of chest expansion is measured from deep

expiration to full inspiration. Measurements significantly less than one inch, which is normal chest expansion, could indicate AS.

- **Range of Motion:** To test how well and far your joints allow you to move, the doctor measures the degree to which you can perform movements of flexion, extension, lateral bending, and spinal rotation. Asymmetry may also be noted.
- Blood tests for inflammation-A blood test can also detect signs of inflammation in the body. Those tests include an erythrocyte sedimentation rate (ESR) test or the C-reactive protein (CRP) test. While these tests can spot common signs of inflammation in the body, they will not specify that the inflammation is due to AS.

#### SYMPTOMS:

The symptoms of these AS disease firstly observed in late adolescence or may be in the people who get early adulthood. The symptom is started with mainly the dull pain that is indirect in onset. The pain is generally felt deep in the buttock as well as in the lower lumbar regions. [9] the most common symptom is anemia or low iron mainly observed in these AS.

Initially the signs and symptoms of ankylosing spondylitis disease is might include pain , stiffness in lower back and hips of body as well as specially in the morning and after period in activity in day .Also pain in neck and fatigue, dizziness are commonly observed. Overtime symptoms, might worsen improved or stop at irregular interval.

- In that the most affected area of body is
- Joint between the base of your spine and your pelvis.
- The vertebrae in your lower back.
- The places where your tendons and ligaments attached to bone, mainly in your spin but sometime along the back of your heel.
- The cartilage between your breast bone and ribs.

#### DIAGNOSIS & MONITORING:

There is no any particular test which is use for the diagnosis of ankylosing spondylitis , but the X -ray as well as MRI can shows the proof of swelling of the sacroiliac joint which is present between the sacrum and the ilium in person .

The diagnosis of this disease before the presence of irreversible damage is very difficult. There were several years may pass to find out

the symptoms and definite diagnosis of these disease. Low awareness between those non-rheumatologists of Ankylosing spondylitis and the fact that radiological evidence of sacroiliitis is a late feature of the disease is most likely. This is unfortunate, as earlier diagnoses might potentially decreased the crippling effects that can be produced. In 2006, the great scientist Rudwaleit et al. defined the diagnostic criteria for inflammatory back pain in patients body more than 50 years with long term back pain that may lead to an earlier diagnosis of these disease. These included morning stiffness may be less than 30 min, rise in back pain with only exercise but not the rest of body awakening due to the back pain during the second half of the night only, and alternating buttock pain.

Magnetic resonance imaging is through its ability to found inflammatory changes in the bone and soft tissues of body, the most sensitive imaging modality for recognizing early in spinal cord or some joint changes in this ankylosing spondylitis disease. If the spinal cord is structurally damage then the ankylosing spondylitis is observed by MRI.

The diagnosis of these disease is mainly based on the radiographic technique observed by lateral intensity and unilateral severe inflammation of one or both of your joint which is present between the spinal cord and pelvis.

#### **MONITORING:**

Computed tomography (CT) does not show any useful role in monitoring these disease activity or damage of the spinal cord. CT does not show any active inflammation and the related high radiation dose of CT. [1] Imaging of the spinal cord plays an important role in diagnosis and classification but also in monitoring of patient with axial SpA. Spinal radiographic progression seems to occur linear during the course of disease in the majority of patient.

#### **COMPLICATION:**

If these ankylosing spondylitis disease is left not treated then some complication are occur. These are difficulty in breathing and heart, lungs as well as bowel damage. In that eye irritation definitely found. In that disease most serious complication may occur is spinal cord get fracture. And other complication included is trauma to the rigid, fragile spinal column which can be cause severe damage. The cervical spinal cord is the most significant site; fractures at this

site can cause the quadriplegia. Inflammation to the prostate gland is highly common in among the men with this disease. Appropriateness in aorta and in cardiac muscle disturbances can occur in patients with long term disease. Pulmonary fibrosis is very rare complications of this disease. Fusion can become stiff your rib cage of body restricting your lung capacity. For these disease the main complication may be include the eye inflammation (uveitis). One of the most common complications of this ankylosing spondylitis disease is eye inflammation that can be Cause rapid onset eye pain, sensitivity to light and in some cases vision may be loss.

#### **TREATMENT:**

There is no any special treatment for ankylosing spondylitis but, treatment is available to help relieve the symptoms. Management, as well as treatment of this disease, can be challenging. Regular treatments for inflammatory arthritis less evidence for effectiveness in AS disease. Most of the patients of this disease are young and are in work in some cases, patients may have to leave their job. Having a long time illness can cause depression and anxiety. Guidance and psychological support may be necessary if the patient is suffering from depression or low mood can cause their illness. The swelling in the knee joint subsided, but the patient started to develop skin problems. Finally, in this way, he was managed for a period of 1 month, then after which he was able to walk without support, and the severity of the pain get decreased.

#### **RISK FACTORS:**

The risk factors that predispose a person to AS include HLA-B27 seropositivity; family history of AS; male sex; and frequent GI infections. A comparison of relatives of patients with AS and the general population determined that the risk for AS was 16 times greater among HLA-B27 positive relatives (21% had AS) than among HLA-B27 positive individuals from the general population (1.3% had AS). The HLA-B27 negative relatives did not have any manifestations of AS. As discussed earlier, AS occurs more commonly in men than women. The deficiency in TNF $\alpha$  secretion by T cells, coupled with the increased levels of IL10 as seen in ReA, also may result in the long-term persistence of bacteria, leading to inflammation and subsequent pathogenesis in AS.

### PREVENTION:

- a. The prevention of Ankylosing spondylitis is as follows.
- b. Firstly this disease can be prevented by doing regular exercise, proper stretching, and do weight maintaining activities these can protect against joint damage.
- c. Avoid Alcohol to Help Keep Bones Strong
- d. Get Plenty of Calcium and Vitamin D — the Building Blocks of Bone
- e. Get Active to Prevent Stiffness
- f. Wear Good Shoes to Help Prevent Falls
- g. Practice Good Posture to Keep Your Spine Flexible
- h. Avoid Smoking to Help Reduce the Risk of Syndesmophytes
- i. Try Pilates to Ease Pain and Stiffness
- j. Get Good Sleep to Reduce Inflammation  
Communicate With Your Doctor

### II. CONCLUSION:

AS is a complex, unpredictable disease that has puzzled and frustrated clinicians and scientists alike for centuries. It is insidious in onset, striking individuals, mostly men, at an early age, subsequently progressing over several years until structural damage manifests clinically as inflammatory back pain (sacroiliitis) and loss of spinal mobility, and a definite diagnosis of AS is made. Peripheral and extra-articular symptoms may also occur. Patients with severe AS have a reduced quality of life and loss of productivity due to work disability and sick leave. In addition, the management of AS is taxing on healthcare resources. Thus, indirect and direct costs associated with AS are high.

The pathogenesis of AS is poorly understood. However, the prevailing hypothesis is that immune-mediated mechanisms have a major role. Researchers are currently exploring the pathogenic role of inflammatory cellular infiltrates, including various cytokines such as TNF $\alpha$ , and the interaction between the T cell response, HLA-B27, and genetic and environmental factors, including bacterial antigens. The close relationship between AS and clinical and asymptomatic forms of IBD suggests the potential involvement of an immune reaction directed against gut bacteria. Sacroiliitis detected by radiography, MRI, or CT in the presence of clinical manifestations is diagnostic of AS. However, the presence of inflammatory back pain, plus at least two to three other typical features of SpA (for example, enthesitis, uveitis, HLA-B27 positivity, or raised ESR), is generally diagnostic of

axial SpA, which usually progresses to AS over time. At present, NSAIDs, in conjunction with physical therapy, are the mainstay of treatment for patients with symptomatic AS. However, these measures are strictly palliative, and NSAIDs do not alter the course of the disease or prevent structural damage. For symptoms refractory to NSAIDs, second-line treatments including corticosteroids and various DMARDs are employed. However, these treatments are of limited benefit. Emerging biological therapies target the inflammatory processes underlying AS, and thus, may favorably alter the disease process while providing relief of symptoms.

AS is an autoimmune inflammatory disease that causes severe spinal pain and abnormality, and can be associated with extra-articular and systemic features. If these AS diseases are unable to be treated properly, then it can cause in chronic pain, reduced movement of the spinal cord, and reduced quality of life. Patients complain of inflammatory-sounding back pain in the body and may have other spondylo-arthritis features. [2]

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