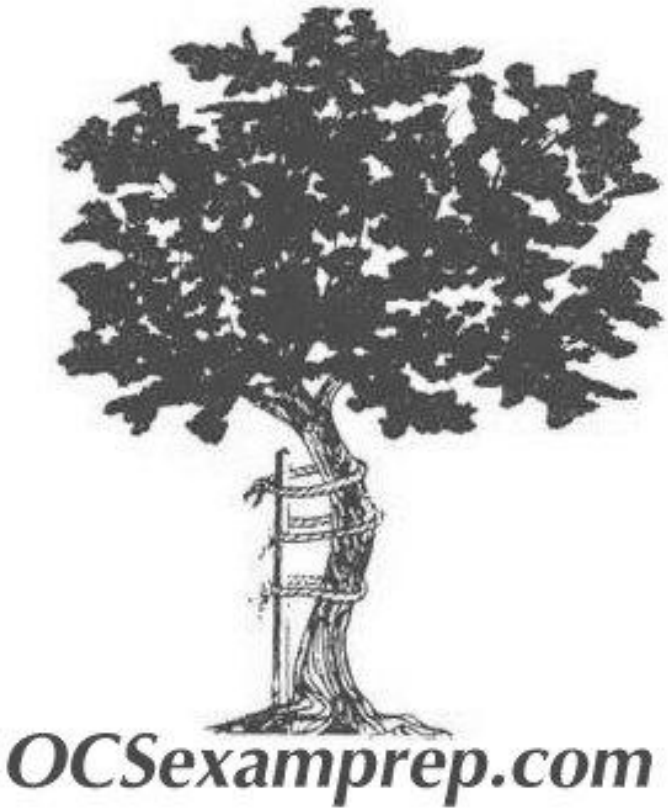
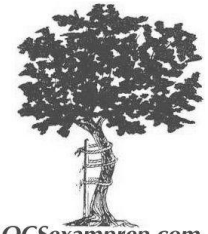
ANKYLOSING SPONDYLITIS



Background

- Ankylosing spondylitis (AS) is a chronic inflammatory disease characterized by a variable symptomatic course.
- Back pain and stiffness are the initial symptoms in 81% of patients.
- In the thoracic spine, AS causes decreased motion at the costovertebral joints, reduced chest expansion, and impaired pulmonary function.



Hallmark Sign

- Limited chest expansion.

- Chest expansion is measured at the fourth intercostal space in men and below the breasts in women.
- The patient raises both hands over the head and is asked to take a deep inspiration.

- Normal expansion is 5 cm
- Less than 2.5 cm is considered pathologic.

Non-Movement Related Symptoms

- Night sweats
- Iritis
- Ulcerative colitis

Risk Factors

- Ratio of those affected is 3:1 for men to women
- Onset generally occurs in late adolescence or early adulthood. Uncommon past the age of 45

- About 90% of patients with ankylosing spondylitis are HLA-B27 positive.

- HOWEVER, only 10-20% of people who are HLA-B27 positive develop the condition.

HLA-B27

- HLA-B27 is a blood test to look for a protein that is found on the surface of white blood cells. The protein is called human leukocyte antigen B27 (HLA-B27).

- Human leukocyte antigens (HLAs) are proteins that help the body's immune system tell the difference between its own cells and foreign, harmful substances.

X-Ray Changes

- Erosion, sclerosis, pseudowidening, and ultimately fusion of sacroiliac joints
- Squaring of vertebrae with shiny corners
- Syndesmophyte formation (ossification of the outer layer of the intervertebral disk), leading to bamboo spine
- Fusion of apophyseal joints

Physical Exam

- Limitation of chest wall expansion
  - < 2cm of expansion is more specific than HLA-B27 for making diagnosis
- Decreased spine motion
  - Schober test
    - used to evaluate lumbar stiffness. Examiner determines the location of the lumbosacral junction and marks it by drawing a horizontal line. A second line is marked 10 cm above the first line. The difference between the measurements in erect and flexion positions indicates the outcome of the lumbar flexion
  - Kyphotic spine deformity
  - Hip flexion contracture
    - examining patient in supine and sitting position helps differentiate sagittal plane imbalance due to hip flexion contractures or kyphotic spinal deformity
  - Sacroiliac provocative tests
    - Faber test

Differential with Mechanical Back Pain

	Ankylosing Spondylitis	Mechanical Back Pain
Onset	Insidious, Non-Traumatic	Often Sudden, Traumatic
Pain with Rest	Increased	Decreased
Pain with Activity	Decreased	Increased
Stiffness	Very Stiff	Usually lasts < 15 minutes

Differential Diagnosis

- Degenerative Disc Disease
- Herniated Intervertebral Disc
- Fractures
- Osteoarthritis
- Psoriatic arthritis
- Spinal Stenosis
- Spondylolisthesis
- Spondylolysis
- Spondylosis

New York Classification Criteria

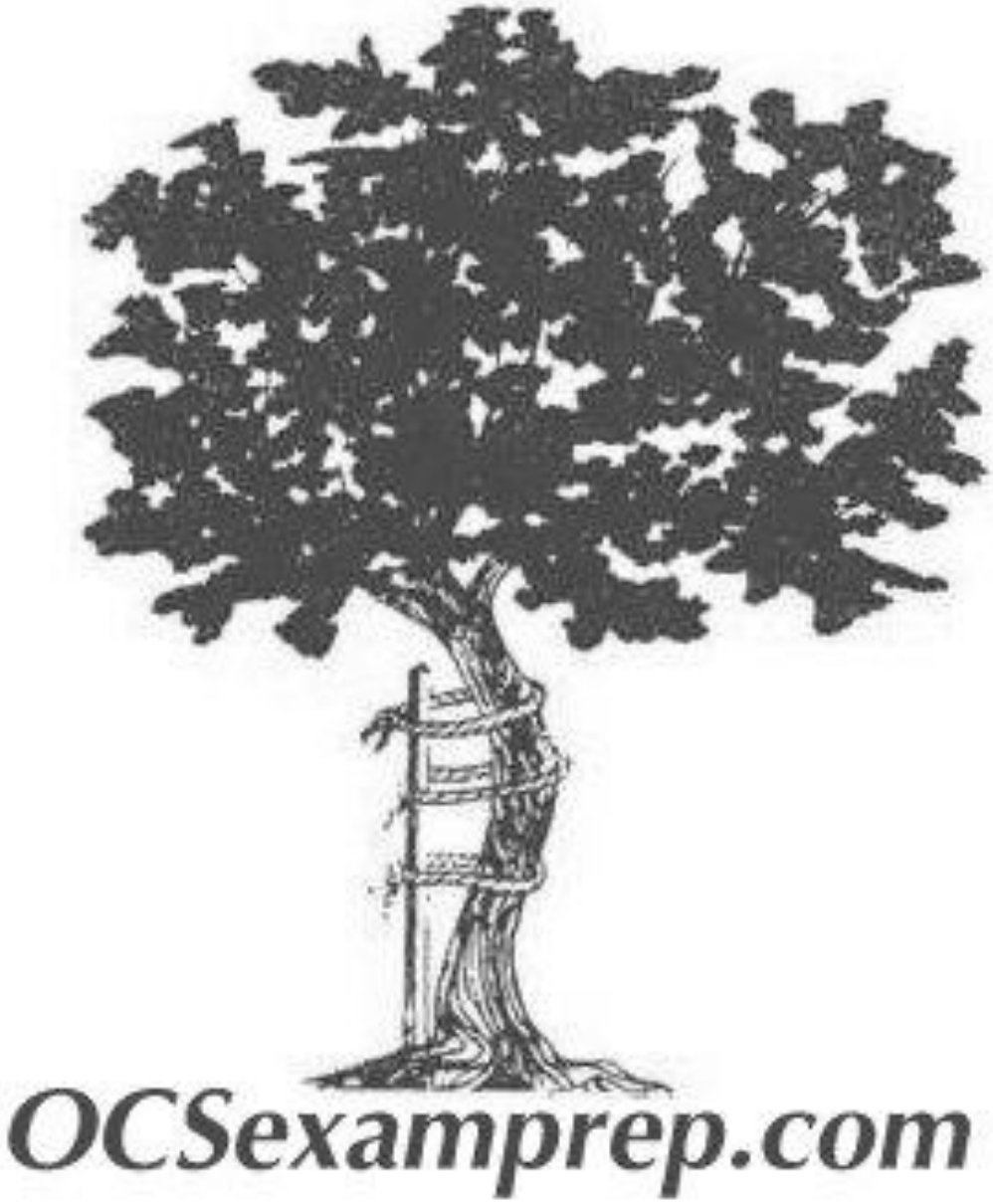
- Clinical criteria
  - Low back pain and stiffness for at least 3 months, which improves with exercise, but is not relieved by rest
  - Limited lumbar spinal motion in sagittal (sideways) and frontal (forward and backward) planes.
  - Chest expansion decreased relative to normal values corrected for age and sex
- Radiologic criteria
  - Bilateral sacroiliitis grade 2 to 4
  - Unilateral sacroiliitis grade 3 or 4
- Definite AS, if one radiologic criterion is associated with at least one clinical criterion.
- Probable AS, if three clinical criteria are present or one radiologic criterion is present without any clinical criterion.

Treatments

- Education and exercise are most important
- Extension exercises 3 times daily (swimming recommended), attention to erect posture, and sleeping without a pillow to prevent kyphosis are recommended.
- Manual mobilization improves chest expansion, and spinal mobility.
- Nonsteroidal anti-inflammatory drugs (NSAIDs) can help relieve pain and stiffness, and methotrexate and sulfasalazine improve inflammation in peripheral joints.
- Tumor necrosis factor (TNF) inhibitors have been shown to cause clinical improvement in the axial skeleton.
  - TNF is a cell protein that acts as an inflammatory agent in rheumatoid arthritis. TNF blockers target this protein to help reduce pain, stiffness, and tender or swollen joints.
  - Administered by injecting the medication under the skin or through an intravenous line.

Treatments (Chest Expansion)

- By performing the following exercises, chest expansion can increase.
  - Twice the normal rate of inspiration through the nose and expiration through the mouth
  - Normal expiration through nose and normal expiration through mouth
  - Respiration through the chest and abdomen
  - Deep breathing and then expiration through the mouth slowly
  - Resistance exercises for inspiratory pulmonary muscles



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