Spondyloarthropathies and Ankylosing Spondylitis

Disease Features
Current Management
Spondyloarthropathies (SpA)

- A cluster of inter-related and overlapping diseases that includes 5 subtypes:
  - Ankylosing Spondylitis (AS)
  - Reactive Arthritis
  - Psoriatic Arthritis
  - Arthritis associated with Crohn’s disease and Ulcerative Colitis
  - Undifferentiated SpAs.


The Spondyloarthropathies

- Ankylosing Spondylitis
- Juvenile SpA
- Reactive arthritis
  - Reiter syndrome
- Psoriatic Arthritis
- Sacroiliitis
- Undifferentiated SpA
- Arthritis associated with Crohn’s disease / UC

AI = Aortic incompetence
HB = Heart block
AAU = Acute anterior uveitis

Characteristics of SpA

- Spondyloarthropathies are characterized by:
- Radiographic sacroiliitis with or without accompanying spondylitis
  - Variable inflammatory peripheral arthritis, enthesitis, and dactylitis
  - Association with chronic inflammatory bowel disease
  - Association with psoriasis and other mucocutaneous lesions
  - Tendency for anterior ocular inflammation
  - Increased familial incidence
  - Occasional aortitis and heart block
  - No association with rheumatoid factor
  - Strong association with HLA-B27
Association of Spondyloarthropathies with HLA-B27 in White Persons

<table>
<thead>
<tr>
<th>Disease</th>
<th>Approximate Prevalence of HLA-B27, %</th>
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<tbody>
<tr>
<td>Ankylosing spondylitis</td>
<td>90</td>
</tr>
<tr>
<td>Reactive arthritis</td>
<td>40–80</td>
</tr>
<tr>
<td>Juvenile spondyloarthropathy</td>
<td>70</td>
</tr>
<tr>
<td>Enteropathic spondyloarthritis</td>
<td>35–75</td>
</tr>
<tr>
<td>Psoriatic spondyloarthritis</td>
<td>40–50</td>
</tr>
<tr>
<td>Undifferentiated spondyloarthropathy</td>
<td>70</td>
</tr>
<tr>
<td>Acute anterior uveitis (acute iritis)</td>
<td>50</td>
</tr>
<tr>
<td>Aortic incompetence with heart block</td>
<td>80</td>
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</tbody>
</table>

HLA-B27 prevalence in healthy population is approximately 8%.

Epidemiology of Spondyloarthropathies

- Prevalence of SpA is 0.6 – 1.9%.
- Prevalence is close to Rheumatoid Arthritis.
- AS prevalence is 0.1 - 1.1%.
- 13.6% of all individuals positive for the HLA B27 antigen had a spondyloarthropathy.
- Prevalence of HLA B27 varies between 1% (Japanese) to 40% (Eskimos and Inuits).
- The risk for spondylo-arthritis among HLA-B27-positive persons who have a first-degree relative with ankylosing spondylitis is increased threefold (30% instead of 10%).

Dougados M. Joint Bone Spine 2001; 68: 557-63
Ankylosing Spondylitis

• Most typical and common form of SpA.
• Chronic inflammatory joint disease of unknown cause that mainly affects the spine and the joints between the base of the spine and the pelvis.
• Ankylosing (Greek *ankylos*) = stiffening of a joint, *spondylos* = vertebra.
• A chronic and progressive form of seronegative arthritis.
AS: A Complex Disease

- Chronic, systemic, and progressive inflammatory disorder\(^1,2\)
- Characterized by involvement of the axial spine\(^1\)
- Affects the sacroiliac (SI) joints and may also affect peripheral joints, including hips, shoulders, and ankles\(^1\)
- Manifests the enthesitis typical of the spondyloarthropathies (SpAs)\(^2\)
- Recurrent back pain and loss of spinal mobility may progress to spinal fusion (ankylosis)\(^2\)
- May affect extra-articular sites\(^2\)

Clinical Features of AS

- Chronic inflammatory back pain
- Sacroiliitis
- Ankylosis
- Kyphosis
- Peripheral joint affection
- Uveitis
- Systemic manifestations
Chronic Inflammatory Back Pain

- Age of onset below 40 years
- Insidious onset
- Duration greater than 3 months before medical attention is sought
- Morning stiffness and improvement with exercise or activity.
Ankylosing spondylitis: iridocyclitis with synechiae
Spinal Mobility – Modified Schober

1. Patient standing erect

2. Mark an imaginary line connecting both posterior superior iliac spines (close to the dimples of Venus) (1)
   - A next mark is placed 10 cm above (2)

3. The patient bends forward maximally, measure the difference between the two marks (3)
   - Report the increase (in cm to the nearest 0.1 cm)

   The best of two tries is recorded.

ASAS handbook, Ann Rheum Dis 2009; 68 (Suppl II) (with permission)
Spinal Mobility – Chest Expansion

- Hands resting on - or behind the head
- Measure at 4th intercostal level anteriorly
- Difference between maximal inspiration (1) and exspiration (2) in cm (eg. 4.3 cm) is recorded
- Report the best of two tries

ASAS handbook, Ann Rheum Dis 2009; 68 (Suppl II) (with permission)
Diagnosis of AS

Modified New York Criteria (1984):

• Criteria components
  1. Low back pain of at least 3 months’ duration that improved by exercise and was not relieved by rest
  2. Limited lumbar spinal motion in sagittal (sideways) and frontal (forward and backward) planes
  3. Chest expansion decreased relative to normal values for sex and age
  4. Bilateral sacroiliitis grade 2–4 or unilateral sacroiliitis grade 3 or 4

  – Definite ankylosing spondylitis if criterion 4 and any one of the other criteria is fulfilled

van der Linden S, Valkenburg HA, Cats A. Arthritis Rheum. 1984;27:361
In patients with ≥3 months back pain and age at onset <45 years

- Sacroiliitis on imaging*
  - plus
  - ≥1 SpA feature#

OR

- HLA-B27
  - plus
  - ≥2 other SpA features#

#SpA features
- inflammatory back pain
- arthritis
- enthesitis (heel)
- uveitis
- dactylitis
- psoriasis
- Crohn’s/colitis
- good response to NSAIDs
- family history for SpA
- HLA-B27
- elevated CRP

*Sacroiliitis on imaging
- active (acute) inflammation on MRI highly suggestive of sacroiliitis associated with SpA
- definite radiographic sacroiliitis according to mod NY criteria

van der Heijde et al Ann Rheum Dis 2010;69:949-54
Radiological Findings in AS

- **Early:**
  - Sacroiliitis (closed arrow):
    - Erosions
    - Sclerosis
- **Late:**
  - Vertebra (open arrow):
    - Syndesmophytes
    - Calcification of ligaments (tramline appearance)
    - Squaring of vertebrae due to erosions of their corners.
Radiological Findings In AS

Bilateral sacroiliitis. Frontal radiograph shows bilateral sacroiliac joint erosions and iliac side subchondral sclerosis.

Bilateral chronic sacroiliitis. Frontal radiograph shows complete fusion of both sacroiliac joints.
Ankylosing spondylitis: early sacroiliitis (radiograph)
Ankylosing spondylitis: advanced sacroiliitis (radiograph)
Radiological Findings In AS

Lateral radiograph shows anterior corner erosions at the T12 and L1 vertebral bodies. The typical shiny corner sign (or Romanus lesion) is present (arrows).

Vertebral body squaring. Lateral radiograph shows squaring of L3 and L4 vertebral bodies, L3-L4 anterior syndesmophyte, and lumbar facet joint fusion.

Laboratory Findings in AS

• No diagnostic test:
  – HLA-B27 gene (90%)
  – High ESR, CRP
  – Mild normocytic normochromic anemia
  – High AP (in severe cases)
  – High seraum IgA levels
  – -ve RF, ANA
  – Synovial fluid similar to other inflammatory arthritis.
  – Pulmonary functions: Low VC, High FRC
Bone Scintigraphy

• Helpful in AS patient with normal or equivocal radiograph findings.

• Quantitative analysis: ratios of sacroiliac joint to sacral uptake of 1.3:1 or more are considered abnormal.

• ↑ bone scintigraphic uptake also may be used to evaluate active disease.

Magnetic Resonance Imaging (MRI)

• Best for early detection of skeletal involvement

• No associated radiation; so especially valuable in adolescents & young women

• Use MRI STIR technique; no need for gadolinium enhancement

• Major problems: high cost & relatively restricted availability
ASAS*/EULAR Recommendations for the Management of Ankylosing Spondylitis

- NSAIDs are recommended as the first-line drug treatment for AS patients with pain and stiffness.

In those with increased GI risk, non-selective NSAIDs plus a gastro-protective agent, or a selective COX-2 inhibitor could be used.

*ASessment in AS International Society
Efficacy of NSAIDs in AS

(good or very good efficacy)

Patients Responding (%)

<table>
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<tr>
<th></th>
<th>AS (n=69)</th>
<th>Mechanical Back Pain (n=768)</th>
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<tbody>
<tr>
<td>Patients</td>
<td>100%</td>
<td>10%</td>
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<td>Responding (%)</td>
<td>100%</td>
<td>10%</td>
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There is no evidence for the efficacy of the traditional DMARDs, including MTX, for the treatment of axial disease of AS.

Sulfasalazine may be considered in patients with peripheral arthritis.
Treatment Algorithm

Active AS

- Sacroiliac
- Axial
- Entheses
- Periph jts

NSAIDs

C/S Injections?

Exercise

???

C/S Injections

C/S Injections

Sulfasalazine

TNF Antagonists
Psoriatic Arthritis

- AGE of on set •
Psoriasis usually appears in the second and third decades of life arthritis delayed by some 2 decade.

juvenile P S A: 9-12 years •

Sex Ratio: 1-1 •
Group (1)

Predominant involvement of Dip's • 8-16%.
Group (2): Arthritis Mutilan's

- Osteolysis of the phalanges and Metacarpal's 5%.
- Often associated with sacorilities.
Group (3): - Symmetric polyarthritis

- Dip •
- Tendency for bony ankylosing •
- R A •
Group (4): -Oligoarticular Arthritis

- Asymmetric
- D I P - P I P - M C P - M I P - knee
- 15-30%
Psoriatic arthritis: "sausage" digits and rash
Group (5): Axial Involvement
Extra-articular manifestation

* Eye: - conjunctivitis •
  - episcleritis •
  - iritis •

* Mitral prolapse – Aortic incompetence •
Psoriatic arthritis: progressive joint changes (radiographs)
Peripheral arthritis

Initiate therapy:
- NSAID
- IA steroids
- DMARD (MTX, CsA, SSZ, LEF)
- Biologics (anti-TNF)

Skin and nail diseases

Initiate therapy:
- Topicals
- PUVA/UVB
- Systemics (MTX, CsA, etc)
- Biologics (anti-TNF, etc)

Axial disease

Initiate therapy:
- NSAID
- PT
- Biologics (anti-TNF)

Dactylitis

Initiate therapy:
- NSAID
- Injection
- Biologics (anti-TNF)

Enthesitis

Initiate therapy:
- NSAID
- PT
- Biologics (anti-TNF)

Reassess response to therapy and toxicity
Enteropathic Arthritis
IBD

- peripheral arthritis
- axial involvement
Peripheral arthritis

- 17-20% •

Age 25-44 •

Clinical: - pauci articular •
- Asymmetric •
- Mono arthritis •
- Migratory and transient •
- parallels the activity of bowel involvement •
Axial

5-12% •
M : F  3:1 •
B 27: 33-70% •
Extra-articular

- erythema nodosum
- pyoderma gangrenosum
- anterior uveitis
- amyloidosis
Therapy

- NSAID'S •
- Corticoidsteroid's •
- Sulphasalazine •
- Anti TNF •
Reactive arthritis

Is a sterile synovitis which occurs following an infection
Aetiology

- salmonella, shigella, yersina enterocolitica

- N S U: - chlamydia trachomatis
  - urea plasma urealyticum

-bacterial antigen or bacterial DNA have been found in the inflamed synovium of affected joint

Repeated infection do not necessarily produce reactive arthritis
Clinical features

- *arthritis – acute, lower limb, asymmetrical*
- *enthesitis – plantar fascitis or achills tendonitis*
- *Sacroilitis or spondylitis*

- bilateral conjunctivitis 30%

- circinate balanitis: painless superficial ulceration of the glan`s penis. heal without scarring

- keratoderma blenorrhagica: skin of feet and hand`s painles red and raised plaques and pustules

- Acute anterior uveitis
Reactive arthritis: balanitis circinata
Reactive arthritis: conjunctivitis
Ankylosing spondylitis: early sacroiliitis (radiograph)
Treatment

- antibiotic (cultures should be taken and any infection treated)
- NSAIDs
- local injection
- sulfasalazin or MTX
- Anti TNF