Spinal Pain vs. Spondylitis

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Learning Objectives

• Recognize inflammatory back pain and distinguish it from “mechanical” back pain
• Review recent advances in understanding and treating spondylitis
Disclosures

• None
Back Pain

• Low back pain one of the most common complaints in general practice
• A major cause absenteeism and work disability
• Acute and chronic
Acute Low Back Pain

• Cause: probably disc protrusion (discs don’t herniate anymore, they protrude)
• Self limited in most cases
• Imaging unnecessary (nearly everybody has findings on MRI, sick or healthy)
• Avoid opiates and benzos
• Moderate activity, bed rest not advised
Danger Signs in Back Pain

- Fever, chills
- Elderly patient
- Presence of known malignancy
- Abrupt onset (think fracture)
- Abdominal mass or widened aorta
**Table 2. Characteristics of Inflammatory Back Pain.**

<table>
<thead>
<tr>
<th>Characteristic</th>
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<tbody>
<tr>
<td>Age at onset, &lt;45 yr</td>
</tr>
<tr>
<td>Duration, &gt;3 mo</td>
</tr>
<tr>
<td>Insidious onset</td>
</tr>
<tr>
<td>Morning stiffness &gt;30 min</td>
</tr>
<tr>
<td>Improvement with exercise</td>
</tr>
<tr>
<td>No improvement with rest</td>
</tr>
<tr>
<td>Awaking from pain, especially during second half of night, with improvement on arising</td>
</tr>
<tr>
<td>Alternating buttock pain</td>
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* The presence of two or more of these features should arouse suspicion for inflammatory back pain, and the presence of four or more features can be considered diagnostic. The sensitivity of inflammatory back pain for the diagnosis of axial spondyloarthritis is 70 to 80%. The specificity varies, depending on the population being studied.²⁹
Spondyloarthropathies
Seronegative spondyloarthropathies

- Ankylosing spondylitis
- Reactive arthritis
- Inflammatory bowel disease-associated spondyloarthropathy
- Psoriatic arthritis
  - Spondylitic variant
Figure 1 Pathology of entheses in ankylosing spondylitis

Nat. Rev. Rheumatol. doi:10.1038/nrrheum.2010.79
Cytokines in the Spondyloarthropathies

• Key role for TNF-alpha and IL-1
• Remarkable response in many patients to TNF blockade, even in advanced cases
• IL 23R polymorphisms are risk factors
• Role of TH17 cells?
• IL-23 blockade in early clinical trials in AS and IBD
• Remarkable effectiveness of anti IL-17A
SPONDYLOARTHROPATHIES:
Common immunologic mechanisms?

- Greatly increased prevalence among HLA-B27-positive individuals

- Strong association with GI inflammation
  - Reactive arthritis follows infectious diarrhea with Shigella, Salmonella, Campylobacter
  - HLA-B27-positive patients with inflammatory bowel disease develop spondylitis
## HLA-B27 associations

<table>
<thead>
<tr>
<th>Disorder</th>
<th>B27 frequency</th>
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<tbody>
<tr>
<td>Ankylosing spondylitis</td>
<td>90%</td>
</tr>
<tr>
<td>With uveitis or aortitis</td>
<td>Nearly 100%</td>
</tr>
<tr>
<td>Reactive arthritis</td>
<td>50-80%</td>
</tr>
<tr>
<td>With sacroiliitis or uveitis</td>
<td>90%</td>
</tr>
<tr>
<td>Inflammatory bowel disease</td>
<td>Not increased</td>
</tr>
<tr>
<td>With spondylitis</td>
<td>50%</td>
</tr>
<tr>
<td>Psoriasis vulgaris</td>
<td>Not increased</td>
</tr>
<tr>
<td>With spondylitis</td>
<td>50%</td>
</tr>
<tr>
<td>Unaffected Caucasians</td>
<td>6-8%</td>
</tr>
</tbody>
</table>
Pathogenesis of Joint Destruction

Macrophages → Proinflammatory cytokines, Chemokines

Endothelium → Adhesion molecules

Synoviocytes → Metalloproteinase synthesis

Osteoclast progenitors → RANKL expression

Increased Inflammation

Increased Cell Infiltration

Articular Cartilage Degradation

Bone Erosions
Ankylosing Spondylitis -- A Distinct Entity
Why Can’t He Touch His Toes?
X-ray of normal sacroiliac joint
X-ray of early sacroiliitis
Progressive Spondylitis
Vertebral Squaring and Syndesmophytes
Syndesmophytes Bridge Vertebrae in AS
“Bamboo” Spine
Figure 1

Magnetic resonance imaging in spondyloarthritis.
Marzo-Ortega, Helena; McGonagle, Dennis; Bennett, Alexander

DOI: 10.1097/BOR.0b013e328339381e

Figure 1  Image illustrating a T2 short tau inversion recovery sagittal sequence of the lumbar spine of a patient with inflammatory bowel disease-associated spondyloarthritides
Figure 2

Magnetic resonance imaging in spondyloarthritis.
Marzo-Ortega, Helena; McGonagle, Dennis; Bennett, Alexander

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Figure 2  T1-weighted sagittal image of the thoracic spine of a patient with undifferentiated spondyloarthritis showing multiple fatty Romanus lesions (white arrows)
TNF blockers in AS and Related Diseases

- Excellent data for infliximab (Remicade) and adalimumab (Humira) in AS
- Some data support early use
- Approved for psoriatic spondylitis
- Golimumab and certolizumab may also be effective
- Long term data are scant
Uveitis with Synechea Formation in Ankylosing Spondylitis
Oligoarthritis of Large Joint in AS
Treatment of Spondyarthropathies

- NSAIDs still recommended as first step
- Poor data support methotrexate and sulfasalazine
- Good data for TNF blockers (3 of them) for PsA and axial spondy
- High CRP spondy pts respond better
Spondyarthropathy Rx

• Limited role for glucocorticoids
• Ustekinumab in PsA, trials ongoing in spondy
• Anti-IL-17
Secukinumab in Ankylosing Spondylitis – ACR 2014

Figure. ASAS response over 16 weeks

*P < 0.001 secukinumab 150 mg s.c. vs. placebo at Week 16
P-values adjusted for multiplicity of testing based on predefined hierarchy, non-responder imputation

Sieper, et. al.
Summary

• Progress but no definitive mechanism worked out
• MRI identifies inflammatory lesions before conventional radiography
• TNF blockade has marked efficacy in reducing inflammation, even in established disease
• A more aggressive approach in identifying patients with inflammatory back pain is warranted