Approach to the patient with musculoskeletal pain
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Prevalence of Diagnosed Musculoskeletal Disorders

- Data updated 2012

Arthritis Care: An Increasing Burden on Healthcare Resources

Prevalence of Diagnosed Musculoskeletal Disorders

![Graph showing prevalence of different musculoskeletal disorders.](image)

- Millions of Cases in US (% Population)
- Osteoarthritis: 27.4%
- Rheumatoid arthritis: 1.3%
- Musculoskeletal soft-tissue disease: 49.8%
- Psoriatic arthritis: 0.6%
- Ankylosing spondylitis: 0.3%
- Other systemic connective-tissue disease: 0.0%

Musculoskeletal Problems in a Primary Care Office

- Degenerative: Osteoarthritis
- Inflammatory: Rheumatoid arthritis
- Seronegative spondyloarthropathy
- Non-articular: Fibromyalgia
Principle

- Every arthritis has a specific target tissue:
  - Osteoarthritis: articular cartilage
  - Rheumatoid arthritis: synovium
  - Seronegative spondyloarthropathy: enthesis
Principle

- Every arthritis has a specific pattern of joint distribution:
  - Osteoarthritis: symmetrical pattern involving mechanical degradation of hyaline cartilage

Joints Commonly Involved in Osteoarthritis
Prevalence of Radiological OA in a Dutch population

Osteoarthritis: Heberden's nodes
Osteoarthritis: hip

- Suspect hip osteoarthritis if internal rotation < 24 degrees and groin symptoms.


Osteoarthritis: Cam-type deformity in young men
Charcot arthropathy

A 50-year-old Man with painful knuckles
A 50-year-old Man with painful knuckles

Iron saturation = 48% (15-50)
Ferritin = 1081 ng/mL (27-360)
ESR = 11 mm/hour, C-Reactive Protein negative
Liver function tests elevated 1.5 normal
HFE genotype = C282Y / C282Y

Diagnosis: Hemochromatosis

“Iron Fist” sign of Hemochromatosis Arthropathy

Typical involvement of 2nd and 3rd MCP joints
Diagnosing Osteoarthritis

- Learn the typical distribution of primary OA
- Examine the whole patient
- Atypical joint involvement needs further elucidation: hemochromatosis, hyperparathyroidism
- Morning stiffness typically brief
- Bed rest usually not affected, joints comfortable at rest
- No synovitis: joint enlargement due to bone
- ESR, C-reactive protein should be normal

Principle

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Difference Between Normal Joint and Joint Affected by Rheumatoid Arthritis

- Normal Joint:
  - Muscles
  - Cartilage
  - Tendon
  - Bone
  - Synovial Fluid
  - Synovium

- Joint Affected by RA:
  - Bone Loss/Erosion
  - Cartilage Loss
  - Swollen Joint Capsule
  - Synovitis

Synovitis:
- Swelling is confined to the area of the joint capsule
- Synovial thickening feels like a firm sponge
Principle

• Every arthritis has a specific pattern of joint distribution:
  − Osteoarthritis: symmetrical pattern involving mechanical degradation of hyaline cartilage
  − Rheumatoid arthritis: symmetrical synovitis

Rheumatoid arthritis: Joint Distribution

• Symmetric polyarthritis
• Corresponds to the distribution of synovial lined joints
• Note absence of axial involvement except at C1-2

RA: Atlantoaxial subluxation
RA Symmetrical synovitis

Radionuclide Scan in Early RA

RA: finger deformities
RA: knee swelling and popliteal cyst

RA: feet

RA: foot deformities
The value of X-rays in Rheumatoid Arthritis

• For a Symmetric polyarthritis that satisfies ARA Criteria for rheumatoid arthritis:
• Perform X-rays of the hands and feet
• Repeat them at 1 year or sooner if the disease is not controlled

Radiographic Progression of Joint Erosions
Rheumatoid Arthritis

How fast is joint damage progressing?

A. Soft-tissue swelling, no erosions
B. Thinning of the cortex on the radial side and minimal joint space narrowing
C. Marginal erosion at the radial side of the metacarpal head with joint space narrowing

25% of patients in an Early Arthritis Clinic already had erosions at the First Visit

474 patients seen in an early RA clinic; 141 had definite or probable RA

RA: severe hand deformity
Extra-articular RA

- Corneal ulcers and melt

Rheumatoid factor and RA

- 45% positive in first 6 months
- 70% positive in the first year
- 10-15% more become positive in the next year
- 15% are persistently RF-negative and tend to have milder disease

Anti-CCP antibody
(cyclic-citrullinated peptide)

- More specific than Rheumatoid Factor (98%)
- Newer generation tests almost as sensitive (70+%)?
- High titers predict severe erosive deforming arthritis
- May be positive when RF is negative and vice versa
- May be positive before clinical symptoms of RA
When to Suspect Early RA

- Morning stiffness longer than 30 minutes
- 3 or more swollen joints
- Involvement of MCP or MTP joints
- Positive RF and/or anti-CCP may be confirmatory

Co-morbidities in RA

- Osteoporosis
- Chronic pulmonary disease
- CV
  - Preclinical atherosclerosis (Carotid US)
  - Myocardial Infarction
  - All strokes and ischemic strokes
  - Congestive heart failure
  - Metabolic syndrome
- Malignancy – NM skin cancer, lung, lymphoma

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Seronegative spondyloarthropathies

- Ankylosing spondylitis
- Psoriatic arthritis
- Reiter’s Syndrome and reactive arthritis
- Arthritis of inflammatory bowel disease

Characteristics:
- Negative rheumatoid factor
- Spinal involvement and sacroiliitis
- Asymmetric oligoarthritis
- Sausage digits

Enthesopathy
Spinal Ligaments

Principle

- Every arthritis has a specific pattern of joint distribution:
  - Osteoarthritis: symmetrical pattern involving mechanical degradation of hyaline cartilage
  - Rheumatoid arthritis: symmetrical synovitis
  - Seronegative spondyloarthropathy: asymmetric inflammation of enthesis and synovium

Seronegative spondyloarthropathy

- Axial Involvement
- Large joints
- Asymmetric pattern
When should you suspect inflammatory back pain?

- Young male
- Morning stiffness greater than 30 minutes
- Back pain is worse with rest and better with movement
- Unable to sleep through the night, usually awakens in the early hours of the morning
- Alternating buttock pain but no true radicular symptoms
**Whole body MRI**

Sacroilitis demonstrated


**Spinal Fusion: syndesmophytes**

[Images of spinal fusion with syndesmophytes]

**Spinal Fusion: syndesmophytes**

[Images of spinal fusion with syndesmophytes]
Peripheral arthritis: enthesopathy

RA Symmetrical synovitis

Peripheral arthritis: asymmetry
What distinguishes psoriatic arthritis from rheumatoid arthritis?

- Asymmetry
- Spine involvement
- Sausage digits
- Absence of nodules
- Psoriasis may be subtle and easy to miss

Fibromyalgia

A clinical syndrome characterized by chronic widespread pain and tenderness to palpation at specific body sites
The Paradox of Fibromyalgia: No target tissue

- Normal passive range of joint motion
- Minimal mechanical disability
- Absence of muscle weakness or atrophy
- Normal ESR
- Normal radiographs, electromyogram, etc

ACR Fibromyalgia Criteria

From History: widespread pain of 3 months duration

From Examination: tender points defined by digital palpation with a force of 4 kg pain experienced in at least 11 of 18 tender point sites

The Tender Point: Key to Fibromyalgia Diagnosis

- Excessively tender, discrete area of soft tissue
- Palpated with thumb or first two fingers
- Palpation pressure: ~4 kg/cm, enough to whiten nail


Tender-Point Palpation: I. Head

- Insertion of suboccipital muscles

Tender-Point Palpation: IV. Neck and Chest

- Lower sternomastoid
- Second costochondral junction
Clinical Features of Fibromyalgia

<table>
<thead>
<tr>
<th>Criterion</th>
<th>% positive</th>
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<tbody>
<tr>
<td>Widespread Pain</td>
<td>97.6</td>
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<tr>
<td>Tenderpoints: 11 of 11 tender points</td>
<td>90.1</td>
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<tr>
<td>Fatigue</td>
<td>81.6</td>
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<tr>
<td>Morning stiffness &gt; 15 minutes</td>
<td>74.6</td>
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<tr>
<td>Sleep disturbance</td>
<td>58.8</td>
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<tr>
<td>Headache</td>
<td>53.6</td>
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<tr>
<td>Anxiety</td>
<td>47.8</td>
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<tr>
<td>Dysosmia remitts</td>
<td>46.2</td>
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<tr>
<td>Sclerosis symptoms</td>
<td>39.5</td>
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<tr>
<td>Fever</td>
<td>31.2</td>
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<tr>
<td>Irritable bowel syndrome</td>
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<tr>
<td>Urinary urgency</td>
<td>29.5</td>
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<tr>
<td>Raynaud's phenomenon</td>
<td>16.7</td>
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Syndromes That Overlap with Fibromyalgia

The neurologist sees chronic headache, the gastroenterologist sees IBS, the otolaryngologist sees TMJ syndrome, the cardiologist sees costochondritis, the rheumatologist sees fibromyalgia, and the gynecologist sees PMS.

The Fibromyalgia Complex:

- Chronic Fatigue Syndrome
- Fibromyalgia
- Irritable bowel syndrome
- Migraine and tension headaches
- Multiple allergies syndrome
- Multiple chemical sensitivities
- Irritable bladder syndrome
Differential Diagnosis

- What laboratory studies should we perform?
- All laboratory studies are normal in FM. Tests are performed to screen for other systemic illnesses:
  - CBC, comprehensive metabolic panel, ESR, CRP, CK, TSH
  - Do NOT perform RF or ANA as screening studies
  - Serum 25 (OH) D probably not helpful unless very low Vitamin D (< 9 ng/ml) mimics FM

Conclusions

- Examine the whole patient
- Identify the target tissue and joint distribution
- Recognize synovitis
- Interpret laboratory studies in the context of the clinical picture