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Diagnostic Challenges of Rheumatologic Disease

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- Recognize the importance of pathophysiology in understanding rheumatic disease –target tissue and characteristic joint distribution
- Distinguish inflammatory from non-inflammatory (degenerative) arthritis and non-articular (soft-tissue) rheumatic conditions.
- Discuss the role of laboratory and imaging studies in rheumatologic diagnosis
- Review the features that distinguish fibromyalgia from other rheumatic diseases





Illustrative Case

- A 50-year-old woman presents with generalized aches and pains and severe tenderness in her hands, knees, ankles and feet
- Her joints are swollen in the morning and she has several hours of morning stiffness
- Physical examination shows widespread tenderness in the neck, shoulders, hands, knees, ankles and feet
- · Joints show full range of motion without swelling
- CBC, comprehensive metabolic panel, UA, ESR, CRP, RF and anti-CCP are negative; ANA positive at 1:320

Two Pragmatic Principles for Recognizing Arthritis

- I. Every arthritis has a specific target tissue:
 - Osteoarthritis: articular cartilage
 - Rheumatoid arthritis: synovium
 - Seronegative spondyloarthropathy: enthesis
- Fibromyalgia does NOT have a target tissue





Osteoarthritis Cartilage - Early





Two Pragmatic Principles for Recognizing Arthritis

- II. Every arthritis has a specific pattern of joint distribution:
 - Osteoarthritis: symmetrical pattern of noninflammatory arthritis
 - Rheumatoid arthritis: symmetrical synovitis
 - Seronegative spondyloarthropathy: axial inflammation and peripheral inflammatory arthritis





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Acute back pain with stooping Disc space narrowing and vacuum disc at L4-5 with Grade I spondylolisthesis



Clinical Presentation of Lumbar Spinal Stenosis Syndrome and Neurogenic Claudication

Extension provokes symptoms
Pain/weakness in the legs

 Patients lean forward while walking to ambulate more comfortably Sitting relieves symptoms

Osteoarthritis: Hip

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

Osteoarthritis: Hip

Progressive loss of superior cartilage and femoral head deformity

Holla JFM. Arth Care Res 2012;64:59-65





Osteoarthritis of the Knees Both valgus and varus alignment abnormalities are the principal factor in progression; nullifies effect of weight reduction. Even minor alignment changes are important.









A 50-year-old Man with Painful Knuckles



Note joint space narrowing and osteophytes at the MCP joints



A 50-year-old Man with Painful Knuckles

- Serum iron = 75 µg/dL (50-160)
- Iron saturation = 23% (15-50)
- TIBC = 328 µg/dL (300-360)
- Ferritin = 1081ng/mL (27-360)
- ESR = 11 mm/hour, C-Reactive Protein negative
- Liver function tests elevated 1.5 normal
- · Diagnosis: Hemochromatosis

Osteoarthritis

- No systemic symptoms
- Morning stiffness under 30 minutes
- · ESR and C-reactive protein are normal
- Very uncommon in patients under 40 except for trauma or certain inherited patterns
- No pathognomonic serologic test for OA

RA: Proliferative Synovium with Invasion of Cartilage and Bone



Note synovial proliferation and reduplication with intense lymphoid activity

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:
 - 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





































Anti-CCP Antibody (cyclic-citrullinated peptide)

- · A better and more specific assay than RF
- Sensitivity 60-70 (66.4)%, specificity ?100(98.3)% (active TB – 7-39%)
- Present in early and preclinical disease (up to 14 years)
- Correlates with increased risk for progressive joint damage
- · Does not correlate with fluctuation of RF

Peoples C, Valiyil R, Davis RB, Shmerling RH. J Clin Rheumatol 2013; 19:351.

Co-Morbidities in RA

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

Seronegative Spondyloarthropathies

- Ankylosing spondylitis
- Psoriatic arthritis
- · Reactive arthritis
- · Arthritis of inflammatory bowel disease
- Characteristics:
 - Negative rheumatoid factor
 - spinal involvement and sacroiliitis
 - Asymmetric oligoarthritis
 - Sausage digits

Principle

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



Two Pragmatic Principles for Recognizing Arthritis

- II. Every arthritis has a specific pattern of joint distribution:
 - Seronegative spondyloarthropathy: axial inflammation and peripheral inflammatory arthritis

Seronegative Spondyloarthropathy

- Axial Involvement
- Common targets highlighted
- Pattern is symmetrical in ankylosing spondylitis and asymmetric in psoriatic arthritis

Spinal Inflammation



Limited flexion. Thermogram shows increased spinal temperature



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

Hamilton L, et al. Rheumatology (Oxford). 2014 Jan;53(1):161-4.



























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
- Fibromyalgia has no target tissue but an easily recognizable clinical presentation

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





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



Insertion of suboccipital muscle

Wolfe, et al. 1990.







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Fibromyalgia Patients Have Widespread Somatic Symptoms Criterion % Positive Widespread Pain Tenderness 11 of 18 tender points 97.6 90.1 Fatigue 81.4 Morning stiffness > 15 minutes 77.0 Sleep disturbance Parasthesias 74.6 62.8 Headache 52.8 Anxiety 47.8 Dysmenorrhea 40.6 Sicca symptoms Prior depression 35.8 31.5 Irritable bowel syndrome 29.6 Urinary urgency Raynaud's phenomenon 26.3 16.7

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.

Don't use ANA as a screening test

Sensitivity 99+ %, specificity 85% Lupus is a rare disease: highest prevalence (AA women) is 400/100,000 (or 4/1000)

= base rate
If 1000 women were screened,
4 would be true positive (all SLE positive)

But 150 would be false positive (15% false positive)

A patient with a positive ANA has 4/154 = 2.59% chance of having lupus

In a primary care setting 232 patients referred with positive ANA and widespread patin – 2.1% had lupus, 9.1% had any ANA-associated rheumatic disease; no patient with ANA < 1:160. Abeles,Abeles. Am J Med 126:342, 2013.

Illustrative Case

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- · Joints show full range of motion without swelling
- · Fibromyalgia may be the most likely diagnosis

Conclusions

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