Musculoskeletal Manifestations of Systemic Disease

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Objectives

• Recognize patients with systemic causes of musculoskeletal pain.
• When to prescribe DMARDs for patients with rheumatoid arthritis.
• Non-surgical options for treating osteoarthritis.
• Perform appropriate joint injections
“If you haven’t seen it, it has probably seen you”

- CPPD
- Gout
- Septic joint
- Psoriatic arthritis
- Reiter’s syndrome
- hyperCa2+
- PMR
- Lyme
- Pathologic fracture
- CRPS

- DVT
- Myesthenia gravis
- Myotonia
- Fibromyalgia
- EDS
- Giant Cell tumor
- Multiple Sclerosis
- ALS
- Osteoid osteoma
When do I think about a systemic rather than orthopedic etiology?

- No history of trauma or overuse
- Atypical pain pattern
- + ROS
- Persistent sx (<6 weeks)
- Synovitis
  - Soft tissue swelling
  - Warmth, tenderness
  - Joint effusion
  - Painful passive and active ROM
Baker with wrist pain

• 35yo WM with right wrist swelling for over a month.
• Works as a baker for grocery store chain
• Increased work load but no specific injury
• ROS: increased fatigue for last 2 months.
• SH: smoker.
• FHx: no rheum dz
Physical Exam

- Tenderness and swelling over the wrist.
- (-) squeeze test of MCPs
- No erythema, +warmth
- Pain with passive and active ROM of wrist
- No motor weakness or sensory deficit
DDx

- Tendonitis
- Sprain
- Rheumatologic
  - Rheumatoid arthritis
  - SLE
  - Crystal-induced (Gout, CPPD)
  - seronegative arthritides (AS, IBD, psoriasis, Reiters)
- Infectious
  - Parvovirus, Hepatitis, Lyme
Provisional Diagnosis of Rheumatoid Arthritis

1. > 1 large joint or
   ≥ 1 small joint or
   + squeeze test
   AND

2. ≥ 6 weeks of symptoms

OR

Synovitis in any one joint with + lab test
What Additional Tests Would You Do To Confirm Diagnosis?

- Rheumatoid factor
- Anticyclic citrullinated protein (CCP)
- ESR, CRP
- ANA
- Radiographs of the wrist and hand
- Ultrasound of wrist and hand
- CBCD
- Lyme
- Rheumatology referral
Setting the table for our Rheumatology colleagues.

- **Smoking cessation**
- **CAD screening**
  - (RA = DM2)
- **Immunizations UTD**
- **PPD, hep screening**
- **contraception**
- **age appropriate cancer screening**
- **PT referral for RA vs OA**
  – be wary of tendon rupture.
Starting DMARDs

- Delayed treatment (median treatment lag time, 123 days; n=109)
- Early treatment (median treatment lag time, 15 days; n=97)

Take Home Points

• Recognize synovitis
  • Squeeze test
• Check CCP
• Refer early
  • Most damage occurs in first 2 years

• CAD risk factors
• Smoking cessation

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Tourist with swollen knee

• 55 yo male presents with two days of painful swollen knee. Does not recall a specific injury. Hurts to move or to bear any weight.
• PMH: no prior history of swollen or painful joints
• SH: Works as a carpenter. Just returned from a vacation in Mexico that included hiking and surfing.
• ROS: no urethritis sx, no oral ulcers, no history of rash. He was sexually active in Mexico.
Physical Exam

- No fever, not toxic appearing
- Holding knee in slight flexion
- Mild erythema and heat
- 2+ effusion
- Medial joint line tenderness to palpation
- Pain with any active or passive range of motion
- No bursal swelling
Differential Diagnosis

INFECTION
  • Gonocccocal

INFLAMMATORY
  • Crystal-induced (Gout, CPPD)
  • Rheumatoid,
  • Seronegative arthropathy

REACTIVE/TRAUMATIC
  • DJD/OA
  • Internal derangement (meniscal tear, ligament tear)

ZEBRA
  • Lyme, PVNS, TB
What are your initial steps?

1. Xray
2. Aspirate the effusion
3. RICE/NSAIDs
4. Crutches with WBAT
5. Knee immobilizer
6. Parenteral antibiotics
7. Oral antibiotics
Acute Swollen Knee

• Approach
  • superolateral

• Appearance
  • Yellow or red, cloudy or clear

• Labs

  • ASPIRATE
    • Cells
    • Crystals
    • Gram stain and Culture

  SERUM:
    • CBCD, ESR, CRP
    • Uric Acid
    • RF, CCP
    • Lyme titer (synovial PCR)
Acute Swollen Knee

- Synovial Fluid Cell Count: 35,000 WBC
- ESR 30
- Gram Stain negative for diplocci
- No elevated serum WBC or left shift.
# Knee Effusion

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Cell Count</th>
<th>Culture</th>
<th>ESR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactive</td>
<td>&lt; 20 K</td>
<td>(-)</td>
<td>&lt;30</td>
</tr>
<tr>
<td>Inflammatory</td>
<td>20-50 K</td>
<td>(-)</td>
<td>&lt;50</td>
</tr>
<tr>
<td>Infection</td>
<td>&gt;50 K</td>
<td>(+) Joint 60% Blood 30%</td>
<td>&gt;50</td>
</tr>
</tbody>
</table>
Acute Swollen Knee

- Polarized microscopy = Birefringent Crystals in his synovial fluid

- **ACUTE GOUTY ARTHRITIS**
## GOUT RISK FACTORS

<table>
<thead>
<tr>
<th>INCREASE</th>
<th>NO AFFECT</th>
<th>DECREASE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOCAL TRAUMA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat, Fish</td>
<td>Purine-rich veggies,</td>
<td>Dairy</td>
</tr>
<tr>
<td></td>
<td>Total protein</td>
<td></td>
</tr>
<tr>
<td>Beer, Liquor</td>
<td>Wine</td>
<td>Coffee</td>
</tr>
<tr>
<td>Medications</td>
<td></td>
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</tr>
</tbody>
</table>
Take Home Points

• Trauma is common cause of GOUT attack
• Differentiate effusion, pre-patellar bursitis, and soft tissue swelling
• Know how to aspirate joint
  • Knee (elbow, ankle, digit)
• WBC in effusion
  • Reactive < 15k
  • inflammatory 20-50k
  • infectious >50k
Anterior Knee Pain

• 24 yo WF presents with chronic anterior knee pain.
• Dx’d in past as PFJD and patellar subluxation
• No history of trauma
• Has always been ‘double jointed’ and flexibility runs in her family.

EXAM:
• Tall thin ectomorphic.
• Normal eyes, palette, skin texture
• Hypermobile patella, knee recurvatum
• Beighton score = 9
What Are The Beighton Criteria?

- Thumb to forearm
- 5th MCP extends > 90 degrees
- “double jointed” PIPs, DIPs
- MDI in GH joint (+ sulcus sign)
- Patellar subluxation
- Knee recurvatum
- Elbow hyperextension > -5 deg
- Midfoot hyperpronation
- Hands flat on floor with knees straight
Evaluating the Bend-y Patient

- Beighton Criteria
- Skin changes
- Ectopic lens
- High arch palette
- Cardiac murmur
- Limb length ratio
- Arachnodactyly

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Treating the Bend-y Patient

- Strengthening
  - Physical Therapy
  - ACL video
    - http://mydoctor.kaiserpermanente.org/ncal/acl/
- Bracing
  - Sleeves and Physiotape
  - Orthotics
- Pain management
- Anticipatory guidance
Take Home Point

• Do a Beighton score on patients presenting with hypermobility symptoms.
Knee OA buffet

- Risk factors
  - **Obesity**
    - Each 5u increase in BMI = 35% increased risk in OA
    - Normal BMI + weight-bearing exercise = happy cartilage
  - Trauma
  - Age, female sex


Knee OA Treatment Buffet

**Grade A evidence**
- Weight loss
- Exercise = Quadriceps strength, walking, Tai Chi
- Corticosteroid injection – up to 3x/year
- NSAIDs, Tylenol

**Grade B evidence**
- Hyaluronic acid injection – see TPMG position paper
- Unloader brace
- Lateral heel wedge
- Glucosamine, bromelain, turmeric
- Accupuncture

Stem cells and PRP – only work in NBA All-Stars?

ERIKA RINGDAHL, MD and SANDESH PANDIT, MD, *Am Fam Physician*. 2011 Jun 1;83(11):1287-1292
Time for one more?
Electrician with Swollen Knee

• 31 yo WM with acute onset of painful swelling in his knee.

• PMH “Hard” on his knees, olecranon bursitis once

• Review of systems –
  • Week prior had bilateral red eyes with mild photophobia. Seen in SCPMG and felt to be conjunctivitis. Since resolved.
  • dysuria over the Summer after trip to Germany. Feared he had chlamydia. Never tested. Resolved spontaneously.
  • No history of rash, no GI symptoms
Electrician with swollen knee

- Results of arthrocentesis
  - WBC's = 21780
  - ESR 35
- (-) CPP, RF, Lyme, chlamydia

REITER’S SYNDROME
• Week later severe pain and tense swelling in his calf.
• Initially felt to be DVT. Doppler negative.
• Sent to sports medicine for “gastroc tear”

DVT study ≠ look at the calf
Take Home Points

- Use squeeze test to recognize synovitis in MCPs
- Order CCP for suspected Rheumatoid Arthritis
- Refer early for DMARDs
- Check Beighton score on hypermobile patients

- Aspirate persistent or highly symptomatic atraumatic knee effusion.
- Prescribe weight loss, quadriceps strengthening for knee arthritis.
- NSAIDs, Tylenol, CAM treatments for pain control.
- Standing x-rays
Thank You