Common Musculoskeletal Complaints from Head to Toe

M. Susan Burke, MD, FACP
Clinical Associate Professor of Medicine
 Sidney Kimmel Medical College at Thomas Jefferson University
 Senior Advisor, Lankenau Medical Associates
 Lankenau Medical Center
 Wynnewood, PA

Learning Objectives

- Conduct a focused history on the patient presenting with neck, shoulder, back or knee complaints
- Demonstrate physical examination skills that can be used to effectively diagnose common musculoskeletal disorders
- Determine which findings warrant diagnostic imaging and/or orthopedic consultation

Introduction

- MSK-related complaints are the most common reason for primary care and emergency department visits
  - Account for 10% to 28% of all visits
  - 70% of new MSK complaints are treated by primary care physicians
- Most primary care physicians report insufficient training in musculoskeletal medicine
- My focus will be on common, office-based MSK complaints which are more chronic in nature

Neck Pain

George, a 56-year-old man

- Presents with recurring "spasm-like pain" in his left arm for last 2 months
- Pain wakes him nightly, is located on his lower scapula, posterolateral aspect of upper arm, forearm, and into 4th-5th fingers. Stretching provides little benefit
- Pain persists for rest of night, slowly improves, but a dull ache continues throughout the day
- PMH: Left arthroscopic rotator cuff repair 4 months ago; this arm pain originated 2 months ago. Surgeon does not think the pain is related to the surgery

Neck and Arm Pain Work-up

- Very commonly DJD-related or due to injuries, jobs, etc.
  - Patient age
  - History—how long, acute or chronic?
  - Other areas or joints involved?
  - Location/radiation of pain
    - Differentiate neck vs. shoulder
  - Inspection
    - Head/neck position, look for atrophy
  - Palpation: trigger points, tissue texture changes
  - ROM of neck
  - Provocative maneuvers
    - Spurling test
Cervical Radiculopathy

Foraminal Compression Test (Spurling Test)

- To confirm cervical radiculopathy:
  - Position patient with the neck extended and head rotated
  - Apply downward pressure on head
- Test is + if pain radiates into the limb ipsilateral to the side to which the head is rotated
- Specificity 93%, sensitivity 30% in diagnosing acute radiculopathy


Shoulder Pain

The Shoulder and Rotator Cuff Muscles

Sam, a 45-year-old man with new shoulder pain

- Pain in anterior and lateral shoulder, has gradually worsened over last three weeks
- Dull, constant, keeps him up at night
- Notices marked discomfort when he combs his hair; cannot get sweaters from the top of his closet due to pain and weakness
- Denies trauma but believes pain began after throwing batting practice to son’s little league team
- Works as an investment banker

Causes of Shoulder Pain in the Primary Care Setting

- Impingement Syndrome >70%
- Adhesive Capsulitis 12%
- Bicipital Tendonitis 4%
- A/C Joint OA 7%
- Other 7%

What Is Impingement Syndrome?

Weak rotators battling stronger deltoids, impinging subacromial structures

Typical History of Impingement Syndrome
- Any age, but risk increases with age
- Anterior or lateral shoulder pain
  - Should not radiate below elbow
- Pain exacerbated by abduction and forward flexion
- Night pain common

Physical Examination
- Inspection
- Palpation
- Range of motion
  - Passive and active
    - Pain with active >> passive ROM indicates soft tissue disorder
    - Pain with active = passive ROM likely indicates intra-articular process
- Strength and sensation
- Specific maneuvers to confirm impingement diagnosis
  - Painful arc
  - Empty can
  - Neer's

Maneuvers to Verify Impingement Syndrome
- Painful arc

Maneuvers to Verify Impingement Syndrome: Empty Can Test
Maneuvers to Verify Impingement Syndrome: Neer’s Test

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Sam, a 45-year-old man with new shoulder pain, cont’d

- Inspection: left humerus riding slightly higher than right
- Palpation: pain in the lateral subacromial space
- ROM: pain with abduction and forward flexion; worse with active than passive movements
- Positive painful arc, empty can and Neer tests

Mary, a 68-year-old woman with severe shoulder pain

- Left shoulder pain and weakness began 1 week ago after lifting gallon of milk out of fridge
- Reports intermittent shoulder pain for many years, but this is the most severe
- Exam: tenderness in lateral shoulder with pain and weakness on external rotation and abduction
- Passively abduct her arm to 160 degrees and have patient slowly lower her arm. She cannot continue to lower her arm past 90 degrees due to weakness, so she drops it to her side

Diagnosis of Rotator Cuff Tear—(Supraspinatus) Drop Arm Test

Supraspinatus Tendon Tear

- Positive “Drop-Arm” Test
- Supraspinatus weakness
- External rotation weakness
- Impingement signs
- Greater than 60 years old
- + Empty Can, impingement signs (+ Neers) and over age 60 = 98% chance of having a tear!
Diagnosis of Rotator Cuff Tear  
(Subscapularis Tear of Dysfunction)  
Gerber or Lift-Off Test

Diagnosis of Rotator Cuff Tear  
(Supraspinatus and Infraspinatus)

With Impingement, you MUST Keep the Arm Moving and Have the Patient Rehab it!!

- Wall climbing
- Pendulum exercises
- Physical therapy

Adhesive Capsulitis or Frozen Shoulder

- Insidious onset of pain
- Pain in most planes of movement
- Pain in deltoid, but no tenderness to palpation
- Pain and limited active and passive ROM
  - Need AP X-ray of glenohumeral joint to rule out glenohumeral arthritis
  - Night pain
- Pts need PT; consider injection or surgery in more severe cases

Elbow and Wrist Pain
Ralph, a 31-year-old man

- Presents with left lateral elbow pain worsening over last 2-3 weeks. It occasionally radiates to his forearm and up to his shoulder
- Cooks for local country club. On his time off he utilizes the tennis and golf facilities
- Exam: tenderness to palpation of origin of extensor tendon mass of left elbow

Lateral Epicondylitis (aka Tennis Elbow)

- A common overuse syndrome in primary care
- Annual incidence ~ 1%-3%
- Caused by overuse of the extensor tendons of forearm from repetitive wrist dorsiflexion with supination and pronation
- Results in microtears, collagen degeneration, and angiofibroblastic proliferation

Yolanda, a new mother with wrist pain

- 26-year-old presents to your office with her 3-month-old infant
- Reports right thumb and wrist pain on the radial aspect for the last 6 weeks, making it hard to hold her baby
- Also describes numbness on the back of her thumb and index finger
- Denies any trauma
**Finkelstein Test**

Patient flexes thumb across the palm and the clinician applies ulnar deviation to the wrist, reproducing the pain.

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**De Quervain’s Tenosynovitis**

- Inflammation of tendons in first dorsal compartment (abductor pollicis longus and extensor pollicis brevis)
- Caused by activities requiring forceful grasping with ulnar deviation or repetitive use of thumb
- Common in new mothers grasping infant or daycare workers; exacerbated as infant gets heavier

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**Carpal Tunnel Syndrome (CTS)**

- Compressive neuropathy of median nerve at wrist
- Classic CTS associated with symptoms affecting ≥ 2 of the first through third digits; 4th and 5th digits, wrist pain; radiation of pain proximal to the wrist may also occur
- Unlikely if no symptoms present in any of first 3 digits
- Physical: + Phalen’s, Tinel and Durkin tests, weakness of resisted thumb abduction

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**Carpometacarpal Joint Osteoarthritis**

- Pain at base of thumb
- Most common location in hand
- Worsened by pinching or grasping or forceful use
- Assess with “grind test”

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**Back Pain**

"The pain starts in my husband’s lower back, then it travels up his spine to his neck, then it comes out his mouth and into my ears. And that’s why I get these headaches."
Curtis, a 45-year-old trucker

- Obese, doesn’t exercise
- Lifted a heavy load into his truck around 3 days ago, felt pain in his right lower back and has been resting ever since
- He tried acetaminophen which did not help. However, his brother’s oxycodone with acetaminophen did provide him with relief.
- He has not been back to work

What else do you want to know?

Low Back Pain: History

- Prior injuries
- Mechanism of current injury, if present
- Was it job-related ... is litigation involved?
- Location of pain
- Any radiation of pain?
- Exacerbating/allolevating factors
- What has the patient tried in the way of activity or medications?
- History of cancer, recent fever, or weight loss

Goals of Evaluation

To identify those needing urgent attention

- Look for symptoms suggesting an underlying condition that may be more serious
- Determine who may need urgent surgical evaluation

Low Back Pain: Differential Diagnosis

<table>
<thead>
<tr>
<th>Causes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonspecific LBP</td>
<td>&gt;85</td>
</tr>
<tr>
<td>(ie, no specific disease or spinal abnormality identified)</td>
<td>70</td>
</tr>
<tr>
<td>Lumbar strain/sprain, ie, “idiopathic” or mechanical LBP</td>
<td>10</td>
</tr>
<tr>
<td>Degenerative disk, facets (usually age-related)</td>
<td>4</td>
</tr>
<tr>
<td>Herniated disk</td>
<td>4</td>
</tr>
<tr>
<td>Osteoporotic compression fracture</td>
<td>3</td>
</tr>
<tr>
<td>Spinal stenosis</td>
<td>2</td>
</tr>
<tr>
<td>Spondylolisthesis</td>
<td>2</td>
</tr>
<tr>
<td>Visceral disease (pelvic, renal disease, aortic aneurysm)</td>
<td>1</td>
</tr>
<tr>
<td>Neoplasia (eg, multiple myeloma, spinal cord tumors)</td>
<td>1</td>
</tr>
<tr>
<td>Congenital disease (eg, kyphosis, scoliosis)</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Traumatic fracture</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Inflammatory arthritis (eg, ankylosing spondylitis)</td>
<td>0.3</td>
</tr>
</tbody>
</table>

"Red Flags" for Potentially Serious Cause of Low Back Pain

<table>
<thead>
<tr>
<th>Finding</th>
<th>Possible etiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent significant trauma, or milder trauma age &gt;50</td>
<td>Fracture</td>
</tr>
<tr>
<td>Unexplained weight loss</td>
<td>Cancer</td>
</tr>
<tr>
<td>Unexplained fever or recent UTI</td>
<td>Infection</td>
</tr>
<tr>
<td>Immunosuppression</td>
<td>Cancer</td>
</tr>
<tr>
<td>Intravenous (IV) drug use</td>
<td>Infection</td>
</tr>
<tr>
<td>Osteopenia</td>
<td>Fracture</td>
</tr>
<tr>
<td>Prolonged use of glucocorticoids</td>
<td>Fracture, infection</td>
</tr>
<tr>
<td>Age &gt;70</td>
<td>Fracture, cancer</td>
</tr>
<tr>
<td>Progressive motor or sensory deficit</td>
<td>CES, or cancer</td>
</tr>
<tr>
<td>Duration greater than 6 weeks</td>
<td>Cancer, infection</td>
</tr>
<tr>
<td>History of cancer</td>
<td>Cancer</td>
</tr>
<tr>
<td>saddle anesthesia, bilateral sciatica/weakness</td>
<td>CES</td>
</tr>
<tr>
<td>urination, defecation difficulties</td>
<td>CES</td>
</tr>
</tbody>
</table>

Low Back Pain: Physical Exam

- Observe patient walking into room
- Check vital signs
- Do pulse and BP correlate with the amount of pain patient is reporting?
- Inspect the back
- Palpate/percuss
- Evaluate muscle bulk in back, buttocks, and legs
- Test for manual strength
- Reflex testing
- Rectal exam if bowel/bladder complaints
Physical Exam Findings: Clues to Causes of Low Back Pain

- More pain with extension
  - Suggestive of spinal stenosis
- Pain with forward flexion
  - Suggestive of disc disorders
  - Localized paralumbar pain with extension
  - Suggestive of facet syndrome
- Pain in buttock or leg
  - Often disc or facet, but must rule out hip pathology
    - Perform hip ROM testing
    - Patrick’s test

Straight Leg and Crossed Straight Leg

Positive SLR: pain in back and down posterior or lateral leg at ≤ 70° of hip flexion

Crossover SLR is less sensitive but more specific for herniation

Testing for Lumbar Nerve Root Compromise

<table>
<thead>
<tr>
<th>Nerve Root</th>
<th>Pain</th>
<th>Numbness</th>
<th>Motor Weakness</th>
<th>Screening Examination</th>
<th>Reflexes</th>
</tr>
</thead>
<tbody>
<tr>
<td>L4</td>
<td>Extension of quadriceps</td>
<td></td>
<td></td>
<td>Squat and rise</td>
<td>Knee jerk diminished</td>
</tr>
<tr>
<td>L5</td>
<td>Dorsiflexion of great toe and foot</td>
<td></td>
<td></td>
<td>Heel walking</td>
<td>None reliable</td>
</tr>
<tr>
<td>S1</td>
<td>Plantar flexion of great toe and foot</td>
<td></td>
<td></td>
<td>Walking on toes</td>
<td>Ankle jerk diminished (may happen normally with aging)</td>
</tr>
</tbody>
</table>

Piriformis Syndrome

- Condition in which the piriformis muscle irritates the traversing sciatic nerve causing pain, tingling, and numbness in the buttock and leg; can mimic sciatica
  - Stretching can reduce pain

Patrick’s Test for Hip or SI Pain

AKA “Sign of Four” and “FABERE sign” from the acronym of the maneuvers involved:
- Flexion, abduction, external rotation, and extension

Press down on thigh.
Test is + if pain in anterior hip (flexors) is elicited
This may also provoke pain in SI joint

Choosing Wisely:
Don’t Obtain Imaging Studies in Patients with Nonspecific Low Back Pain

“In patients with back pain that cannot be attributed to a specific disease or spinal abnormality following a history and physical examination (eg, non-specific low back pain), imaging with plain radiography, computed tomography (CT) scan, or magnetic resonance imaging (MRI) does not improve patient outcomes.”
Why Not Get Imaging Studies for Acute Back Pain?

- Imaging can be misleading: Many abnormalities are as common in pain-free individuals as in those with back pain
- If under age 60
  - Low yield: Unexpected x-ray findings in only 1 of 2,500 patients with back pain!
  - May confuse: bulging disk in 1 of 3 pain-free patients; herniated disks in 1 of 5 pain-free patients
- If over age 60 and pain free
  - Bulging disk in 80%; herniated disk in 1 of 3
  - All have age-related disk degeneration
  - Spinal stenosis in 1 of 5 cases

Knee Pain

Sara, a 33-year-old Jogger

- Presents with progressively worsening pain in right knee over last 3 months
- Pain is behind patella, is worse after sitting for a long time; also bothers her going up and down steps
- PE: minimal medial quad atrophy on right. No redness, warmth, or effusion. Pain elicited with compressing patella against femoral groove. McMurray's, Lachman tests negative

Common Causes of Chronic Knee Pain

- Osteoarthritis/degenerative tears
- Patellofemoral syndrome
- Pes anserine bursitis
- Inflammatory causes (eg, rheumatoid arthritis)

History

- Patient age
- When did symptoms develop?
- Was pain gradual or was an injury involved?
  - Did the leg pop, give way, or immediately swell?
- Location of pain
- Are other joints involved?
- Are there prior injuries to be mindful of?
- Can they bear weight?
**Physical Examination**

- Inspection
- Gait
- Alignment
- Quad atrophy
- Bruising
- Deformity
- Palpation
- ROM

**Tests for Knee Disorders**

**Ballotable Patella Test for Swelling**

With the knee extended, grasp the knee just below the patella and push upward. With the fingers of the other hand, gently tap the patella to see if it is ballotable.

**Varus and Valgus Tests to Assess Collateral Ligaments**

- Varus test for lateral collateral injury
- Valgus test for medial collateral injury

**McMurray Tests to Assess Menisci**

- The lateral meniscus is tested by passive flexion, valgus stress, and internal rotation of the lower leg.
- The medial meniscus is tested by passive flexion, varus stress, and external rotation of the lower leg.

**Lachman Test for ACL Injury**

While pushing down on the distal quad, gently yet suddenly apply an upward force to the tibia in an attempt to subluxate it forward. More sensitive than anterior drawer test.

**Anterior Drawer Test (Less Specific than Lachman)**

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Patellofemoral Syndrome
(aka Chondromalacia Patella, Runners' Knee)
- One of the most common causes of knee pain, especially in younger patients
- More common in women
- Pain location is in anterior knee
- Exacerbated by repetitive flexion or prolonged sitting
- Exam often unremarkable
  - Can find retropatellar pain and crepitus when compressing patella against femoral groove during active extension
- PT to strengthen medial quad is key

Pes Anserine Bursitis
- Inflammatory condition of medial knee below joint line, superficial to tibial insertion MCL
- Hallmark finding: Pain over proximal medial tibia at insertion of conjoint tendons of pes anserinus
- Often coexists with other knee disorders (overuse, DJD, obesity)
- Treat with ice, NSAIDs, PT; injection may also help

Plantar Fasciitis Diagnosis
- Sine qua non:
  - Sharp heel pain with first couple of steps in the morning
  - Palpation over medial tubercle of calcaneus usually reproduces the pain
- Other provocative maneuvers: passive dorsiflexion of toes ("windlass" test) or have patient stand on tiptoes and toe-walk

Plantar Fasciitis Risk Factors
- Multifactorial
- Increase in weight bearing activity (common in runners)
- Obesity, diabetes
- Decreased ankle dorsiflexion
- Tight/weak gastrocnemius, soleus, Achilles tendon and intrinsic foot muscles
- Low (pes planus) or high (pes cavus) arches
- Abnormal foot mechanics, improper shoes with inadequate arch support
- Heel spur

Plantar Fasciitis Treatment Options
<table>
<thead>
<tr>
<th>Treatment option</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss</td>
<td>For overweight patients</td>
</tr>
<tr>
<td>Stretching</td>
<td>Primary focus: plantar fascia; secondary focus: calf</td>
</tr>
<tr>
<td>Strengthening</td>
<td>Primary focus: calf; secondary focus: intrinsic foot muscles</td>
</tr>
<tr>
<td>Activity modification</td>
<td>Especially for athletes</td>
</tr>
<tr>
<td>Appropriate footwear</td>
<td>Replace worn shoes and match shoes to foot type</td>
</tr>
<tr>
<td>Night splints</td>
<td>Use if pain during the night and tightness in calf and Achilles tendon</td>
</tr>
<tr>
<td>Physical therapy</td>
<td>For patients who need guidance in learning and complying with stretching and strengthening program</td>
</tr>
<tr>
<td>Medications (eg, corticosteroids, anti-inflammatory, transdermal patches)</td>
<td>For patients who do not respond to first-line treatments or for professional athletes</td>
</tr>
<tr>
<td>Surgery</td>
<td>For patients who do not respond to second-line treatment</td>
</tr>
</tbody>
</table>

De Garceau D, et al. / Foot Ankle Int. 2003;24(3):251-255.
De Garceau D, et al. / Foot Ankle Int. 2003;24(3):251-255.
Plantar Fasciitis Exercises


- Plantar fascia-specific stretch
- Stair stretch
- Dynamic stretching with 15 oz can

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Conclusion

- Patients usually see their primary care provider when they have musculoskeletal complaints
- Various orthopedic tests can be performed by the primary care provider that can help determine the source of pain and expedite appropriate management

Thank you!