LOW BACK PAIN IN PRIMARY CARE

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Impact of low back pain

- 5th most common reason people go to doctor in the U.S. ¹
- 25% of adults reported LBP for at least 1 day in past 3 months when surveyed ²
- 2% of U.S. workforce compensated for back injuries yearly ³

Pearls

- Kids with LBP ≠ adults with LBP
- Identify red flags/non mechanical LBP early
- Imaging often unnecessary outside of red flags
- Exercise is key to patients’ prescriptions

LBP in kids ≠ adults

- Majority of adults have LBP that cannot be attributed to identifiable disease or spinal abnormality
- Much more common to diagnose a cause in children
- Work up pediatric back pain more aggressively than adult

Epidemiology: young athletes with LBP

- Rowing: low back most common site of injury in elite-level junior rowers (32.3% of all injuries) ¹
- Gymnastics: 43% of high school injuries involve back ²
- Dancers: 11-18% have low back pain ³
- Figure skaters: 32% female and 35% male complain of LBP ⁴


History, young athlete

- Sport involvement
- Relation of pain to sports
- Axial vs. peripheral symptoms
- Red flags
  - Night pain
  - Immunosuppressant medication
  - Bowel/ bladder involvement
  - Systemic symptoms
- Family history
  - Disc
  - Connective tissue disorders
  - Spinal curve disorders

Causes of acute LBP differ by age

<table>
<thead>
<tr>
<th>Lesion</th>
<th>Youth (%)</th>
<th>Adult (%)</th>
<th>P value</th>
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<tr>
<td>Discogenic</td>
<td>11</td>
<td>48</td>
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<tr>
<td>Spondylolysis or spondylolisthesis</td>
<td>47</td>
<td>5</td>
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<td>27</td>
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<tr>
<td>Spinal stenosis</td>
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<tr>
<td>Osteoarthritis</td>
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<td>4</td>
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</tbody>
</table>


D’Hermecourt PA, AMSSM 19th Meeting, April 2010.
Causes of LBP by age

- < 18 y/o spondylolysis
- 18 – 50 y/o discogenic pain and herniated disc
- > 50 y/o facet arthropathy, spondylosis/spinal stenosis


Goal when seeing patient with LBP

1. Rule out non-mechanical low back pain
   - Serious spine pathology
   - Non-spine causes of LBP
   - Substantial neurologic involvement
2. Treat mechanical low back pain (85% of cases)

Causes of LBP in adults

- 85% nonspecific, mechanical low back pain
- 4% compression fracture
- 4% herniated disc
- 3% spinal stenosis
- 0.7% cancer
- 0.3-5% ankylosing spondylitis
- 0.04% cauda equina syndrome
- 0.01% spinal infection

MacDonald J. Back Pain in Primary Care, 2009.

Non-msk causes of LBP

- Pancreatitis
- Nephrolithiasis
- Aortic aneurysm
Ddx mechanical low back pain

- Lumbar sprain or strain – 70%
- Degenerative disease – 10%
- Herniated disk – 4%
- Compression fracture – 4%
- Spinal stenosis – 3%
- Spondylolisthesis – 2%
- Spondylolysis – 2%
- Traumatic fracture – 1%

Red flags for serious spine pathology

1. Cancer
2. Cauda equina syndrome
3. Fracture
4. Infection

Cancer

- Age > 50
- H/o cancer
- Fever
- Unintentional weight loss
- Pain awakening from sleep

Cauda equina syndrome

- Bowel/bladder incontinence or constipation
- Urinary retention most frequent symptom in cauda equina syndrome (90% sensitivity)
Fracture
- Age > 50
- Osteoporosis
- Steroid use
- Trauma

Infection
- Fever
- Immunosuppression
- IVDU

Other causes of LBP
1. Ankylosing spondylitis
   - Night pain
   - Morning stiffness
   - Sxs improve with exercise
   - FHx
2. Abdominal aortic aneurysm
   - Age > 60
   - Atherosclerosis
   - Pulsating abdominal mass
   - Night pain
3. Pyelonephritis/nephrolithiasis
4. Pancreatitis

If (+) red flag
- Imaging
  - XR
  - MRI
  - CT
- Labs
  - ESR, CRP
- Referral to specialist
Rule out substantial neurologic involvement

- Abnormal neurologic exam
- Symptoms that do not improve with conservative management
- MRI or CT to identify potential surgical candidates

Risk factors for chronic LBP: yellow flags

- Most patients with acute LBP do not develop chronic LBP
- Risk factors for pain > 1 year
  - Psychiatric comorbidities
  - Avoiding work, movement, or activity for fear of worsening the back pain
  - More generalized pain at baseline
  - Baseline functional impairment
- Recognizing these can help guide management + expectations

History, adult

- Trauma
- Overuse
- Location of pain
- Radiation
- What makes it better?
- What makes it worse?
- Red flags

Physical exam back and hip

- 9:20am On-Screen Demo with Dr. Luke
- Tomorrow 4:15pm Hands On Workshop with me
**Imaging lumbar spine**
- Xray: AP and lateral sufficient
  - Oblique if concerned spondy
- CT: good for bone lesions, fractures.
  - Lots of radiation
- MRI: good for soft tissue, ligaments, discs
  - Expensive
- SPECT: good for r/o spondylolysis

**Case #1**
- 20 y/o football player and wrestler
- R buttock pain late in the season
- No specific injury
- No radiation
- Rested from practice 1 week, didn’t miss any games
- Pain gone by end of season

MacDonald J. Back Pain in Primary Care, 2009.

**Case #1 (cont’d)**
- Pain immediately returned with wrestling
- Developed R lateral thigh pain, anterolateral calf pain
- Unable to continue wrestling
- No LE weakness, no bowel/bladder symptoms
- Pain worse sitting than standing
- No PMHx, no FHx of disc disease

**Case #1 examination**
- Standing, back AROM
  - Low back pain radiating to RLE with flexion
  - No pain with extension
  - Lumbar scoliosis
- Straight leg raise (+) at 45°
- Neurologic
  - 1+ right patellar reflex, otherwise normal
- Xrays: scoliosis

MacDonald J. Back Pain in Primary Care, 2009.
Ddx flexion-based pain

- Disc pathology: #1 in age 18-50
  - Discogenic
  - Herniated disc → radicular sx
- Lumbar sprain/strain
- Facet joint arthropathy: #1 in age > 50

Lumbar disc herniation

- Pain with flexion
- Pain reproduced with SLR between 30-70°
- 95% occur at L4-5 and L5-S1
- Cause sciatica
- 90% improve with non-operative treatment
- Resolution of sciatica
  - 50% by 1 month
  - 75% by 6 months
- Imaging: MRI
  - If no improvement x 4-6 weeks
  - If candidate for epidural steroid injection or surgery

Treatment acute low back pain with or without sciatica

- Routine imaging: not necessary
  - Doesn’t identify the cause
  - Doesn’t improve outcome
  - Costs more
- Relative rest
  - Better results than bed rest
- Self care
  - The Back Book
  - Group classes
  - Heat for short-term relief

Medications for acute low back pain +/- sciatica

- NSAIDs more effective than acetaminophen
  - Assess CV and GI risks before rx
  - Lowest effective dose possible, shortest time period
- Opioids for acute or chronic disabling pain, careful risk/benefit
- Muscle relaxants
- TCAs for chronic low back pain
- Gabapentin → short-term relief in radiculopathy
- Systemic steroids not recommended: no more effective than placebo

Non-pharmacologic treatment of chronic LBP

- Acupuncture
- Exercise therapy (PT)
- Massage
- Yoga
- Cognitive-behavioral therapy
- Progressive relaxation
- Spinal manipulation

Berman BM. NEJM, 2010.

Case #2

- 73 y/o woman with LBP x 4 months
- Radiates to buttocks → knees
- No trauma
- (-) red flags
- Used to walk 2 miles/day but now only 2 blocks due to pain
- Pain relieved with sitting
- Pain worse walking downhill

Ddx extension-based pain (tennis, golf)

- Lumbar strain/sprain
- Spondylosis/spondylolisthesis
  - Isthmic spondyly in young
  - Degenerative spondyly in elderly
- Spinal stenosis
- Facet joint arthropathy

Diagnosis: Spinal stenosis or neurogenic claudication

- Physical exam usually normal, imaging not necessary usually
- Treatment
  - Flexion-biased core stabilization exercise program
  - Epidural steroid injection
  - Surgical decompression +/- fusion

Cody RC. AMSSM 19th Meeting, April 2010.
Case #3
- 16 y/o RHD male baseball pitcher
- Increased left-sided LBP
- Worse with throwing, especially late in the delivery
- Rested x 2 weeks helped
- Pain comes back as soon as returns to pitching

Physical examination
INSPECTION
- 6', 180 pounds
- Posture within normal limits
PALPATION
- Minimal tenderness of TS, LS standing
RANGE OF MOTION
- Extension 30° mild midline pain LS; Flexion 60°
OTHER TESTS
- 1 leg-hyperextension test positive
- Neurological status normal

Differential diagnosis
- Age < 18, extension-based back pain
  - Spondylolysis
  - Spondylolisthesis
  - Lumbar sprain/strain

Spondylolysis vs. listhesis
- Spondy = vertebra
- Lysis = break
- Listhesis = slippage
Lumbar spine x-rays: AP and lateral

Lumbar spine x-rays: right and left oblique

Additional imaging
- SPECT scan  
  - High sensitivity for spondylolysis  
  - Lower specificity  
    - Facet arthritis, infection, osteoid osteoma  
    - Can identify stress injury before fx occurs  
    - Ionizing radiation  
- CT or MRI to diagnose and stage the lesion  
  - Acute or chronic

Treatment
- Physical therapy
- Activity Modification / Rest x 3 months
- Avoid aggravating activity

Controversial
- Modify activities only vs Bracing
Take-home points

- Kids with LBP ≠ adults with LBP
- Identify red flags/non mechanical LBP early
- Imaging often unnecessary outside of red flags
- Exercise is key to patients’ prescriptions

THANK YOU

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References