AN OSTEOPATHIC APPROACH TO LOW BACK PAIN

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INTRO

• Effects: 84% of adults have low back pain at some time in their lives\textsuperscript{1,2}

• Risk factors: smoking, obesity, age, female sex, physically strenuous work, sedentary work, psychologically strenuous work, low educational attainment, Workers' Compensation insurance, job dissatisfaction, and psychologic factors such as somatization disorder, anxiety, and depression\textsuperscript{3,4}
BACK TO THE BASICS: NORMAL ANATOMY

![Diagram of normal anatomy](image1)

**Normal anatomy**
- Lamina
- Cauda equina
- Ligamentum flavum
- Spinal canal
- Facet
- Nerve root
- Intervertebral disc
- Annulus fibrosus
- Nucleus pulposus

![Diagram of muscles of the back](image2)

**Muscles of the back**
- Semispinalis capitis muscle
- Sternocleidomastoid muscle
- Splenius capitis muscle
- Splenius cervicis muscle
- Trapezius muscle
- Levator scapulae muscle
- Spine of scapula
- Supraspinatus muscle
- Deltoid muscle
- Rhomboid minor muscle
- Infraspinatus fascia
- Teres minor muscle
- Teres major muscle
- Latissimus dorsi muscle
- Latissimus dorsi muscle (cut)
- Thoracolumbar fascia
- External oblique muscle
- Internal oblique muscle
- Iliac crest
- Gluteus maximus muscle

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ETIOLOGIES

• Nonspecific
• Serious
• Less Serious
• Other
ETIOLOGIES

• Nonspecific Back Pain
  • Absence of specific reliably identifiable underlying condition
ETIOLOGIES

- Serious
  - Spinal cord compression
  - Cauda equina compression
  - Metastatic cancer
  - Spinal epidural abscess
  - Vertebral osteomyelitis
ETIOLOGIES

• Less Serious
  • Vertebral compression fracture
  • Radiculopathy
  • Spinal stenosis
ETIOLOGIES

OTHER

- Ankylosing spondylitis
- Osteoarthritis
- Scoliosis and hyperkyphosis
- Transitional vertebra

Beyond the spine:

- Pancreatitis
- Nephrolithiasis
- Pyelonephritis
- AAA
- Herpes zoster
- Piriformis Syndrome
- SI joint dysfunction
- Psychologic stress
INITIAL EVALUATION

GOAL: EVALUATE FOR SIGNS OR SYMPTOMS THAT INDICATE NEED FOR IMMEDIATE IMAGING AND FURTHER EVALUATION
HISTORY

• OLDCAAARTS
• Constitutional symptoms
  • unintentional weight loss, fevers, nighttime sweats
• Neurological symptoms
  • weakness, falls or gait instability, numbness or other sensory changes, or bowel/bladder symptoms
• Drugs
  • Prescribed: corticosteroids
  • Illicit: IV?
• Past medical history
  • Cancer
  • Bacterial infections
• Past surgical history
  • Spine surgeries, epidural…
PHYSICAL

- Inspect – scoliosis or hyperkyphosis?
- Palpate/percuss – vertebral or paravertebral tenderness?
- Neuro exam – sensation, strength, reflexes
- Special Maneuvers – Straight leg raise
- Non-organic signs – psychologic?
- Other – PVR, lymphadenopathy?
OSTEOPATHIC EXAM

- Lumbar
  - Type 1 (TONGO)
  - Type 2 (flexion/extension component)
OSTEOPATHIC EXAM

INNOMINATES

• ASIS
• PSIS
• Medial Malleoli
• Pubic symphysis/tubercles
• Ischial tuberosity
• Iliac crest

SACRUM

• Seated flexion/compression
• Lumbar lordosis
• Sacral sulcus
• Inferior lateral angle
• Lumbar spring
• Respiratory motion
• Sidebending passive
• 4 point passive
LABS

- ESR <20
  - Infection very unlikely
- CRP
- CBC
IMAGING
LIMITED UTILITY

- In those without associated symptoms
  - no difference in short term (3mo) or long term (up to 1y) term outcomes regarding pain or function\textsuperscript{17}
  - 65yo+ without radiculopathy: no difference in disability at 1y\textsuperscript{18}
  - Greater likelihood of back surgery, opioid treatment, greater costs (by $\sim$3000) at one year\textsuperscript{19}
  - Red herrings: disc herniations, OA, spinal stenosis, annular fissures, etc.
TYPES

- XR AP and lateral
  - No benefit with additional views\textsuperscript{16}
- MRI w/ and w/o
  - Infection and malignancy
- CT w/
  - for poor MRI candidates
RESERVE IMAGING

- American College of Physicians
- American Pain society
- American Board of Internal Medicine “Choosing Wisely Campaign”
RED FLAGS

- Sx of spinal cord compression, cauda equina compression
- Progressive/severe neurologic deficits
- SSx/risk for spinal infection
- Hx of malignancy
- Risk for compression fracture
Acute low back pain: Considerations for imaging

This algorithm is intended to assist with the evaluation of patients with acute (<4 to 6 weeks) low back pain in whom imaging is being considered. Most patients (90%) will not require immediate imaging.

Exclusion: History of significant trauma.

1. Signs or symptoms of cauda equina syndrome (new urinary retention, fecal incontinence, or saddle anesthesia).
   - OR
   - Significant neurologic deficits (progressive motor weakness or significant motor deficits not localized to a single unilateral nerve root).

   No → Emergency MRI* and specialist consultation

   Yes → Discuss choice of imaging study with patient’s oncologist

2. Current or recent cancer history (other than nonmelanoma skin cancer) particularly breast, prostate, lung, thyroid, kidney, and MM.

   Yes → Evaluate for malignancy

   No → Radiograph suggests possible cancer

3. Moderate to high risk for cancer (multiple risk factors/symptoms, history of cancer, strong clinical suspicion).

   No → MRI

   Yes → Pain radiography then ESR (or CRP)

4. Signs, symptoms, risk factors for spinal infection (e.g., epidural abscess or osteomyelitis):
   - Objective fever
   - Current immunosuppression, hemodialysis
   - Current or recent bacteremia, injection drug use, endovascular, invasive epidural/spinal procedure

   No → MRI

   Yes → Level of suspicion for spinal infection

5. Risk for vertebral compression fracture (advanced age, history of prolonged systemic glucocorticoid use, significant trauma, mild trauma with history or risk factors for osteoporosis).

   No → MRI

   Yes → Pain radiography

6. Other patients (low back pain without other worrisome features and low risk for cancer, spinal infection, or progressive neurologic impairment).

   (Approximately 95% of patients in primary care who present with acute low back pain)

   → Conservative therapy for 4 to 6 weeks.
   - If no improvement in symptoms after 4 to 6 weeks, assess for subacute radiculopathy.

   → MRI
NONPHARMACOLOGIC APPROACH

• In the absence of red flag symptoms
  • Goal of care = short term symptomatic relief
    • Nonpharmacologic:
      • Heat… less evidence for ice
      • Massage
      • Acupuncture
    • Prescribed exercise and PT

*Caution against bed rest: more pain and slower recovery
OMT

• Lumbar
  • Muscle Energy
    • Type I – NUDR
    • Type II Flexed – FDDR
    • Type II Extended – SUUE
  • HVLA
    • OB Roll
PHARMACOLOGIC APPROACH

• NSAIDs
  • Ibuprofen 400-600mg QID
  • Naproxen 250mg-500mg BID
  • Meloxicam 7.5-15mg Daily

• Acetaminophen
  • Mixed efficacy

Consider combining, though limited evidence
PHARMACOLOGIC APPROACH

• 2\textsuperscript{nd} line options
  • Non-benzo muscle relaxants
    • Cyclobenzaprine
    • Methocarbamol
    • Carisoprodol
    • Baclofen
    • Chlorzoxazone
    • Metaxalone
    • Orphenadrine
    • Tizanidine

AVOID Benzos: not effective in improving pain or functional outcome, and potential for abuse\textsuperscript{12}
PHARMACOLOGIC APPROACH

• Refractory or Severe Pain
  • Opioids
    • Few benefits
    • Avoid >3 day duration, rarely more than 7 days of therapy
  • Tramadol
    • Few days up to 2 weeks
    • Less constipation and dependence
    • Caution Serotonin Syndrome
OPTIONS WITHOUT PROVEN BENEFIT FOR ACUTE

**NONPHARMACOLOGIC**
- Traction
- Lumbar supports
- Yoga
- Paraspinal injections – including trigger points, epidurals, facet injections

**PHARMACOLOGIC**
- Antidepressants
- Systemic glucocorticoids
- Antiepileptics
- Topicals
- Herbals
PATIENT EDUCATION

• The prognosis for acute low back pain is excellent; only one-third of patients seek medical care at all. Of those who present for care, 70-90% percent improve within seven weeks.\textsuperscript{13,14,15}

• Recurrences are common, don’t get discouraged as prognosis remains optimistic.

• Motivate toward prevention of recurrence
QUESTIONS?