

LOW BACK PAIN

Background

1. Definitions
 - Pain, muscle tension, or stiffness between the lower costal margin and gluteal folds
 - Chronic: > 3 mo duration and causing disability¹
 - Recurrent: acute episode in a pt. recovered from prior episode
2. General information
 - Second most common reason for visit to PCP
 - Second leading cause of absenteeism from work
 - Usually represents end result of chronic flexion injury & deconditioned musculoskeletal elements

Pathophysiology

1. Pathology
 - Multiple structures of lumbar spine have sensory input making anatomical diagnosis difficult
 - Many sources of pain: muscle strain, ligament sprain, small tears of annulus fibrosis, facet joint arthritis, disc bulges¹
 - 70-80% mechanical sprain/strain, facet dz
 - 4% disc herniation
 - 4-7% osteoporotic fracture and spinal stenosis
 - 1% other causes
2. Risk factors
 - Work requiring heavy labor/awkward positions
 - Age > 45 yo
 - Prior episode of back pain
 - Obesity and smoking
3. Morbidity/mortality
 - No mortality
 - Significant morbidity secondary to lost work time/cost of treatment
 - Costs
 - Direct: \$20-40 billion
 - Indirect: \$100 billion
 - Pts. out of work 1 year have 10% chance of returning to work

Diagnostics

1. History
 - Location, radiation
 - Severity using standard pain scale
 - Numbness, weakness, stiffness, mobility limitation
 - Temporal factors, prior episodes, trauma
 - Aggravating/alleviating factors
 - Assess red flags (bowel/bladder control, bilateral leg weakness, saddle numbness, fever, unrelenting night pain or pain at rest, below knee numbness, progressive)

neurological deficit, unexplained weight loss, history of cancer or strong suspicion of current cancer, history of osteoporosis, immunosuppression, substance abuse, trauma)¹

2. Physical exam

- Gait: leaning to painful side + circumduction suggest hip pathology
- Posture: accentuation of normal lordotic curve suggests muscle spasm, disc disease
- Strength
 - Standing on toes (gastrocnemius)
 - Heel-walk tests (dorsiflexors)
 - Repeated toe raises to elucidate fatigability (sensitive for nerve root irritation)
- Inspection
 - Specific areas of tenderness, swelling, redness, rash, spasm
 - Reflex hammer to percuss spinous processes: localizes bony or disc process
- Reflexes
 - Patellar (L2-L4) & Achilles (L5-S2) decrease with nerve impairment
 - Bilateral involvement suggests massive central disc herniation or systemic illness
- Sensation
 - Nerve root involvement/dermatomes correlate with motor or reflex findings
 - Rectal exam for tone, perianal sensation
- Maneuvers
 - Straight leg raise: lift leg to limit of comfort with knee extended/foot dorsiflexed
 - Positive: pain radiates from back into leg below knee
 - Crossed straight leg test: as above with uninvolved leg
 - Positive: pain in leg with radicular symptoms
 - Sitting knee-extension: extend leg at knee with pt. sitting/hip & knee flexed 90 deg
 - Positive: back pain reproduced
- **Waddell's signs**
 - If 3 or more present suggests high likelihood psychogenic component to pain
 - Overreaction to exam
 - Simulated testing: patient reports pain with axial loading or rotation of the spine in one plane
 - Distraction testing: sitting straight leg raise
 - Superficial variable tenderness
 - Motor/sensory findings not explained anatomically
- Abdomen/chest
 - Tenderness, masses, bruits, bowel sounds, CVA tenderness, RUQ tenderness

3. Diagnostic testing

- Laboratory
 - CBC, ESR if suspicion of cancer
- Diagnostic imaging
 - Routine imaging not recommended during initial 4-6 wk of symptoms unless underlying condition suspected (SORT-C)¹
 - X-ray
 - Thoracic/lumbar/sacral if indicated by history
 - Consider oblique view if spondylolysis suspected
 - MRI
 - Preferred diagnostic test when indicated¹⁰
 - Use emergently if:
 - Suspicion of cauda equina syndrome
 - Suspicion of disc, epidural, bony infection
 - Rapidly worsening neurological deficit
 - Suspect malignancy with cord impingement

Differential Diagnosis

1. Key Differential Diagnoses
 - Piriformis Syndrome
 - Herniated Disk
 - Fractures
 - Facet Syndrome
 - Spinal Stenosis
2. Extensive Differential Diagnoses
 - Pelvic or intra-abdominal pathologies
 - Spondyloarthropathies
 - Tumor
 - Infection
 - Claudication

Therapeutics : There are no studies comparing treatment modality to treatment modality

1. Exercise- slightly effective at improving pain and function in adults²
2. Viniyoga, may provide short term pain relief ¹
3. Multidisciplinary team-with a physician and at least one additional intervention (vocational, psychological, social) returns patient to work 5 weeks earlier and reduces recidivism rates for 5 years¹
4. Medications
 - TCA-no difference with placebo³
 - Muscle Relaxants-possible short term relief and may be helpful for exacerbations; no evidence to support long term use¹
 - Opioids-centrally acting and provide pain relief; use in chronic back pain is controversial; Risk include tolerance, addiction, abuse, constipation, drowsiness, memory impairment, hyperalgesia⁴
 - Tramadol-[mixed receptor agonist/antagonist] may be helpful in short term treatment; less risks compared to opioids (long term studies are lacking)¹

- NSAIDs-helpful for short term treatment of pain; no more effective than acetaminophen; Risks include renal, GI, cardiovascular (esp COX-2) complications⁵
 - Acetaminophen-first line and safe (SORT-A)¹
 - Antiepileptics-Only gabapentin shown to provide short term relief in LBP with radiculopathy¹
 - Antidepressants-no class benefit with SSRI's; exception: duloxetine found to provide pain relief³
5. Manipulation- improved pain relief; no functional advantage over other commonly used treatments; allows for less medication use than other treatment options⁶
 6. Accupuncture- effective in reducing pain, improve functioning in short term as adjunctive to other treatments¹
 7. Injections-no evidence for or against; many options including epidural steroid, facet blocks, nerve roots and tender/trigger point injections⁷
 8. Mental Health-cognitive behavioral therapy, progressive relaxation provide short term pain control⁸
 9. Herbal Products-short term relief¹
 - oral
 - Harpagophytum Procumbens-devil's claw 50 mg
 - Salix Alba-white willow bark 120 and 240mg
 - topical
 - Capsicum Frutescens-Cayenne plaster

Follow-Up

1. Return to office
 - Patient off of work: 2-3 days
 - Moderate pain: 1 wk
 - Symptoms improve: PRN
2. Refer to specialist
 - No improvement in 2-3 wk, consider:
 - Physical therapy
 - Non-surgical back specialist
3. Psychiatrist if psychogenic component Admit to Hospital
 - Recommendations / urgency

Prognosis

1. Four interventions with adequate data:¹¹
 - Analgesics: less pain than placebo in chronic back pain over 10 weeks
 - Herbal medicine: less pain than placebo in acute back pain over one week
 - Muscle relaxants: less pain than placebo in acute back pain over one week
 - NSAIDs: less pain than placebo in both acute and chronic pain over average of six weeks
2. Acute LBP¹²
 - Mean 58% reduction within one month
 - Mean 58% reduction in disability within one month
 - 68-86% return to work within one month

- 66-84% cumulative risk of at least one recurrence within 12 months
- 3. Chronic LBP¹²
 - Pain level, disability and return to work remain essentially constant at 3 and 12 months

Patient Education

1. National Library of Medicine-<http://www.nlm.nih.gov/medlineplus/backpain.html>
2. Family Doctor.org-
<http://familydoctor.org/online/famdocen/home/common/pain/disorders/117.html>
3. Mayo Clinic-<http://www.mayoclinic.com/health/back-pain/DS00171>
4. MD Consult-<http://www.mdconsult.com/das/patient/body/240487363-2/0/10041/9441.html>
5. AFP-<http://www.aafp.org/afp/20000315/1789ph.html>

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