



Musculoskeletal problems in older adults

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Request 1:

Geriatric Assessment consults

- ▶ Post hospitalization
- ▶ Frail
- ▶ Dementia
- ▶ Falls
- ▶ Transitions of care
- ▶ Continence issues
- ▶ Medical complexity

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Request 2

- ▶ Apply the Geriatric 4Ms with each clinical encounter
- ▶ Use smart phrase .4MGeri

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Case Presentation

An 82-year-old man has had progressive low back pain that radiates down his legs; it began 6 months ago. He describes the pain as moderate in severity.

- ▶ The pain is worse with prolonged standing and when he walks for more than a few minutes on a flat surface.
- ▶ He rides on a stationary bicycle for 15 minutes, 3 to 4 times a day without difficulty.
- ▶ Acetaminophen brings partial relief to his symptoms.

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▶ Examination

- ▶ Vital signs are normal.
- ▶ Peripheral pulses are mildly diminished.
- ▶ Palpation to the lower back yields mild tenderness in the lumbar area. Range of motion is reduced in lumbar flexion and extension.
- ▶ There is tightness in the muscles in the back of his thighs. Lower-extremity muscle strength is intact.
- ▶ Sensation is normal in the perineal region and in the legs. Reflexes are normal. Straight leg-raising test is positive bilaterally.
- ▶ Spine radiography: mild to moderate osteoarthritis of L2–L4 lumbar vertebrae

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Which one of the following is the most appropriate next test?

- A. Standing flexion-extension radiography of lumbar spine
- B. Nerve conduction studies of lower extremities
- C. Magnetic resonance imaging of lumbar spine
- D. Radionucleotide bone scan

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Goals

Describe:

- Key questions to ask about musculoskeletal pain
- The musculoskeletal exam
 - ▶ The differential diagnosis of neck and back pain
 - ▶ Evidence-based management of musculoskeletal problems

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To manage pain

- ▶ Find the source
- ▶ Seek patterns: local, regional, systemic ?
- ▶ If more than one joint, think systemic

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Finding the pattern

- ▶ What symptoms accompany the pain?
- ▶ What brings on the pain? Is it exacerbated when going from lying to sitting, ascending or descending stairs, standing, or walking?
- ▶ Is the pain worse in the morning, midday, or night?
- ▶ Does the pain radiate?
- ▶ Does the pain cause the patient to cease the activity associated with the pain?
- ▶ Was the pain acute at onset? Or has it worsened over time?

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Exam

- ▶ Observe gait & mobility
- ▶ Check joints and muscle groups
- ▶ Patterns of weakness
 - Malalignment and swelling of joints (e.g., soft tissue or bony enlargement)
 - Decreased range of motion (ROM): active and passive
 - Patterns of joint involvement (small, large, all)

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Diagnostics

- ▶ Rule of thumb: imaging if new onset (e.g., low back pain) or progressive, especially in neuro findings
- ▶ Consider serum tests to include Total Protein – Albumin > 3.5 gm / dL for Multiple Myeloma and Vitamin D levels
- ▶ Sed rate and CRP do not increase with age

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Pain in the neck

- ▶ systemic disease,
- ▶ cervical myelopathy,
- ▶ cervical radiculopathy,
- ▶ mechanical

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Systemic linked neck pain

- Polymyalgia rheumatica, rheumatoid arthritis, and other inflammatory conditions
- Systemic symptoms and signs,
- Other joint complaints,
- Prolonged morning stiffness are often present
- Typical: symmetric loss of ROM of the cervical spine
- Lab markers of inflammation, CRP and ESR elevated

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Cervical stenosis myelopathy

- Usually *no* neck pain
- Apastic gait disturbance
- Weak lower extremities
- Leg upper motor neuron signs (eg, hyperreflexia, increased muscle tone, positive Babinski signs)
- Lower motor neuron findings in the upper extremities
- Bladder symptoms include urgency, frequency, or retention

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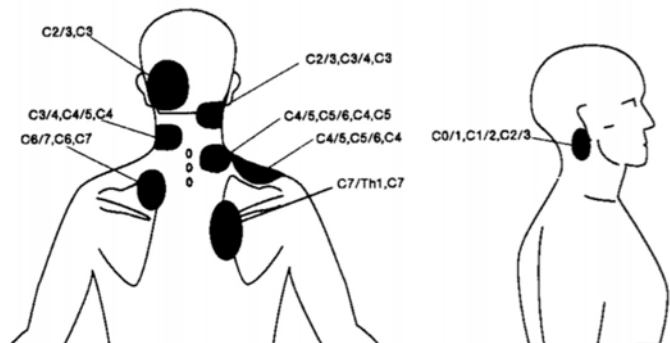
Cervical radiculopathy

- Pain in the neck and arm,
- Nerve root sensory loss, loss of motor function, and reflex changes
- C7 nerve root is most frequently affected
- Pain reproduced by rotating the head or bending it toward the symptomatic side

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Mechanical neck pain

- ▶ Very common
- ▶ Cervical disc dx
- ▶ Muscle spasm and tenderness (confused with fibromyalgia trigger points)
- ▶ Typical:
 - ▶ asymmetric loss of ROM of the cervical spine and
 - ▶ weakness of muscles innervated by cervical nerve roots, such as elbow extension and finger abduction in patients with C7, C8, and T1 disease



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Treatment of mechanical neck pain

- Insufficient studies in older adults
- Bone and Joint Task Force on Neck Pain: Manual therapy and exercise are more effective than alternative strategies
- Surgery should be considered only for significant, persistent, and worsening neurologic signs

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Neck pain: other

- ▶ Cerebellar tumor
- ▶ Cerebral artery tears (Salon Stroke): neck pain with dizziness, ataxia, slurred speech, numbness, double vision
 - ▶ Avoid neck cracking and chiropractic manipulation for vertebral artery strokes
- ▶ Meningitis: fever, stiffness, and altered mental status (confusion, sleepiness)

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Back pain etiologies

| Condition | History | Examination | Lab Tests, Imaging |
|-----------------------|---|---|---|
| Tumor | Persistent, progressive pain at rest; systemic symptoms | No focal abnormalities | Anemia, increased ESR, abnormal bone scan or MRI |
| Infection | Persistent pain, fever; at-risk patient (eg, indwelling catheter) | Tender spine | Increased ESR, WBC count; positive bone scan or MRI |
| Unstable lumbar spine | Recurring episodes of pain on change of position | Pain going from flexed to extended position | MRI or CT showing one disc space narrowed and sclerotic spondylolisthesis |

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Back pain etiologies

| Condition | History | Examination | Lab Tests, Imaging |
|--------------------------------|--|--|---|
| Lumbar spinal stenosis | Pain on standing and walking relieved by sitting and lying | Immobile spine; L4, L5, S1 weakness | MRI or CT scan showing stenosis |
| Sciatica | Pain in posterior aspect of leg; may be incomplete | Often positive straight leg raise; L4, L5, S1 weakness | Variable findings |
| Vertebral compression fracture | Sudden onset of severe pain; resolves in 4–6 weeks | Pain on any movement of spine; no neurologic deficits | Vertebral end-plate collapse; compression fracture seen on plain film |

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Back pain etiologies

| Condition | History | Examination | Lab Tests, Imaging |
|------------------------------|---|-------------------|------------------------------|
| Osteoporotic sacral fracture | Sudden lower back, buttock, or hip pain | Sacral tenderness | H-shaped uptake on bone scan |

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Back pain assessment

| Symptom | Condition |
|--|---|
| Acute pain | <ul style="list-style-type: none">• Vertebral compression fracture• Disc displacement• Osteoporotic sacral fracture• Visceral origin (eg, aortic aneurysm) |
| Positional pain <ul style="list-style-type: none">• Increased with standing and walking and relieved with sitting• Brought on by bending, lifting, or unguarded movements | <ul style="list-style-type: none">• Lumbar spinal stenosis• Unstable lumbar spine |
| Persistent pain (gradually increasing, non-positional) | <ul style="list-style-type: none">• Tumor• Infection |

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Back exam

- ▶ Evaluate the back, hips, legs, and gait
- ▶ With patient upright, move the back through the 4 planes of movement of the lumbar spine (flexion to the right, flexion to the left, forward flexion, extension)
- ▶ The most helpful physical finding in patients with possible back disease is subtle weakness of the L4–L5 and L5–S1 muscles (see slide notes)

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| Sign | Condition |
|-------------------------------------|--|
| Paravertebral muscle spasm | <ul style="list-style-type: none"> Mechanical disc disease* |
| Asymmetric ROM of the lumbar spine | <ul style="list-style-type: none"> Mechanical disc disease Unstable lumbar spine |
| Spinal tenderness | <ul style="list-style-type: none"> Vertebral compression fracture Infection |
| Weakness of L4–L5 and L5–S1 muscles | <ul style="list-style-type: none"> Mechanical disc disease Lumbar spinal stenosis |
| Normal examination of lumbar spine | <ul style="list-style-type: none"> Osteoporotic sacral fracture Hip disease Tumor Referred visceral pain |

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| Function | Muscle | Nerve Root |
|------------------------|---------------------------------|------------|
| Great toe dorsiflexion | Extensor hallucis longus | L5 |
| Ankle dorsiflexion | Tibialis anterior | L4, L5 |
| Ankle eversion | Peroneus longus, brevis | L5, S1 |
| Ankle plantar flexion | Gastrocnemius, soleus | S1, S2 |
| Knee extension | Quadriceps | L3, L4 |
| Hip flexion | Iliopsoas | L2, L3 |
| Hip adduction | Adductor magnus, brevis, longus | L3, L4 |
| Hip abduction | Gluteus medius | L4, L5 |
| Hip extension | Gluteus maximus | L5, S1 |

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Red flags that warrant imaging without delay:

Osteoporosis (if management will be different)

Acute neurologic deficit

Bowel or bladder dysfunction

Fever

History of cancer

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Pain due to tumor, infection, etc usually has insidious onset **and** becomes more persistent and severe

The pain is usually non-positional, can occur at night, and may be linked to systemic symptoms or signs

Risk of cancer as a cause of back pain increases in adults >50 years old, those with a previous history of cancer, and those with pain that persists >1 month

Fever, discrete local vertebral tenderness, pain in the upper lumbar or thoracic area, and non-positional pain may indicate vertebral infection

Evaluate infection as a source of back pain in patients at risk of endovascular infections

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Vertebral compression fractures

Only 1/3 of patients have symptoms

- Pain is typically abrupt, is felt deep in the site of the fracture, can be severe
- Pain is usually worse on standing and walking, is relieved with lying down, may radiate to flank or legs

Diagnosis is usually made on a plain radiograph of the lumbar or thoracic spine

General consensus: most important intervention: treatment of osteoporosis. Calcitonin significantly reduces severity of acute pain in patients with acute vertebral fractures.

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Sacral insufficiency fractures

Occur without trauma

Spontaneous buttock and lower back pain

Sacral tenderness on physical exam

Associated additional osteoporotic fractures are likely

Imaging:

- Plain radiographs are usually negative
- Technetium bone scans: characteristic H-shaped uptake over the sacrum
- CT: displacement of the interior border of the sacrum

Pain resolves over 4-8 weeks

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Non specific back pain

- Common and relatively short-lived
- Relatively sudden onset
- Exacerbated by positions that stress the lumbar spine
- Weakness of the L4–L5 and L5–S1 innervated muscle suggest displacement of disc material
- Avoid aggressive interventions.

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Choose Wisely

Avoid NSAIDs in individuals with hypertension, heart failure, or chronic kidney disease of all causes, including diabetes mellitus.

Do not perform imaging for lower back pain within the first 6 weeks unless red flags are present

If concern for a vertebral compression fracture, a plain lumbar spine x-ray should be done immediately after the patient is evaluated.

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Treatment modalities

- Acetaminophen, scheduled
- NSAIDS are more effective but limited in older adults
- Cyclobenzaprine equivocal and limited by anti – cholinergic effect
- Topical options: lidocaine patch, mentholated ointments
- Soft tissue stretch, OMT clinic
- Alternative adjuvants: turmeric
- Heat, ultrasound. exercises

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Summary

Back problems are the third most common reason for clinician visits by older adults

Prevention ! Exercise, vitamin D, screen osteoporosis

Escalate clinical investigation if neuro signs

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