

LOW BACK PAIN CASE CONFERENCE

Students' Material

Ambulatory Component of the Internal Medicine Clerkship
Yale University School of Medicine

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I. GOALS AND OBJECTIVES FOR STUDENTS

By the end of the conference, students will be able to:

1. Describe the basic functional anatomy of the low back.
2. Demonstrate an approach to the evaluation of low back pain.
 - a) Determine presence of indicators of urgent and serious conditions (i.e., Red Flags)
 - b) Identify non mechanical causes (e.g., inflammatory causes)
 - c) Evaluate and treat simple mechanical causes and identify associated neurological deficits
3. Demonstrate the physical exam for evaluation of back pain.
4. Describe the indications for imaging studies in the evaluation of low back pain.
5. Be familiar with treatment modalities for low back pain including the role of rest and controlled physical activity, back protection techniques, physical therapy, and pharmacologic therapy.

II. INSTRUCTIONS FOR STUDENTS

A. Read the paper provided (if you have not read it recently).

Deyo RA, Weinstein JN. Low Back Pain. NEJM 2001;344:363-370.

III. SELECTED INFORMATION YOU WILL NEED IN CLASS

A. Red Flags.

These need to be identified or excluded in every patient you see with low back pain. They are indications that a patient may have a serious cause for their low back pain symptom (i.e., cancer, fracture, infection, cord compression, radiculopathy with motor impairment).

Past History and Demographics:

Age over 50

Immunocompromised state

Cancer that goes to bone

HPI and Symptoms:

Fever

Blunt trauma

Bowel/bladder dysfunction

Weight loss

Progressive, non-positional pain > 1 month

Signs:

Babinski

Diminished rectal tone

Diminished peri-anal sensation

Fever, weight loss

B. Physical examination components for patients with low back pain.

1. Standing examination:

- Observation for scars, scoliosis, trauma, hair tufts
- Level of distress (patients with disc often will not sit)
- Check for range of motion
- Observe as they flex one leg (look for pelvic tilt) (**L5 = gluteus medius**)
- Palpate for spasm, CVAT, local bony tenderness
- Observe patient do 10 repetitions of toe stand with both feet, then each side (**S1 = gastrocnemius**)

2. Sitting examination

- (reflexes – which could also be done supine or with patient kneeling in a chair) (**L4 = knee, S1 = ankle, Babinski = Red Flag**)

3. Supine examination (many components can be done sitting, too)

- Dorsiflexion against resistance (**L5 = tibialis anterior**)
- Straight leg raise
- Hip rotation (very easily done supine)
- Big toe extension (**L5 = extensor hallucis longus**)
- Foot eversion (**S1 = peroneus longus and brevis**)
- Abdominal exam (aneurysm)
- Straight leg raise

Technique: contralateral leg flexed, raise tested leg to 60 degrees slowly.

4. Prone

- hip extension against resistance

5. Lying on side

- Rectal tone and prostate exam
- Peri-rectal sensation
- Lateral leg lift (**L5 = gluteus medius**)

IV. CHART FOR NEUROLOGICAL FINDINGS

Level				
Root	Disc	Pain	Weakness	Relexes
L4	L3/L4	Lateral thigh/medial leg	Tibialis Anterior	Patellar
L5	L4/L5	Lateral leg	Great toe extensor Gluteus Medius*	None
S1	L5/S1	Posterior thigh/leg/foot	Peroneus longus/brevis† Gastrocnemius-Soleus Gluteus Maximus§	Achilles
Cord	Any	All over both legs	Bilateral leg Bowel/bladder paresis	Babinski

* Leg abductor

† secure the patient's ankle, have him plantar flex and evert his foot, and oppose this motion by pushing against the head of the fifth metatarsal with your palm (from Hoppenfeld S. *Physical Examination of the Spine and Extremities*. Appelton-Century-Crofts, Norwalk, 1976)

§ with patient prone and knee flexed, resist hip extension (push down on the back of the patients thigh as he or she tries to extend it) and palpate gluteus maximus for tone.

V. CASE DESCRIPTIONS

Case #1

Mr. Escalante (Part 1)

This 58-year-old man sees his personal physician because of back pain. He reports that he has had this pain for the past two-and-a-half months. It started as a mild ache, but the intensity of the pain has gradually increased. The pain now bothers him in all positions throughout the day and night.

Questions:

1. Based on the history, could there be:
 - an ominous cause of the back pain (as suggested by a Red Flag)?
 - A systematic or visceral disease which could explain the pain?
 - A mechanical cause, with or without neurological compromise?
2. What further historical information would you like to obtain. If so, what is it and why would you like to get it?
3. Based on the history, delineate the physical examination you would plan to perform.

Facilitator will hand out Part 2 of this case

Case #2

Ms. Miller (Part I)

This 48-year-old woman sees her personal physician for leg pain. She reports that she has had recurring episodes of low back pain over the past ten years. These episodes usually last two to four weeks. Two weeks ago she noticed mild aching in her lower back. The next morning, she developed pain radiating into her right buttock down to the posterior aspect of her right leg. The pain is worse on prolonged sitting and climbing stairs, but is generally relieved by rest.

Questions:

1. Based on the history, could there be:
 - An ominous cause of the back pain (as indicated by a Red Flag)?
 - A systematic or visceral disease which could explain the pain?
 - A mechanical cause, with or without neurologic compromise?
2. What further historical information would you like to obtain. If so, what is it and why would you like to get it?
3. Based on the history, delineate the physical examination you would plan to perform.

Facilitator will hand out Part 2 of this case.

Case #3

Ms. Copella (Part I)

A 78-year-old white woman with corticosteroid dependent COPD presents with lower back pain that began suddenly five days ago. She denies any history of trauma. The pain is localized in the midline and is severe. She has no neurologic complaints. She denies fevers, chills, and weight change. The GI and GU ROS are negative.

Physical exam is notable for kyphosis. She has marked spinal tenderness in the upper lumbar region. Neurologic exam is unremarkable.

Questions:

1. Based on the history and examination, could there be:
 - an ominous cause of the back pain (as suggested by a Red Flag)?
 - A systematic or visceral disease which could explain the pain?
 - A mechanical cause, with or without neurological compromise?
2. What is in the differential diagnosis of this pain?
4. What is the most likely diagnosis?
5. What risk factors does this patient have for development of her current problem?
6. How would you manage her?
7. Would you order imaging of her spine?

Facilitator will hand out Part 2 of this case.

Case #4

Mr. Carter

A 78-year-old man comes in complaining of back and leg pain. He reports that he has had a “bad back” for more than 10 years. Over the past four months, the back pain has worsened. He is also experiencing a feeling of poorly localized fatigue and heaviness in the legs that comes only on prolonged standing or walking. The leg pain is relieved immediately with sitting. In the grocery store, he notes less leg pain than usual when he is leaning forward on the grocery cart.

PMH: Hypertension, BPH, duodenal ulcer, appendectomy, osteoarthritis of the hands and knees.

MEDS: HCTZ, potassium, tamsulosin, lisinopril, acetaminophen prn

ROS: No fever or weight change. GU and GI ROS are negative.

On exam, he has limited movement of the lumbar spine, with no significant tenderness. Neurologic and vascular exam of the lower extremities is normal.

Questions:

1. Based on the history and examination, could there be:
 - an ominous cause of the back pain (as suggested by a Red Flag)?
 - A systematic or visceral disease which could explain the pain?
 - A mechanical cause with or without neurological compromise?
2. What is in the differential diagnosis of this pain?
3. What is the most likely diagnosis?
4. What risk factors does this patient have for development of her current problem?
5. How would you manage him?

Case #5

A multiple choice question

A 37 year-old woman reports low back pain for one week. She has had similar pain in the past, but this is more severe. The pain is located on the right and radiates to the buttock. She denies bowel or bladder dysfunction, radiation of pain into the calf, or history of cancer. She denies recent weight change or fever. She works as a data entry clerk, but recalls no activity that precipitated the pain. On examination, she is in obvious distress, holding her right flank. On standing inspection, lumbar lordosis is absent and there is paraspinous muscle spasm on the right at the level of L3. Reflexes are symmetrical at 2+ in the lower extremities and there is no evidence for sensory or motor deficits in the legs. Lifting the right leg to 45 degrees produced a stretching sensation in her buttock and posterior thigh. A urinalysis shows trace ketones and no leukocyte esterase. What is the most appropriate next step in management?

- 1) Health education for low back pain
- 2) Bed rest for 72 hours
- 3) Gradual introduction of sit-ups and leg lifts
- 4) Benzodiazepine therapy
- 5) Antibiotic therapy