back Pain? Don’t misdiagnose this!

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Disclosures -

I have nothing to disclose.

Objectives

Review anatomy and assessment of the back.

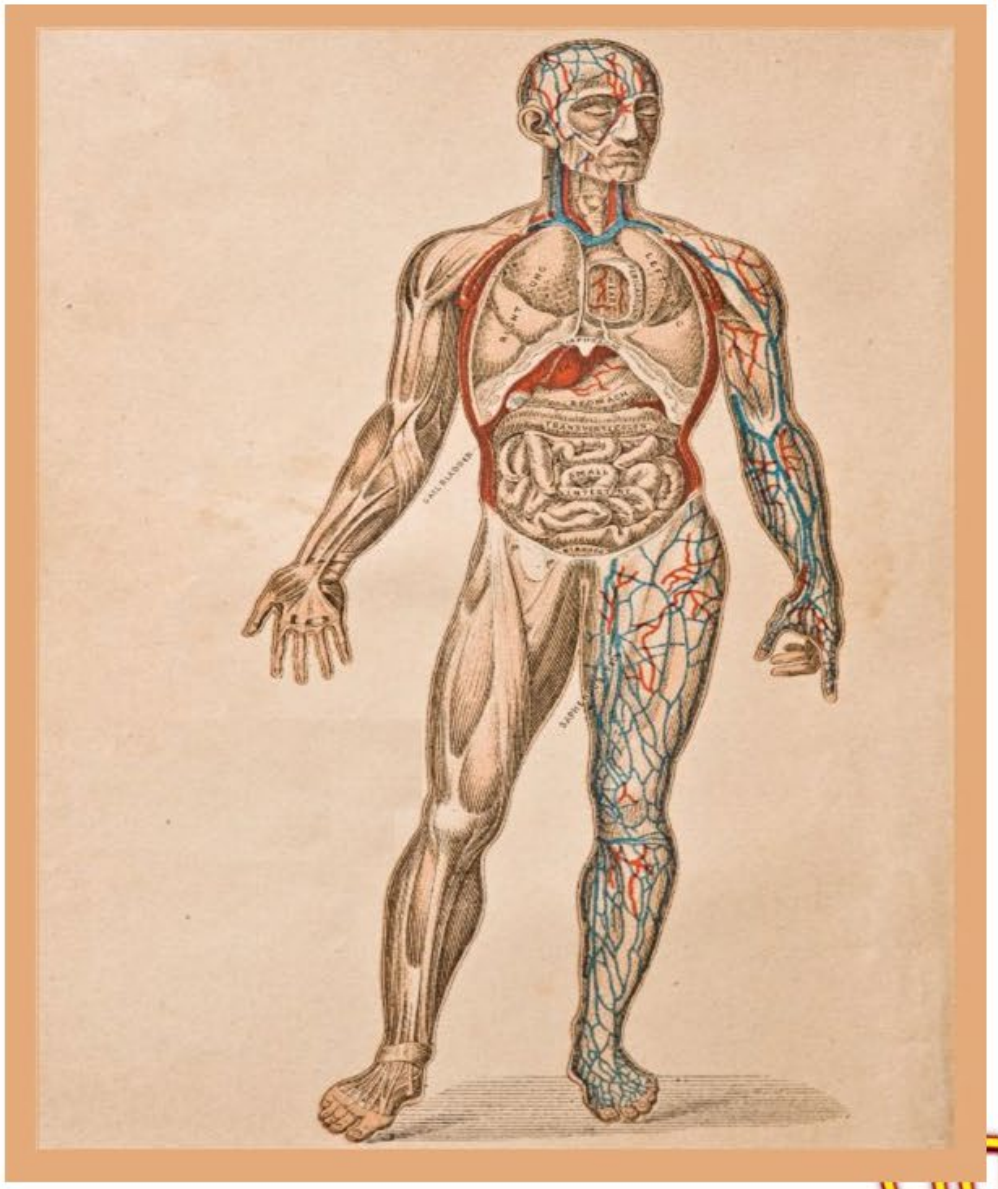
Identifying common and life-threatening causes of back disorders.

Explore differential diagnoses in case-based presentations of back pain.

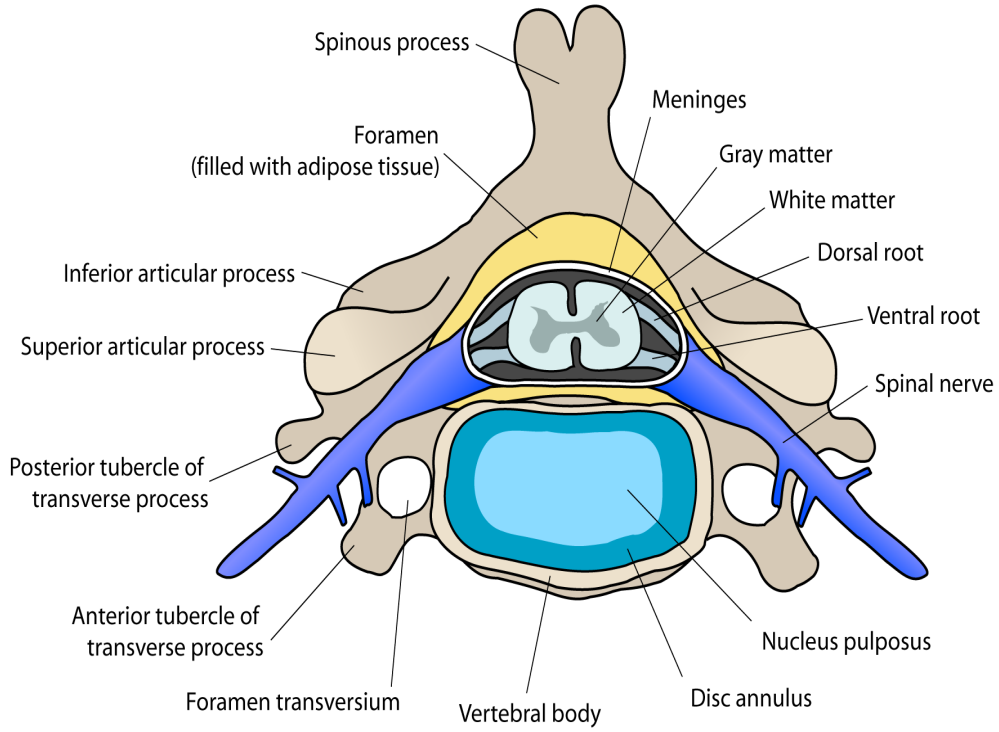
Recommend management of these presentations with pharmacologic and non-pharmacologic methods will be interpreted.

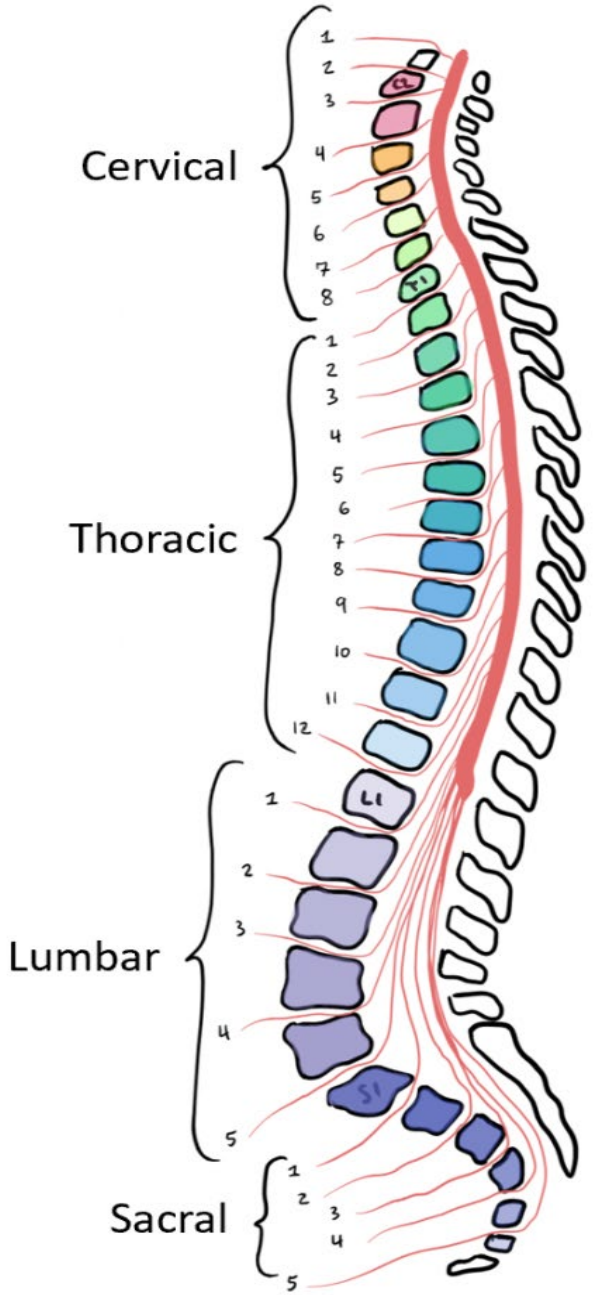
ANATOMY

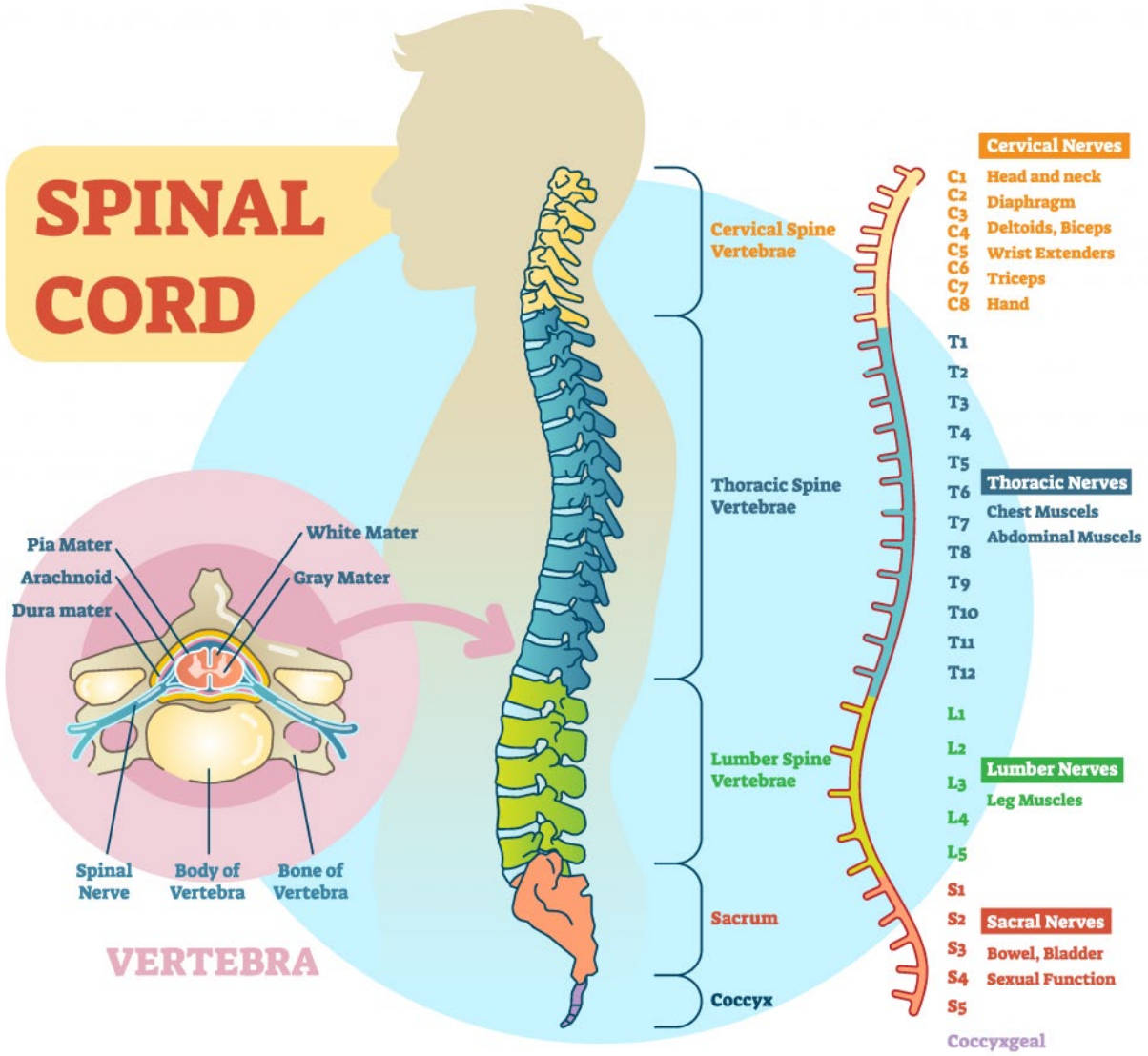
- Skeletal
- Vascular
- Muscle/Ligamental
- Neurologic

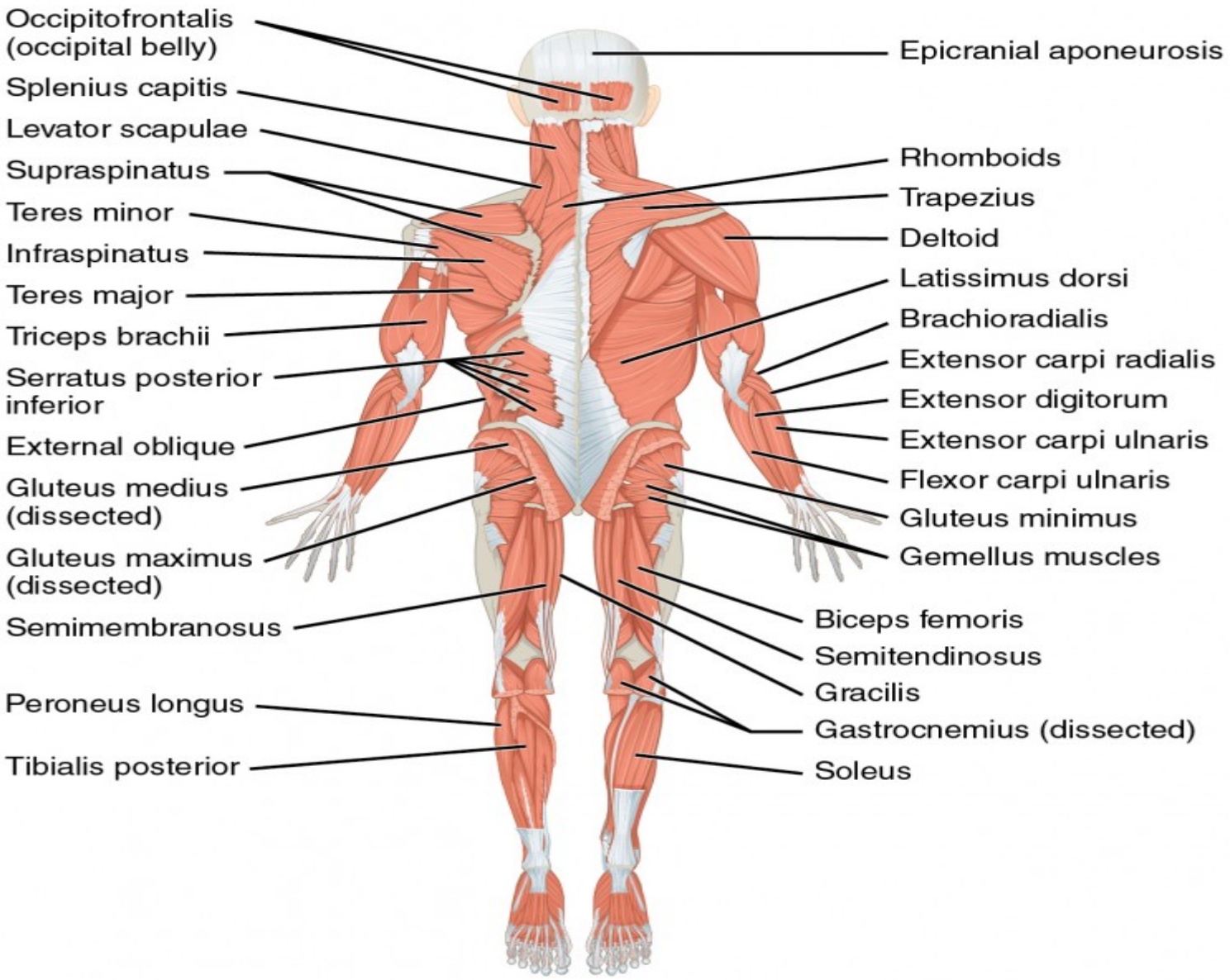


Skeletal

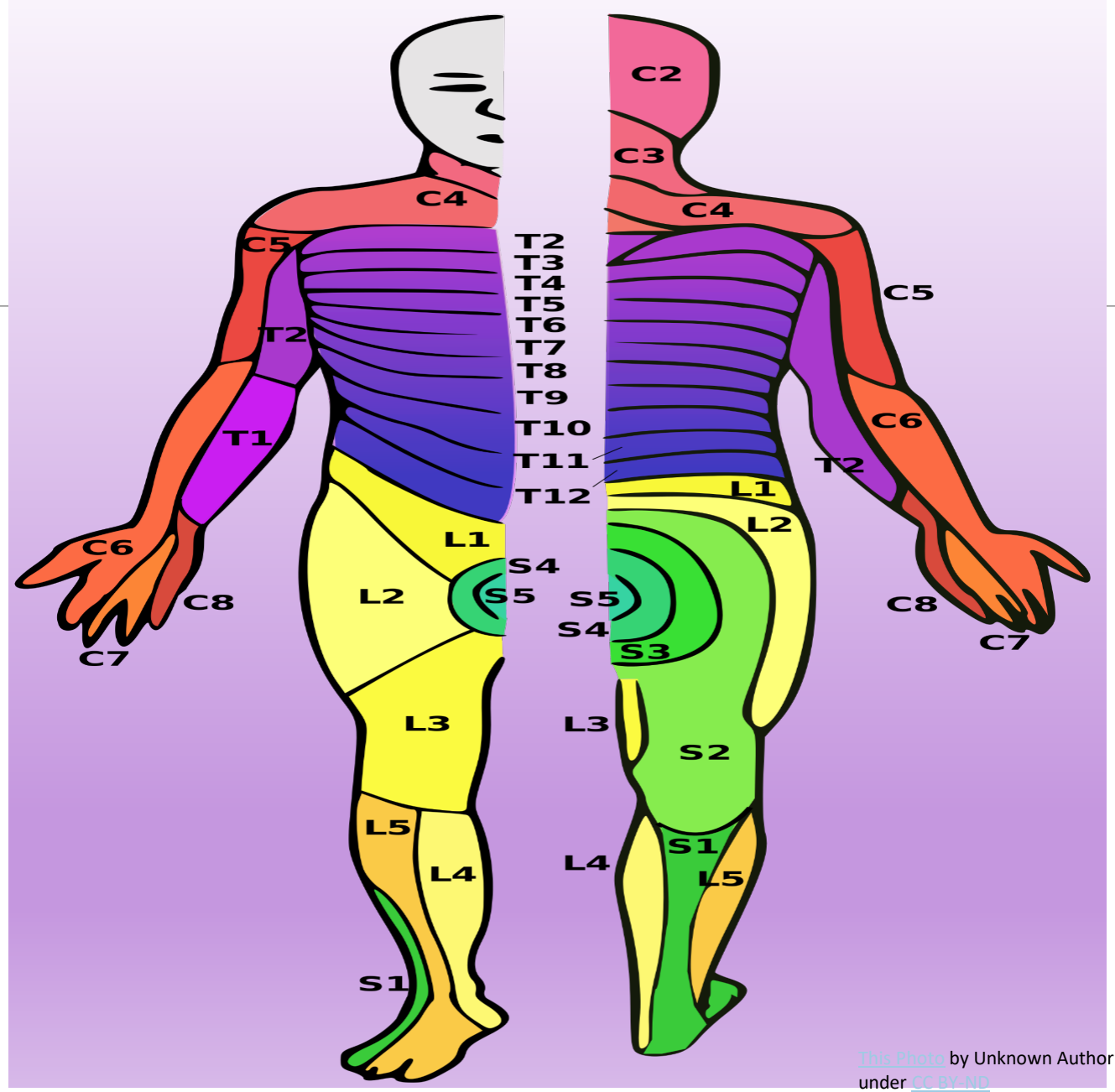


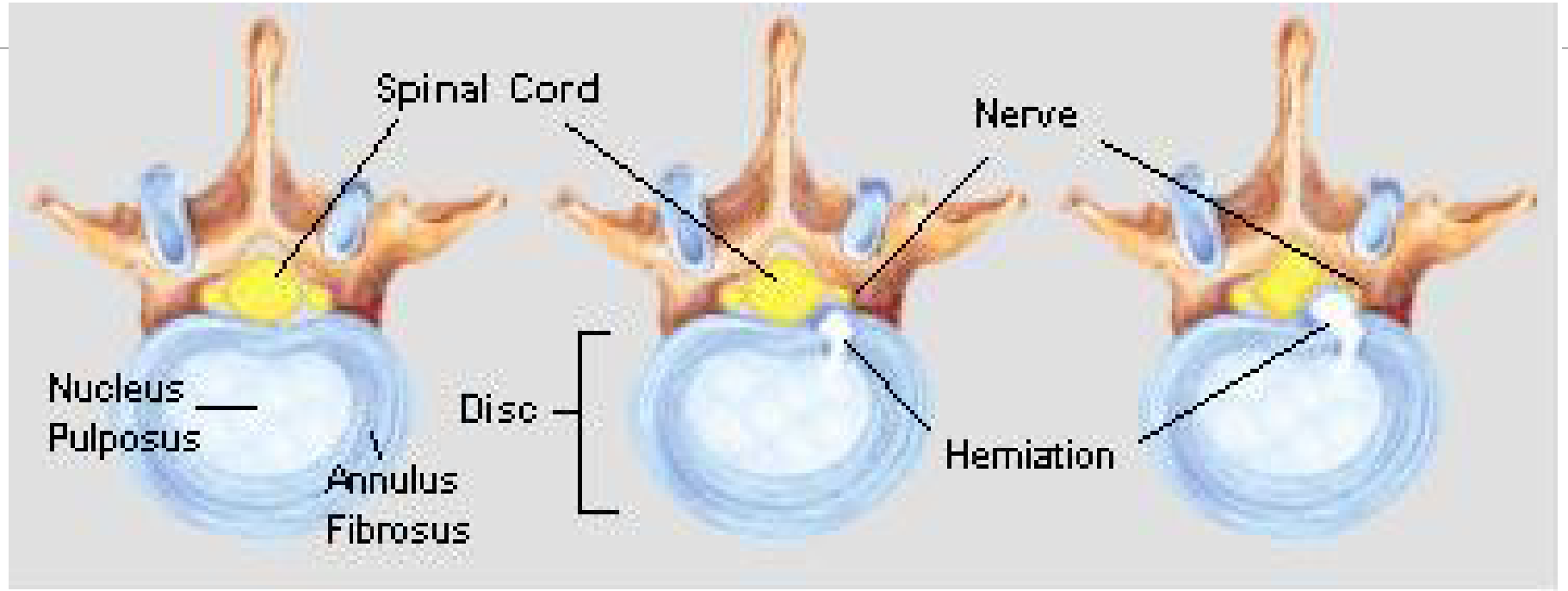


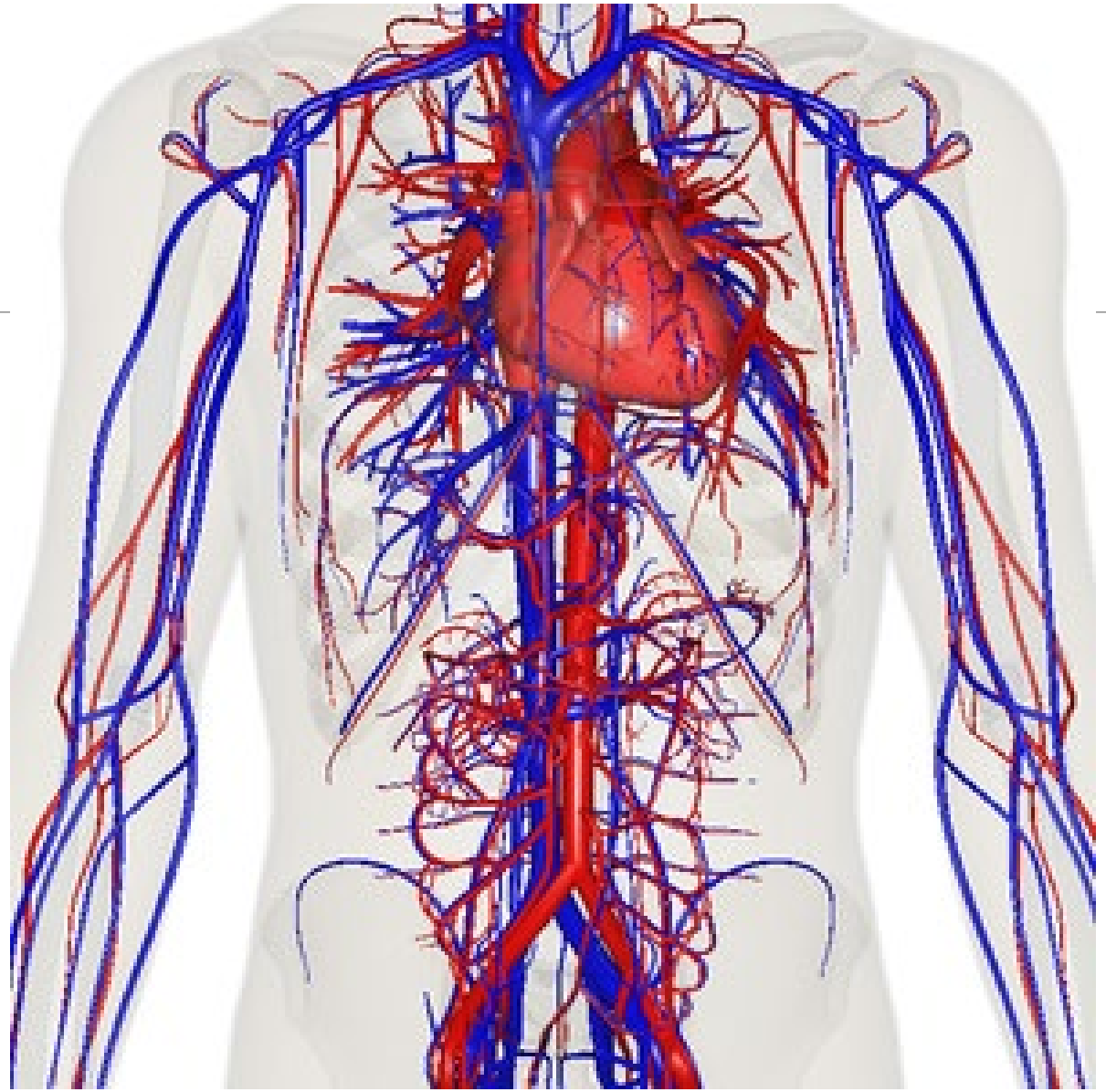


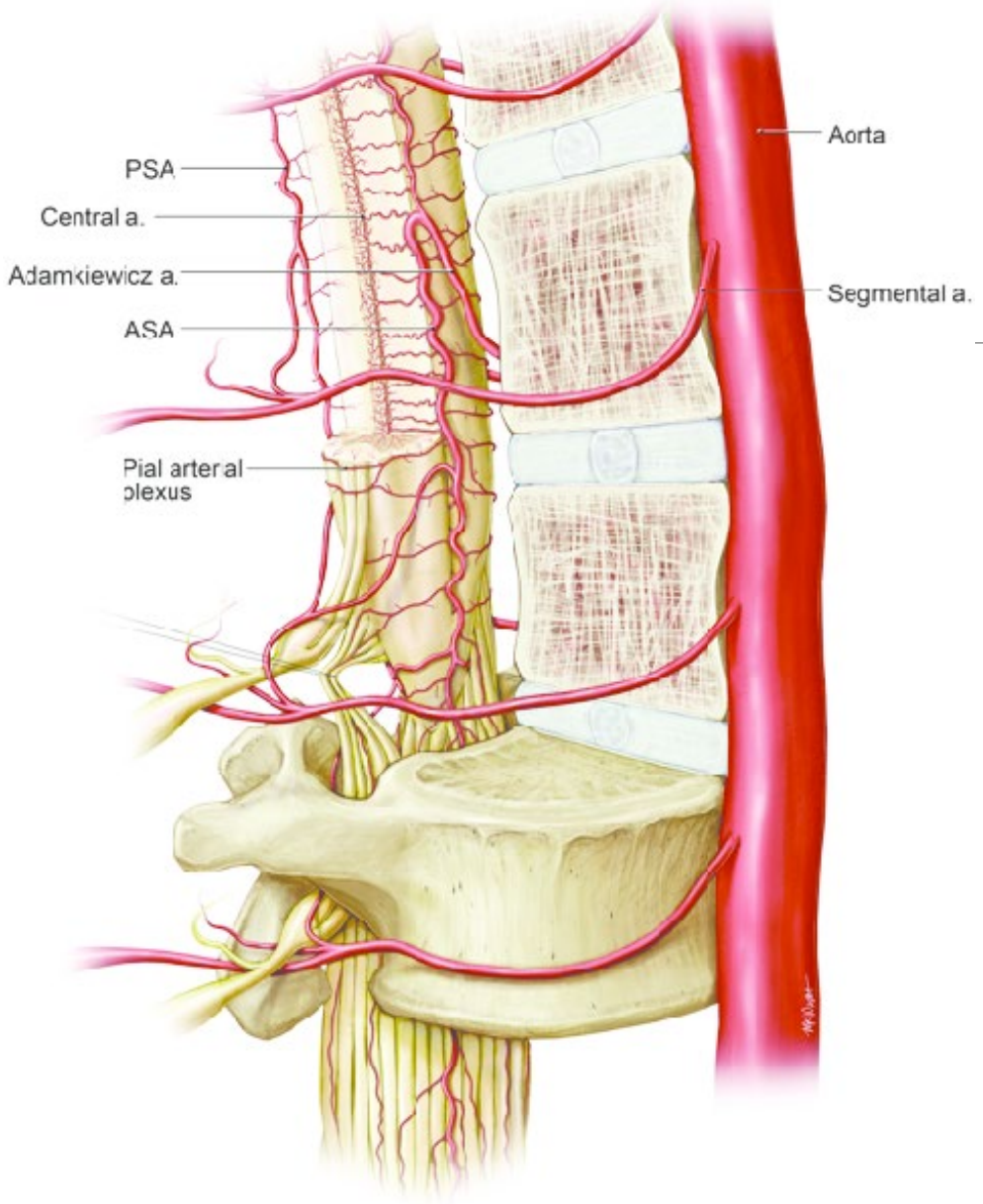


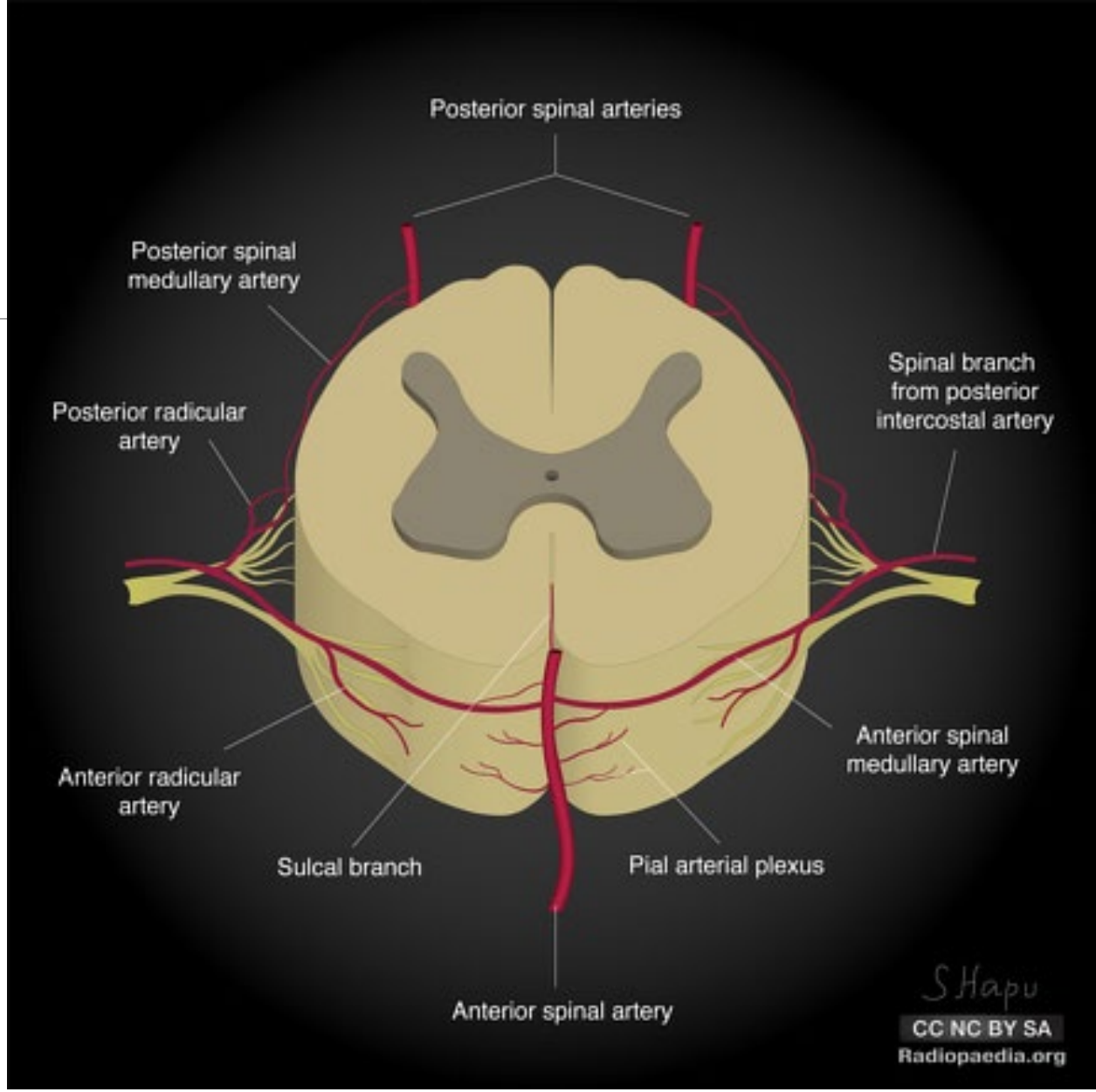
Major muscles of the body.
Right side: superficial; left side: deep (posterior view)



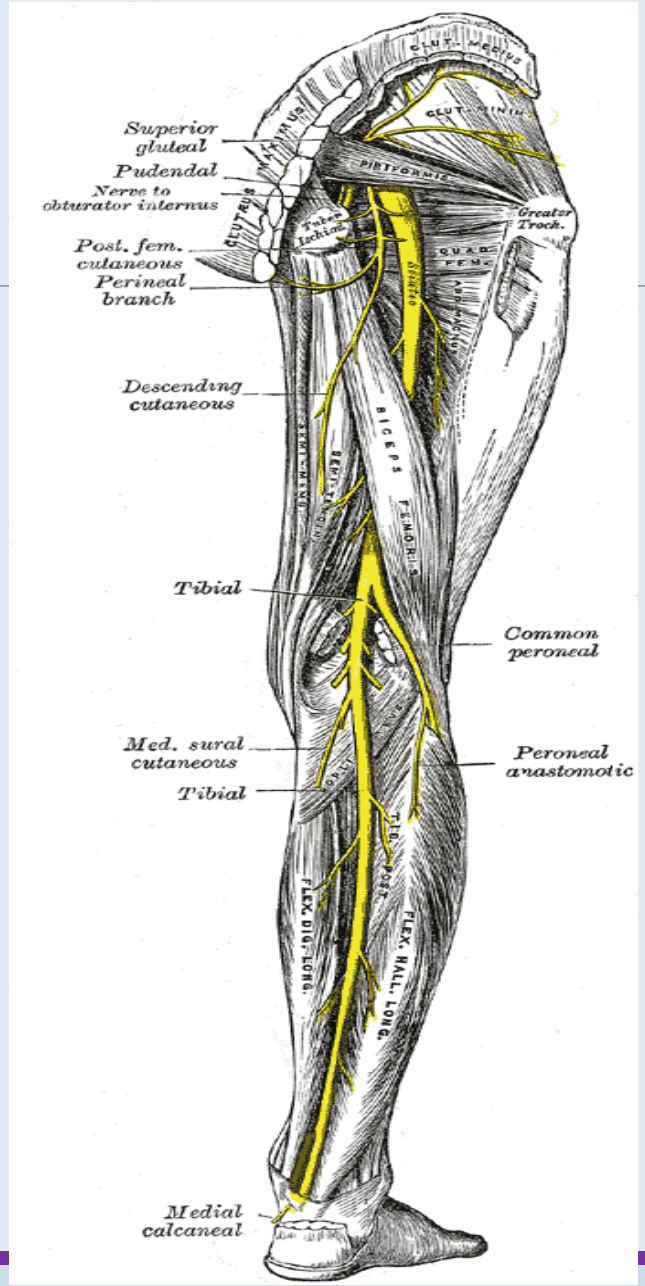








Sciatic nerve



Starting the assessment

The Red Flags - Mnemonic

T: trauma

H: history of cancer

E: extended duration (>4-6 weeks)

R: rest or night pain

E: equina

D: disability

F: fever

L: losing weight

A: age <20 or >50

G: general symptoms

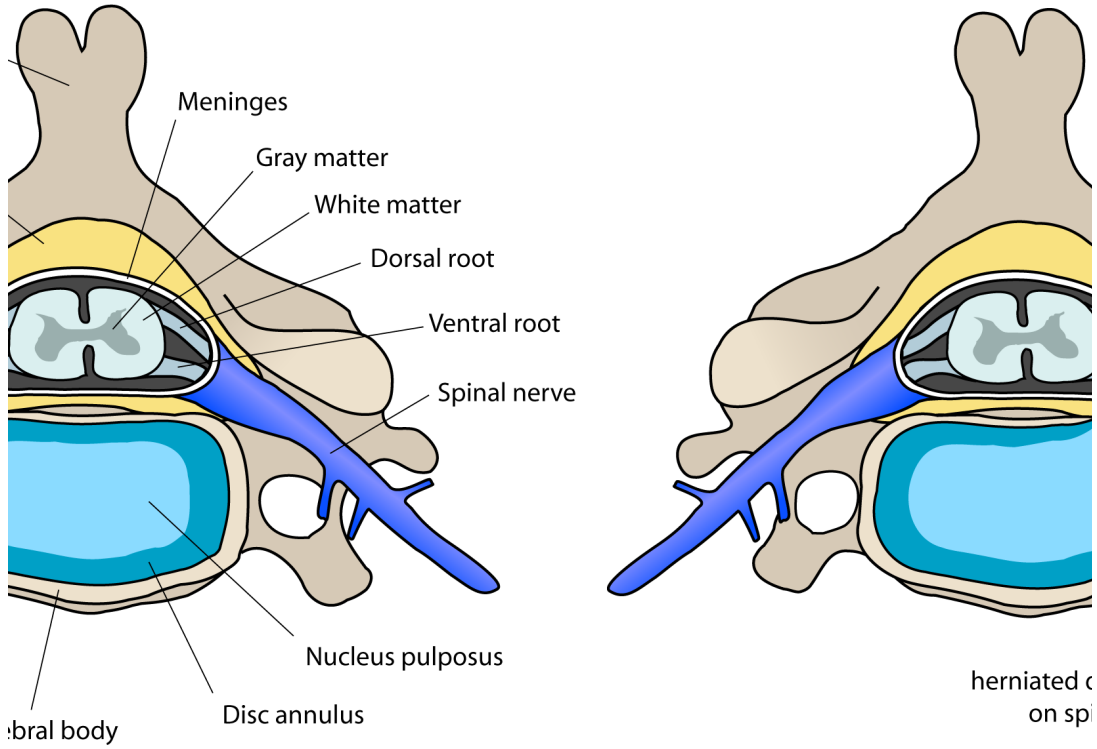
S: steroid use or immunosuppression

https://radiopaedia.org/articles/red-flags-of-low-back-pain-mnemonic?lang=us

Etiology of back pain

Degenerative: Musculoskeletal structures can weaken over time due to aging, overuse, or pre-existing pathology. Conditions like intervertebral disk herniation and degenerative disk disease fall into this class.

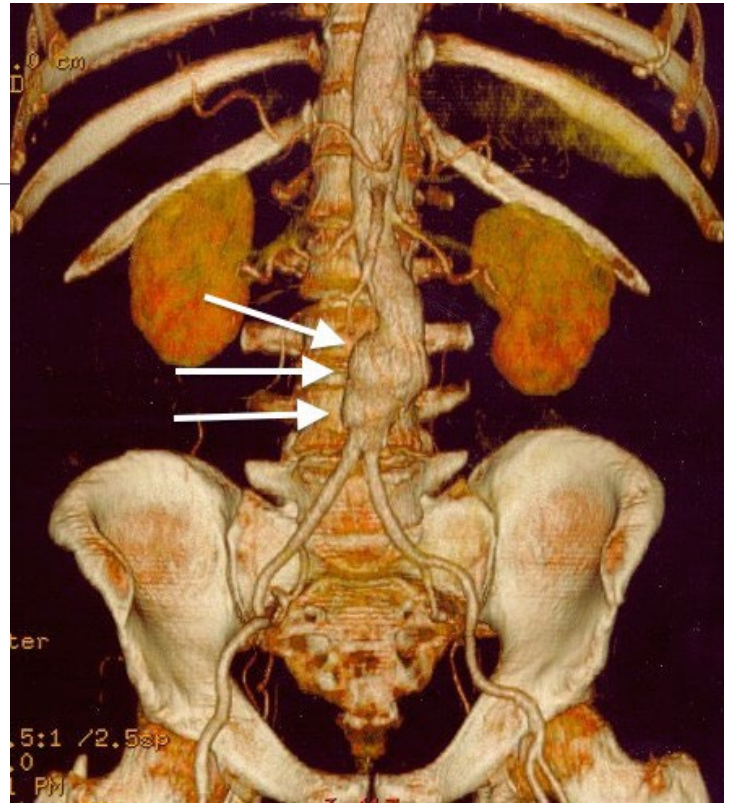
Oncologic: Anatomic structures of the back can develop primary or secondary malignant lesions. Pathologic fractures of the axial skeleton can arise as a complication.



Inflammatory: This category includes inflammatory conditions not caused by infection or malignancy. Examples are ankylosing spondylitis and sacroiliitis. Chronic inflammation can give rise to spinal arthritis.

Metabolic: Calcium and bone metabolism can cause the symptoms. Osteoporosis and osteosclerosis are examples.

Referred pain: Visceral organ inflammation can cause referred back pain. Examples are biliary colic, lung disease, and aortic or vertebral artery pathology.



Infectious: Infections of the musculoskeletal structures in this region can arise from direct inoculation or spread from another source.

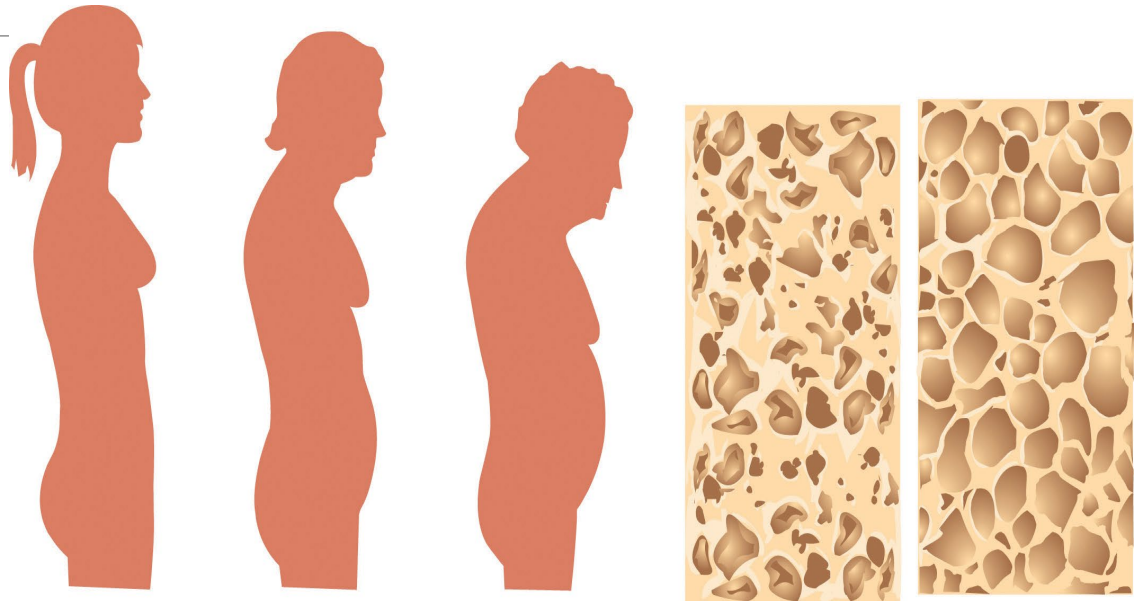
Traumatic: Back pain commonly results from direct or indirect contact with an external force. Examples are whiplash injury, strain, and traumatic fractures.

Casiano VE, Sarwan G, Dydyk AM, et al. Back Pain. [Updated 2023 Dec 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK538173/

Postural: Spending long hours in an upright position can cause back pain. Pregnancy and certain occupations can predispose people to postural back pain.

Congenital: Inborn conditions of the axial skeleton can cause the symptoms. Examples are kyphoscoliosis and tethered spinal cord.

Psychiatric: Back pain may also present in patients with chronic pain syndromes and other mental health conditions. Malingering individuals may also claim to have back pain.



History

Cause

How long 6wk – 12 wks -1 yr

Related to previous injury

What makes better or worse

Taking meds?

PMHx related or contributory

Co- Morbidity

Age >50

Arthritis … osteoporosis

DM

Decreased immunity

IV drug use

Renal/Liver disease

Steroid use

Physical exam

Look at their skin!!!

Motor

Sensation

ROM

DTR

Straight Leg raise

In adults

Malignancy:

- History: History of metastatic cancer, unexplained weight loss
- Physical exam: Focal tenderness to palpation in the setting of risk factors

Infection:

- History: Spinal procedure within the last 12 months, intravenous drug use, immunosuppression, prior lumbar spine surgery
- Physical exam: Fever, wound in the spinal region, localized pain, tenderness

Fracture:

- History: Significant trauma (relative to age), prolonged corticosteroid use, osteoporosis, and age older than 70 years
- Physical exam: Contusions, abrasions, tenderness to palpation over spinous processes

Neurologic:

- History: Progressive motor or sensory loss, new urinary retention or incontinence, new fecal incontinence
- Physical exam: Saddle anesthesia, anal sphincter atony, significant motor deficits of multiple myotomes

- Casazza BA. Diagnosis and treatment of acute low back pain. Am Fam Physician. 2012 Feb 15;85(4):343-50.
- Downie A, Williams CM, Henschke N, Hancock MJ, Ostelo RW, de Vet HC, Macaskill P, Irwig L, van Tulder MW, Koes BW, Maher CG. Red flags to screen for malignancy and fracture in patients with low back pain: systematic review. BMJ. 2013 Dec 11;347:f7095.

Sciatica

Sciatica represents a debilitating condition characterized by pain orparesthesias within the sciatic nerve distribution or an associated lumbosacral nerve root.

The sciatic nerve providing

- direct motor function to the hamstrings and lower extremity adductors
- indirect motor function to the calf muscles, anterior lower leg muscles,
- select intrinsic foot muscles.

No imaging necessary assessment is key

https://www.ncbi.nlm.nih.gov/books/NBK507908/

Davis D, Maini K, Taqi M, et al. Sciatica. [Updated 2024 Jan 4]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK507908/

Treatment for sciatica

A short course of oral nonsteroidal anti-inflammatory drugs, NSAIDs

Opioid and nonopioid analgesics

Muscle relaxants

Anticonvulsants for neurogenic pain

If oral NSAIDs are insufficient, oral corticosteroids may be beneficial

Localized corticosteroid injections

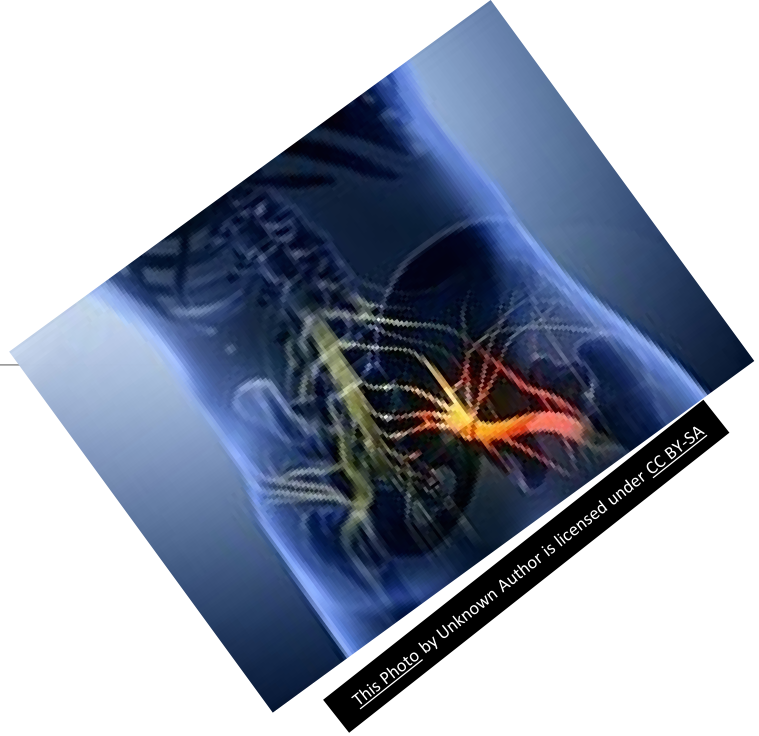
Spinal manipulation

Deep tissue massage may be helpful

Physical therapy consultation

Surgical evaluation and correction of any structural abnormalities such as disc herniation, epidural hematoma, epidural abscess, or tumor

Acupuncture



Ji M, Wang X, Chen M, Shen Y, Zhang X, Yang J. The Efficacy of Acupuncture for the Treatment of Sciatica: A Systematic Review and Meta-Analysis. Evid Based Complement Alternat Med. 2015;2015:192808

In pediatrics

Malignancy:

- History: Age younger than 4 years, nighttime pain
- Physical exam: Focal tenderness to palpation in the setting of risk factors

Infectious:

- History: Age younger than 4 years, nighttime pain, history of tuberculosis exposure
- Physical exam: Fever, wound in the spinal region, localized pain, and tenderness

Inflammatory:

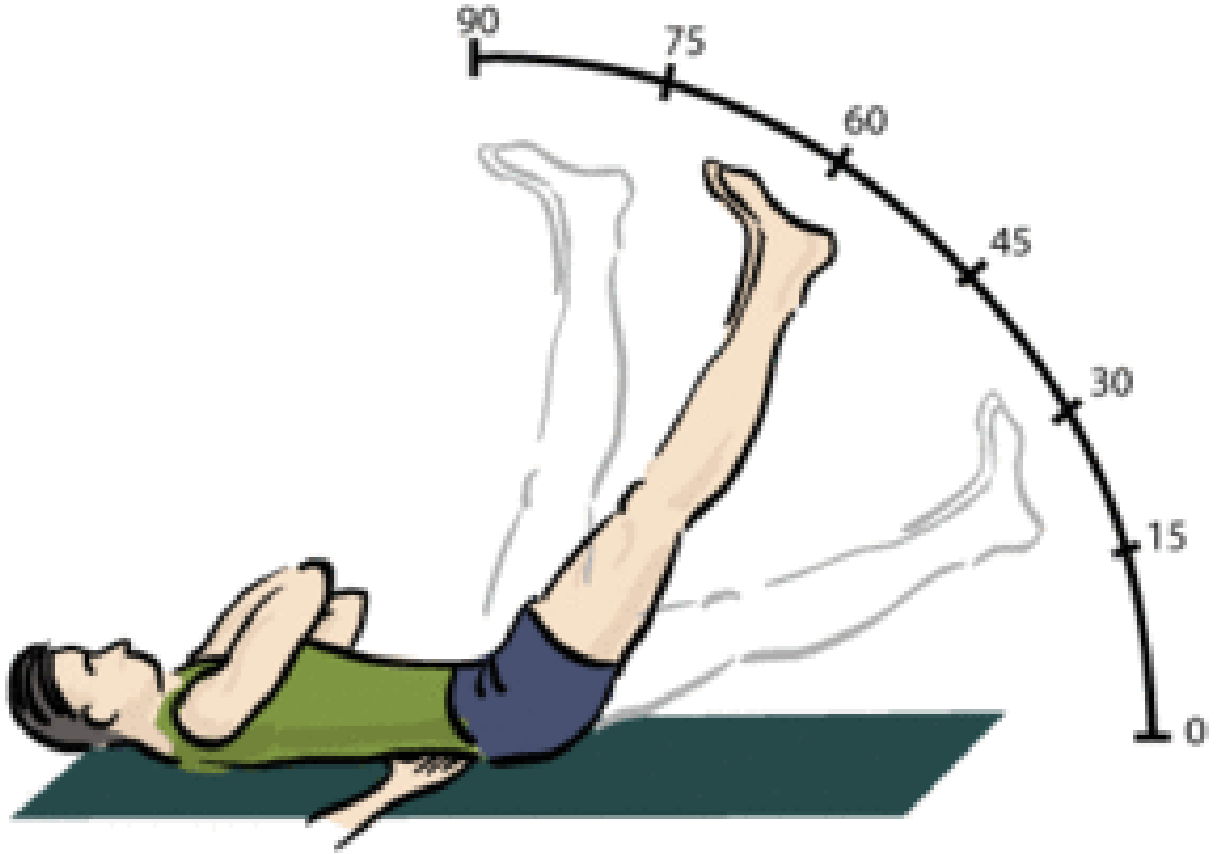
- History: Age younger than 4 years, morning stiffness lasting longer than 30 minutes, improving with activity or hot showers
- Physical exam: Limited range of motion, localized pain, and tenderness

Fracture:

- History: Activities with repetitive lumbar hyperextension (as in sports activities like cheerleading, gymnastics, wrestling, and football)
- Physical exam: Tenderness to palpation over spinous process, positive Stork test

Straight Leg Raise - The test is performed by raising the patient's leg to 30° to 70°. The result is positive if ipsilateral leg pain develops at less than 60°. A crossed SLR test raises the leg contralateral to the side of disk herniation. A positive crossed SLR test result is even more specific than a positive SLR test.

M Das J, Nadi M. StatPearls [Internet]. StatPearls Publishing; Treasure Island (FL): Mar 27, 2023. Lasegue Sign.



The Stork test, which tests for spondylolysis

The examiner supports the patient while having them stand on one leg and hyperextending the back. The maneuver is repeated on the other side. The test result is positive if the patient experiences pain during hyperextension.

The Adam test aids in evaluating for scoliosis. The patient bends over with the feet together, arms extended, and palms together. An examiner standing in front can appreciate a thoracic lump in patients with scoliosis. Patel DR, Kinsella E. Evaluation and management of lower back pain in young athletes. Transl Pediatr. 2017 Jul;6(3):225-235.

Imaging OR NOT TO IMAGE ?

In adults, back pain persisting longer than 6 weeks despite appropriate conservative management is also an indication for imaging.

Plain anteroposterior and lateral (APL) films of the axial skeleton can detect bone pathology

Magnetic resonance imaging (MRI) is indicated for evaluating soft tissue lesions, such as the nerves, intervertebral disks, and tendons.

Both imaging modalities can detect signs of malignancy inflammation, but MRI is preferable when the soft tissues are involved.

Bone scans may show osteomyelitis, diskitis, and stress reactions but remain inferior to MRI in evaluating these conditions.

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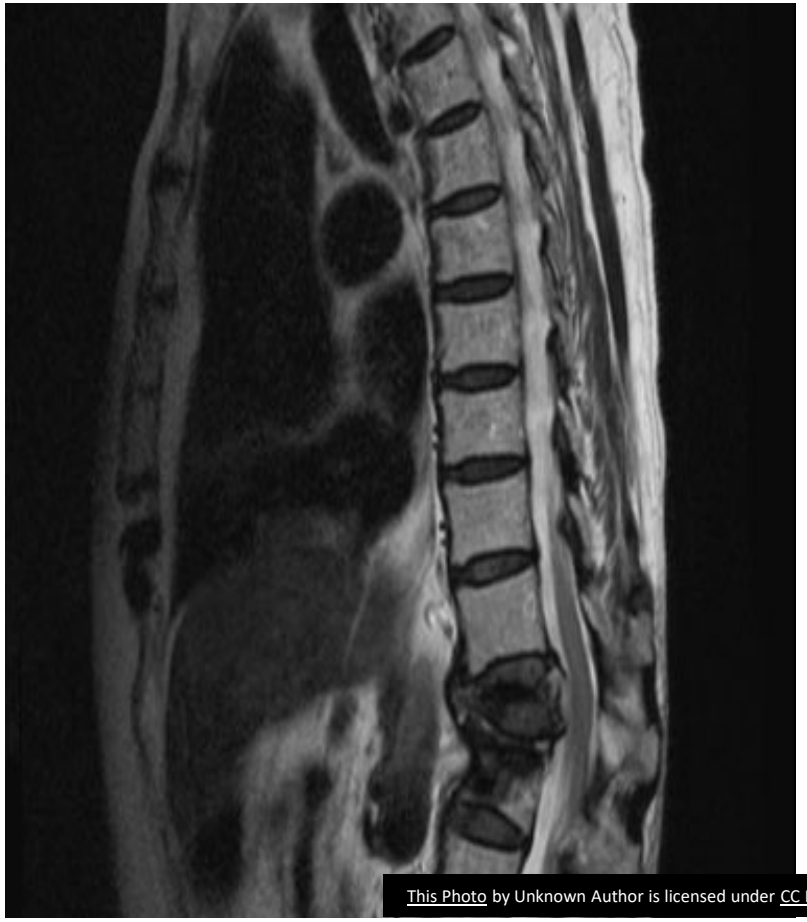
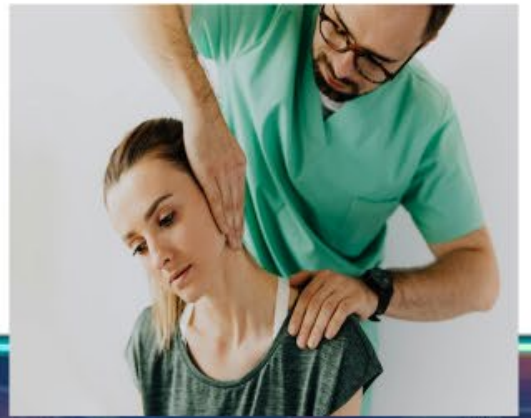


MANAGEMENT

- Medication- NSAID, muscle relaxants, steroids-oral/injected
- Narcotics
- Acupuncture
- Dry needling
- Therapies physical/occupational
- Surgical intervention



Case 1

Case 2

References

Casazza BA. Diagnosis and treatment of acute low back pain. Am Fam Physician. 2012 Feb 15;85(4):343-50.

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Patrick N, Emanski E, Knaub MA. Acute and chronic low back pain. Med Clin North Am. 2014 Jul;98(4):777-89, xii.