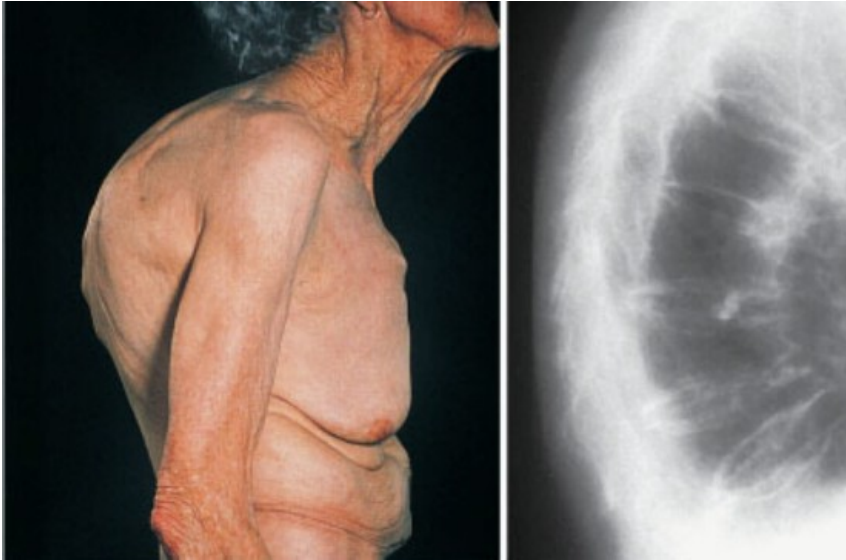


REVIEW QUESTIONS ON VERTEBRAE, SPINAL CORD, SPINAL NERVES



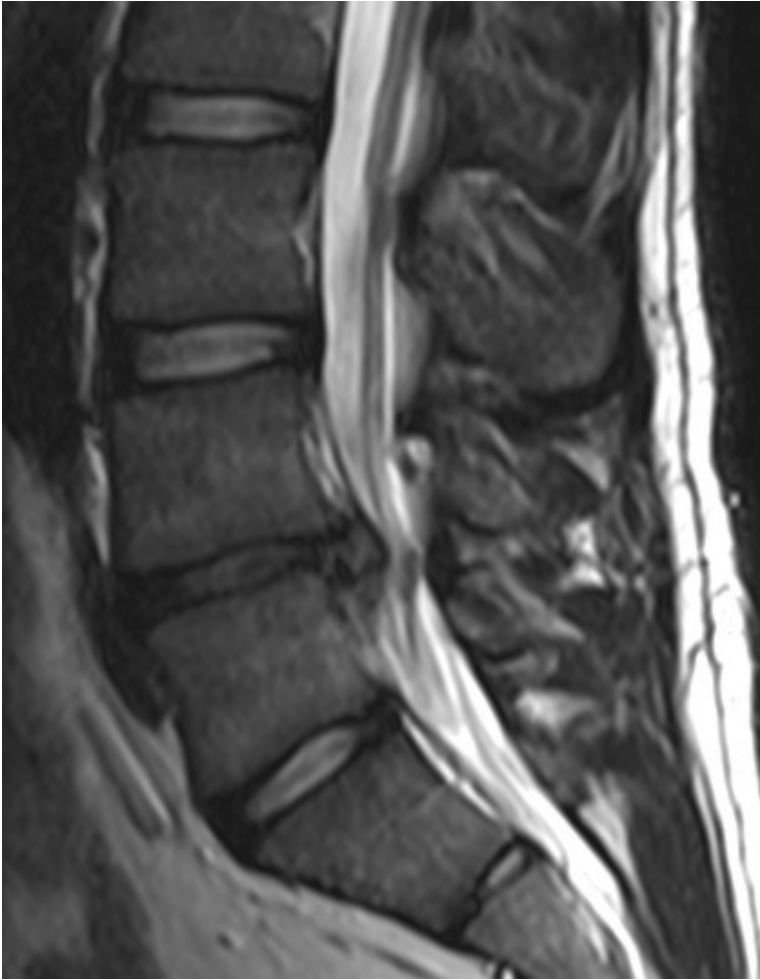
1. ____ A 28-year-old-women presented to the hospital emergency room with intense lower back spasms in the context of coughing during an upper respiratory infection. Review of her medical records showed that she had experienced progressive lower back problems for the preceding 6 years. She had gained 15 pounds during that period but was not morbidly obese. MRI scan of the vertebral column (image above) showed an exaggerated anterior-posterior curvature. Based upon this image, the radiologist would diagnose this as which of the following conditions?

- A. Scoliosis in vertebrae L3-S1
- B. Kyphosis in vertebrae T12-L3
- C. Increased lordosis in vertebrae L3-S1
- D. Increased lordosis in vertebrae T12-L1
- E. Scoliosis in vertebrae T12-L3



2.____ A 70 year old female with no health insurance was seen at a community based clinic. She complained of stooping of her posture (photo left above). She stated that the condition had been developing over a number of years. However, the deformity had increased to the point that she had difficulty holding her neck upright. She had also begun experiencing chronic back pain. The image (above right) is a lateral view x-ray of the thoracic spine. Which of the following would be a diagnosis of this condition?

- A. Congenital scoliosis
- B. Degenerative kyphosis associated with osteoporosis
- C. Post-traumatic fracture of bodies of thoracic vertebrae
- D. Scoliosis due to the presence of a hemivertebra
- E. Degenerative lordosis of thoracic vertebrae



3. ____ A 45 year old man was helping a friend move a piano when he experienced sudden lower back pain. Physical examination showed weakness in dorsiflexion of the foot. The MRI image of the lumbosacral spine (above) shows a structure pressing against the cauda equina. The herniated structure would be immediately adjacent to which of the following spinal ligaments?

- A. Anterior Longitudinal ligament
- B. Ligamentum Flavum
- C. Interspinous ligament
- D. Posterior Longitudinal ligament
- E. Supraspinous ligament



4. ___ A 2.2 kg girl was born at 34 weeks and showed severe respiratory distress. The neonate had a malformed thorax that limited normal respiration. The skeleton was imaged by CT and showed multiple abnormalities. Three dimensional reconstruction (shown above) of the spine showed a distinct discontinuity in the vertebrae (arrow). Which of the following describes this discontinuity?

- A. Lordosis due to the presence of a 'hemivertebra'
- B. Scoliosis due to the presence of a 'hemivertebra'
- C. Congenital Kyphosis
- D. Exaggerated primary curvature
- E. Exaggerated secondary curvature in the lumbar region

5. ____ A 25-year-old rugby player injured his neck while tackling another player. He felt numbness over the region of the thumb on the palmar surface that persisted for several days. Physical examination by his physician showed weakness in the biceps muscle. These symptoms could result a sign of herniation of an intervertebral disc located between vertebrae at which of the following levels?

- A. C3-C4
- B. C4-C5
- C. C5-C6
- D. C6-C7
- E. C7-T1

6. ____ A newborn baby born at 37 weeks is noted to be unwell, feeding poorly and is jittery, with a temperature of 38°C. A clinical diagnosis of early sepsis is made and a lumbar puncture to sample cerebrospinal fluid (CSF) is suggested on the ward round as a part of sepsis evaluation. To perform the procedure of lumbar puncture (spinal tap) safely in a newborn, the needle must be inserted between which of the following vertebrae?

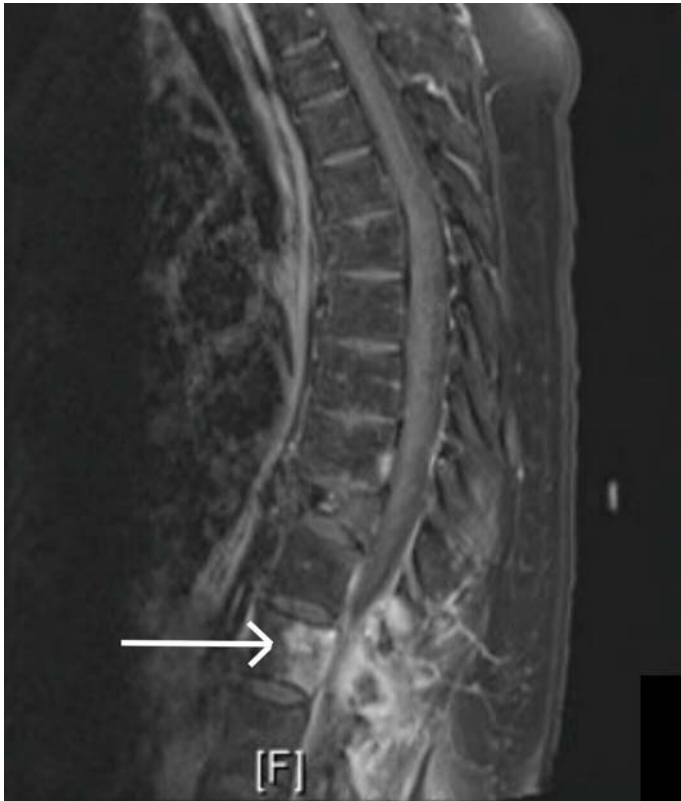
- A. T12-L1
- B. L1-L2
- C. L2-L3
- D. L3-L4
- E. L4-L5

7. ____ A 24-year-old-patient is seen for a routine neurological exam. The patient is a medical student who has been studying intensely for Step 1 board (or Final) examinations. Testing of patellar tendon reflexes (deep tendon reflex) shows bilateral, mild hyperreflexia (scored 3). The physician suspects that this is not pathological but due to increased activation of Gamma dynamic motor neurons associated with nervousness and anxiety. Which of the following is an action of Gamma dynamic motor neurons that could produce the mild hyperreflexia?

- A. Increase sensitivity of Golgi tendon organs
- B. Increase sensitivity of Ia fibers in muscle spindles
- C. Directly produce contraction of all muscle cells
- D. Increase sensitivity of free nerve endings in muscles
- E. Produce relaxation of muscle cells in muscle spindles

8. ___ Both Lower motor neuron and Upper motor neuron lesions can cause muscle paralysis. Differential diagnosis is often complex and based upon a number of tests. Which of the following is a characteristic of Lower motor neuron lesions which does not occur in Upper motor neuron lesions?

- A. Hyperreflexia
- B. Fasciculations
- C. Increased muscle tonus
- D. Clasped knife reflexes
- E. Babinski sign



9. ___ A patient who was treated for advanced carcinoma of the prostate begins to experience back pain. An MRI image of a lateral view of the vertebral column is shown above. Which of the following could serve as an anatomical pathway by which metastasis spread to the structures indicated by the arrow?

- A. External Iliac vein
- B. Renal vein
- C. Testicular vein
- D. Lumbar veins
- E. Deep Femoral vein

10. ____ A first year resident in OBGYN, who has been on call for 18 hours, is asked to administer an epidural anesthetic to a patient prior to delivery. As the needle is being inserted, the resident struggles to remember the anatomy of the vertebral column to know when to stop and administer the anesthetic. Which of the following is the last structure the needle should pass through in administering an epidural anesthetic?

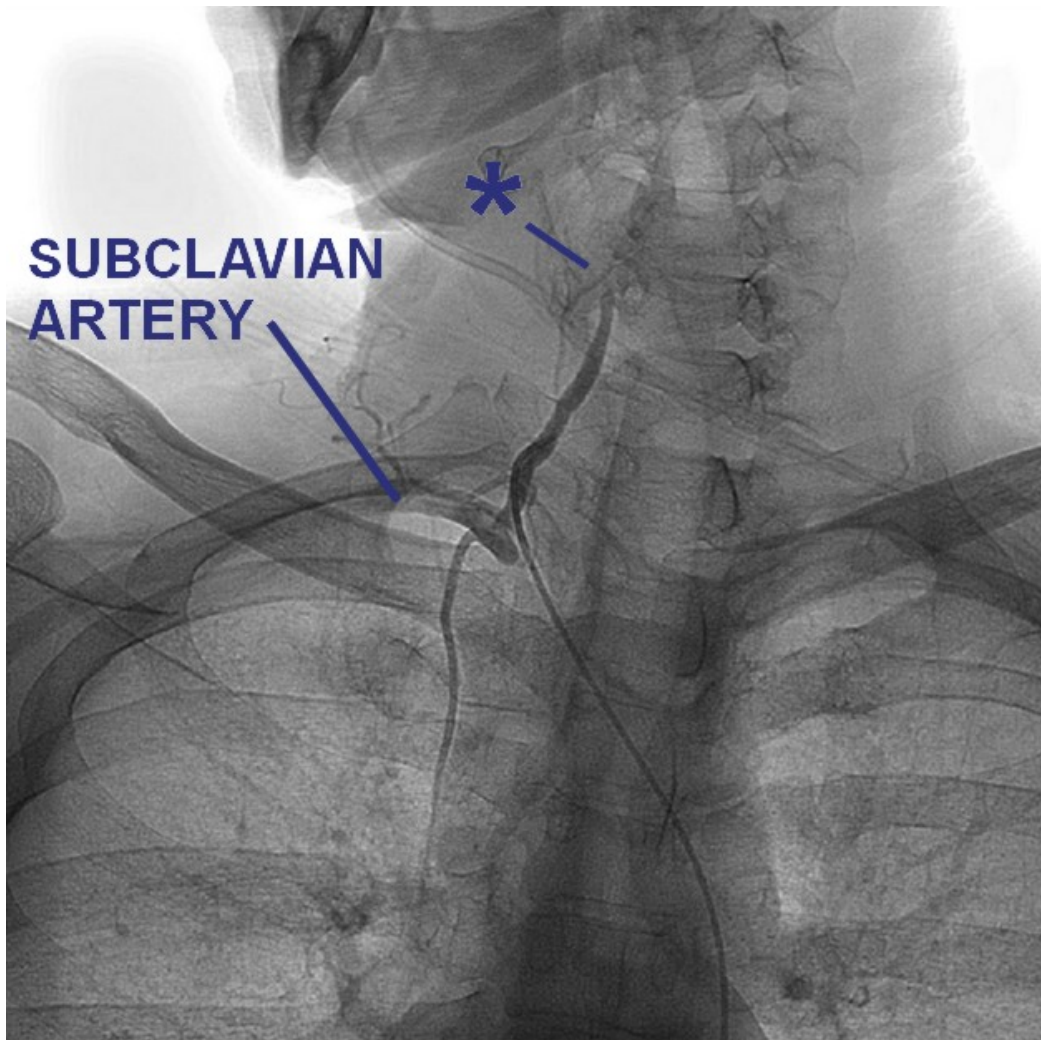
- A. Anterior Longitudinal Ligament
- B. Posterior Longitudinal Ligament
- C. Supraspinous Ligament
- D. Ligamentum flavum
- E. Nuchal Ligament

11. ____ A patient experiences intermittent numbness of the big toe. The physician suspects that the cause may be due to osteophyte formation at an intervertebral foramen. At which of the following levels would foraminal encroachment by osteophyte formation produce numbness of the big toe?

- A. Intervertebral foramen at L1-L2
- B. Intervertebral foramen at L2-L3
- C. Intervertebral foramen at L3-L4
- D. Intervertebral foramen at L4-L5
- E. Intervertebral foramen at T12-L1

12. ____ A 29 year old female is driving her car and suffers a 'whiplash' injury to the neck in a head on collision. The air bag in her car is defective and her neck is bent into hyperflexion when her thorax rebounds anteriorly. Examination in the emergency room and radiographs show no fractures or vertebral subluxations. However, she subsequently develops chronic pain when attempting to flex her neck. The pain is diffuse and extends from the base of the occipital bone to the first thoracic vertebra. Damage to which of the following structures could account for these symptoms.

- A. Anterior Longitudinal Ligament
- B. Longus Colli muscle
- C. Longus Capitis muscle
- D. Ligamentum Nuchae
- E. Scalenus Posterior muscle



13. A 47-year-old man presented with fainting (syncope) when turning his head to the right. He had a history of rotational neck injury with operative repair, Angiography of the Subclavian artery (attached image) showed mild stenosis of an arterial branch that was attributable to an osteophyte at C5-C6. The artery became occluded (*- on image) on rotating the patient's head to the right. Which of the following arteries would produce this condition?

- A. Common Carotid Artery
- B. Inferior Thyroid Artery
- C. Vertebral Artery
- D. Costocervical Trunk
- E. Internal Carotid Artery

Key to Questions on Vertebrae, Spinal Cord, Spinal Nerves

1. C
2. B
3. D
4. B
5. C
6. E
7. B
8. B
9. D
10. D
11. D
12. D
13. C