MRI of Degenerative Disease of the Lumbar Spine

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Examination

1. **The current indications for back surgery include all of the following EXCEPT**
   a. loss of bowel control
   b. a foot drop
   c. loss of bladder control
   d. worsening neurologic symptoms
   e. excruciating pain.

2. **Studies have demonstrated that _____ of patients with disk herniations who are treated conservatively or by surgery are essentially pain free and functional in 1 to 2 years.**
   a. 55%
   b. 65%
   c. 75%
   d. 85%
   e. 95%

3. **The author discusses a recent series of 625 patients with an initial diagnosis of low back pain in which _____ had serious disease that would not have been effectively managed with pain medications or epidural injections.**
   a. 1%
   b. 2%
   c. 3%
   d. 4%
   e. 5%

4. **According to the author, the MR technique that has proven most satisfactory for the evaluation of lumbar disk disease is a combination of proton density and T2-weighted fast spin echo sagittal and axial images with a T1-weighted conventional spin echo sagittal image. The slice thickness is typically**
   a. 3 mm with a 0.1 mm gap.
   b. 4 mm with a 1 mm gap.
   c. 6 mm with a 2 mm gap.
   d. 8 mm with a 2 mm gap.
   e. 8 mm with a 3 mm gap.

5. **According to the author, on axial images, the FOV is generally set to _____ to maximize spatial resolution.**
   a. 22 cm or less
   b. 26 cm or less
   c. 30 cm or less
   d. 32 cm or less
   e. 34 cm or less

6. **The earliest sign of disk herniation is _____ due to desiccation and dehydration of the disk.**
   a. decreased signal on a T2-weighted image
   b. decreased signal on a T1-weighted image
   c. increased signal on a T1-weighted image

d. increased signal on a T2-weighted image
e. a decrease in vascular flow by MR angiography

7. **On axial images for evaluating disk herniation, a posterior convexity is noted, which is abnormal at all lumbar levels EXCEPT**
   a. T12 to L1
   b. L1 to L2
   c. L2 to L3
   d. L3 to L4
   e. L5 to S1

8. **With focal tearing of the inner fibers of the annulus fibrosus, a more focal disk herniation occurs known as**
   a. a wrapped disk.
   b. an extrusion.
   c. an anterolisthesis.
   d. a protrusion.
   e. a sequestration.

9. **In a disk herniation, the ratio of the height to the base is**
   a. greater than 1 in protrusions and less than 1 with extrusions.
   b. less than 1 in extrusions and greater than 1 with sequestrations.
   c. less than 1 in protrusions and greater than 1 with extrusions.
   d. less than 1 in sequestrations and greater than 1 with extrusions.
   e. less than 1 in sequestrations and greater than 1 with protrusions.

10. **When the herniated disk fragment becomes separated from the parent disk, it is known as**
    a. a wrapped disk.
    b. an extrusion.
    c. an anterolisthesis.
    d. a protrusion.
    e. a sequestration.

11. **When diagnosing disk herniation, it is important to note the relationship of the herniated fragment to the local nerve roots. In general, the "traversing" root comes off the thecal sac**
    a. below the level of the disk and this nerve root corresponds to the upper lumbar vertebral level.
    b. above the level of the disk and this nerve root corresponds to the upper lumbar vertebral level.
    c. at the level of the disk and this nerve root corresponds to the lower lumbar vertebral level.
    d. at the level of the disk and this nerve root corresponds to the upper lumbar vertebral level.
    e. below the level of the disk and this nerve root corresponds to the lower lumbar vertebral level.

12. **Most disk herniations are**
    a. central or within the spinal canal in the midline.
    b. para-central or within the spinal canal and just off midline.
    c. foraminal lateral herniations.
    d. far lateral herniations.
    e. central but outside the spinal canal in the midline.

13. **Approximately _____ of disk herniations are lateral to the spinal canal.**
    a. 70%
    b. 50%
    c. 40%
    d. 25%

e. 10%

14. **Which of the following statements is true?**
    a. Lateral disk herniations are best diagnosed on coronal images demonstrating the neural foramina.
    b. Continuity with the parent disk is generally a sufficient finding to diagnose a disk herniation as opposed to a non-contiguous schwannoma.
    c. While schwannomas and disk herniations have similar intensity on T1- and T2-weighted images, early disk fragments enhance intensely with gadolinium while schwannomas do not.
    d. Lateral disk herniations are best diagnosed on axial images because the neural foramina do not need to be demonstrated.
    e. Schwannomas and disk herniations display opposite intensities on T1- and T2-weighted images.

15. **A wrapped disk is**
    a. when the herniated disk fragment becomes separated from the parent disk.
    b. when there is focal tearing of the inner fibers of the annulus fibrosus.
    c. when fatty changes are elicited in the endplates.
    d. a central disk fragment surrounded by enhancing scar tissue.
    e. seen when bone begins to rub against bone.

16. **In a stress fracture, the upper vertebral body can translate relative to the lower vertebral body. This is called**
    a. a wrapped disk.
    b. an extrusion.
    c. an anterolisthesis.
    d. a protrusion.
    e. a sequestration.

17. **To evaluate the stability of a lateral fusion, MRI performed with _____ may demonstrate fluid in a pseudoarthrosis between components of the bony fusion mass.**
    a. proton density fast spin echo sagittal and axial images with a T1-weighted conventional spin echo sagittal image
    b. T1-weighted fast spin echo sagittal and axial images with a T2-weighted conventional spin echo sagittal image
    c. additional T1-weighted sagittal and axial imaging with 3 mm sections before and after administration of intravenous gadolinium
    d. fat saturated T2-weighted fast spin echo or fast STIR technique
    e. additional T2-weighted sagittal and axial imaging with 3 mm sections before and after administration of intravenous gadolinium

18. **In spondylosis, an ingrowth of fibro-granulation tissue is**
    a. a type I change
    b. characterized as high signal on T1-weighted images and low signal on T2-weighted images
    c. dark on both T1- and T2-weighted images
    d. bright on the T1-weighted images
    e. a type III change

19. **In spondylosis, when fatty changes are elicited in the endplates, it**
    a. is a type I change
    b. is characterized as low signal on T1-weighted images and high signal on T2-weighted images
    c. is a type III change
    d. is dark on both T1- and T2-weighted images
    e. appears bright on the T1-weighted images

20. **In spondylosis, type III changes are**
    a. dark on both T1- and T2-weighted images
    b. characterized by fatty changes that are elicited in the endplates

c. characterized by an ingrowth of fibro-granulation tissue
d. bright on the T1-weighted images
e. characterized as low signal on T1-weighted images and high signal on T2-weighted images