

Kowalczyk: Radiographic Pathology for Technologists, 5th Edition

Test Bank

Chapter 02: Skeletal System

MULTIPLE CHOICE

1. What types of cells are responsible for bone growth and thickening, ossification, and regeneration?
 - A. Osteoblasts
 - B. Osteoclasts
 - C. Trabeculae
 - D. Osteophyte

ANS: A

Osteoblasts are the bone-forming cells that line the medullary canal and are interspersed throughout the periosteum. They are responsible for bone growth and thickening, ossification, and regeneration. Osteoclasts are specialized cells that break down bone to enlarge the medullary canal and allow for bone growth.

REF: 15

2. What anatomic structure is responsible for the production of erythrocytes and leukocytes?
 - A. Osteoblasts
 - B. Osteoclasts
 - C. Red bone marrow
 - D. Yellow bone marrow

ANS: C

Red bone marrow is responsible for the production of bone erythrocytes and leukocytes. Red bone marrow is found, in a normal adult, primarily in the bones of the trunk.

REF: 15

3. What portion of a long bone is considered the primary site of ossification?
 - A. Epiphysis
 - B. Diaphysis
 - C. Metaphysic
 - D. Medullary canal

ANS: B

The shaft of the long bone, the diaphysis, is where the majority of growth occurs.

REF: 16

4. Periosteum encloses all of the bone and joint surfaces and provides a blood supply to underlying bone.
- A. True
 - B. False

ANS: B

Periosteum does not enclose articular surfaces.

REF: 16

5. Diploë is specific to cancellous bone located in what anatomic structure?
- A. Femur
 - B. Humerus
 - C. Sternum
 - D. Skull

ANS: D

Diploë is the term for the two layers of bone found specifically in the cranium.

REF: 15

6. What pathologic condition is a fairly common form of osteosclerotic osteoporosis?
- A. Achondroplasia
 - B. Osteopetrosis
 - C. Osteomalacia
 - D. Albers-Schönberg disease

ANS: D

Albers-Schönberg disease is a benign skeletal anomaly that involves increased bone density in conjunction with fairly normal bone contour.

REF: 21

7. The most common primary site(s) for metastatic bone cancer is(are) the:
- A. breast
 - B. lung
 - C. brain
 - D. A only
 - E. A and B
 - F. A and C
 - G. A, B, and C

ANS: E

Metastatic bone cancers generally do not invade the brain as a primary site. Breast and lung are more common sites.

REF: 49

8. Evidence of periosteal response is a characteristic of what type of bone cancer?

- A. Primary
- B. Secondary

ANS: A

Certain characteristics help distinguish between a primary malignant neoplasm and a secondary one. Periosteal response is much more common with primary malignant tumors.

REF: 49

9. Lesions shorter than 10 cm are characteristic of what type of bone cancer?
- A. Primary
 - B. Secondary

ANS: B

Lesions longer than 10 cm often represent a primary malignant tumor; most metastatic tumors range between 2 and 4 cm in length.

REF: 49

10. A solitary lesion is a characteristic of what type of bone cancer?
- A. Primary
 - B. Secondary

ANS: A

Most primary tumors are solitary, whereas metastatic lesions are usually multiple.

REF: 49

11. Evidence of soft tissue masses are characteristic of what type of bone cancer?
- A. Primary
 - B. Secondary

ANS: A

Soft tissue masses are common in primary tumors and rare in metastases.

REF: 49

12. The bony structure most commonly encountering metastases from primary neoplasms is:
- A. femur
 - B. vertebral column
 - C. skull
 - D. pelvis

ANS: B

Statistically, the spine is the most common site for metastasis to occur, accounting for approximately 40% of all metastatic lesions.

REF: 49

13. The majority of metastases are _____ in nature and often detected by CT.
- A. osteolytic
 - B. osteoblastic
 - C. osteoclastic
 - D. all of the above

ANS: A

Osteolytic metastases account for 75% of all metastatic lesions.

REF: 49

14. The modality of choice for demonstrating vertebral fractures or other bony anomalies is:
- A. radiography
 - B. CT
 - C. MRI
 - D. nuclear medicine

ANS: B

CT is the imaging modality for bony vertebral structures. MRI is preferred for soft tissues, such as disks.

REF: 18

15. Spondylolysis is a result of a cleft or defect in the vertebral:
- A. pedicle
 - B. lamina
 - C. spinous process
 - D. pars interarticularis

ANS: D

Spondylolysis appears as a break or collar in the neck of the “Scotty dog” with oblique lumbar spine positions.

REF: 37

16. The condition that causes a forward slippage of the vertebral column off a vertebra because of spondylolysis is known as:
- A. kyphosis
 - B. lordosis
 - C. spondylolisthesis
 - D. herniated nucleus pulposus (HNP)

ANS: C

Anterospondylolisthesis refers to the anterior slipping of the body of the vertebra, and retrospondylolisthesis refers to the posterior slipping of the body of the vertebra.

Anterospondylolithesis is also known as spondylolisthesis and most commonly occurs as L4-L5/L5-S1.

REF: 36

17. A common radiographic finding with patients suffering from whiplash is:
- A. narrowed disk spaces
 - B. loss of lordosis
 - C. subluxation
 - D. erosion of vertebral body

ANS: B

This radiographic finding is caused by reversal or straightening of the normal spinal curvature.

REF: 36

18. The most common imaging modality to assess lower back pain is:
- A. radiography
 - B. CT
 - C. MRI
 - D. nuclear medicine

ANS: A

Radiography is frequently chosen as it can demonstrate anomalies such as fracture, subluxation, spondylolysis, erosion of vertebral bodies, and can also be used as a general survey.

REF: 37

19. The type of arthritis that is triggered when an immunogenetically susceptible host is exposed to an arthritogenic antigen is:
- A. pyogenic arthritis
 - B. rheumatoid arthritis
 - C. juvenile rheumatoid arthritis
 - D. all of the above

ANS: B

Rheumatoid arthritis (RA) is a chronic autoimmune disease that may fluctuate in severity. It is triggered by exposure of an immunogenetically susceptible host to an arthritogenic antigen and is characterized by chronic inflammation and overgrowth of the synovial tissues, most often in the extremities.

REF: 29

20. Which of the following radiographic projections of the spine will decrease dose to the breasts and thyroid gland?
- A. AP
 - B. PA
 - C. Right lateral
 - D. Left lateral

ANS: B

PA will decrease entrance skin exposure to the breasts and thyroid gland.

REF: 17

21. Up to 80% of all scolioses are:
- A. congenital
 - B. iatrogenic
 - C. traumatic
 - D. idiopathic

ANS: D

The majority of scolioses are idiopathic, as no causative factor can be identified with scoliosis.

REF: 23

22. Which disease is congenital?
- A. Pott's disease
 - B. Osteoporosis
 - C. Paget's disease
 - D. Osteogenesis imperfecta

ANS: D

Osteogenesis imperfecta, or OI, is a congenital disease. Paget's disease and osteoporosis are metabolic diseases, and Pott's disease is an inflammatory disease.

REF: 19

23. Osteogenesis imperfecta tarda is present at birth.
- A. True
 - B. False

ANS: B

OI congenital is present at birth, and OI tarda may not appear for some years after birth

REF: 19

24. The most commonly inherited disorder affecting the skeletal system is:
- A. endochondroma
 - B. osteogenesis imperfecta
 - C. achondroplasia
 - D. syndactyly

ANS: C

Statistically, achondroplasia is the most commonly inherited disorder affecting the skeletal system. Individuals with this gene have about a 50% chance of transmitting it to their children.

REF: 19

25. Which of the following neoplastic diseases has the radiographic appearance of a “soap bubble”?
- A. Giant cell tumor (GCT)
 - B. Osteosarcoma
 - C. Ewing’s sarcoma
 - D. Chondrosarcoma

ANS: A

Giant cell tumors (GCTs) have an osteolytic area surrounded by a thin shell of bone that gives them a classic “soap bubble” appearance.

REF: 44

26. Which of the following neoplasms has the radiographic appearance of a well-circumscribed, small radiolucent area containing a nidus?
- A. Giant cell tumor (GCT)
 - B. Osteosarcoma
 - C. Chondrosarcoma
 - D. Osteoid osteoma

ANS: D

Osteoid osteoma involves erosion of underlying bone tissue and results in a lytic lesion surrounded by dense sclerotic bone, and in the center is the nidus, or dense area.

REF: 44

27. Which imaging modality plays a key role in the primary diagnosis of neoplasms of the skeletal system?
- A. Radiography
 - B. Computed tomography (CT)
 - C. Magnetic resonance (MR)
 - D. Nuclear medicine

ANS: B

CT has the ability to provide images with excellent soft tissue and contrast resolution.

REF: 40

28. An osteoma would most commonly be found on the:
- A. humerus
 - B. femur
 - C. skull
 - D. vertebrae

ANS: C

Osteomas are most commonly found in the skull.

REF: 41

29. Being generally larger than 2 cm in dimension is a characteristic of which neoplasm?
A. Osteoid osteoma
B. Osteoblastoma

ANS: B

Osteoid osteomas are less than 2 cm in dimension, whereas osteoblastomas are larger.

REF: 43

30. This neoplasm frequently involves the spine.
A. Osteoid osteoma
B. Osteoblastoma

ANS: B

Osteoblastomas frequently involve the spine.

REF: 43

31. This neoplasm involves a nidus.
A. Osteoid osteoma
B. Osteoblastoma

ANS: A

Osteoid osteomas arise within the cortical bone and erode the underlying bone tissue, resulting in a lytic lesion called a nidus.

REF: 44

32. Osteogenesis imperfecta requires what type of technical factor change?
A. Increase
B. Decrease
C. No change

ANS: B

Subtractive pathology. See pathology summary chart on page 50.

REF: 50

33. Ankylosing spondylitis requires what type of technical factor change?
A. Increase
B. Decrease
C. No change

ANS: A

Additive pathology. See pathology summary chart on page 50.

REF: 50

34. Osteoarthritis requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: B

Subtractive pathology. See pathology summary chart on page 51.

REF: 51

35. Tenosynovitis requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: C

Does not change the density of the structure. See pathology summary chart on page 51.

REF: 51

36. Osteosarcoma requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: A

Additive pathology. See pathology summary chart on page 51.

REF: 51

37. Osteoid osteoma requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: B

Subtractive pathology. See pathology summary chart on page 51.

REF: 51

38. Osteochondroma requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: A

Additive pathology. See pathology summary chart on page 51.

REF: 51

39. Acromegaly requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: C

Does not change the density of the structure. See pathology summary chart on page 51.

REF: 51

40. Osteopetrosis requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: A

Additive pathology. See pathology summary chart on page 50.

REF: 50

41. Anencephaly requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: C

Does not change the density of the structure. See pathology summary chart on page 50.

REF: 50

42. Simple bone cyst requires what type of technical factor change?
- A. Increase
 - B. Decrease
 - C. No change

ANS: B

Subtractive pathology. See pathology summary chart on page 51.

REF: 51

43. This type of arthritis may be caused by streptococci, staphylococci, or gonococci.
- A. Acute arthritis
 - B. Rheumatoid arthritis
 - C. Both types

ANS: A

Infectious arthritis is caused by a variety of factors including *S. aureus*, streptococci, and *Neisseria gonorrhoeae*.

REF: 29

44. This type of arthritis generally occurs between 30 and 40 years of age.
- A. Acute arthritis
 - B. Rheumatoid arthritis
 - C. Both types

ANS: B

Rheumatoid arthritis generally has onset between ages 30-40 years and is three times more common in women than men.

REF: 30

45. This type of arthritis may include clinical symptoms of pain and swelling of the joint.
- A. Acute arthritis
 - B. Rheumatoid arthritis
 - C. Both types

ANS: C

Joint pain and swelling are both common clinical symptoms of both rheumatoid arthritis and acute arthritis.

REF: 29

46. This type of arthritis may involve joint ankylosis.
- A. Acute arthritis
 - B. Rheumatoid arthritis
 - C. Both types

ANS: C

Joint ankylosis is a common clinical symptom of both rheumatoid arthritis and acute arthritis.

REF: 29

47. This type of arthritis typically begins in peripheral joints.
- A. Acute arthritis
 - B. Rheumatoid arthritis
 - C. Both types

ANS: B

Although any joint may be involved, rheumatoid arthritis typically begins in the peripheral joints, particularly in the small bones of the hands and feet and in the knee.

REF: 30

48. This type of arthritis includes the presence of autoantibody against gamma globulin.

- A. Acute arthritis
- B. Rheumatoid arthritis
- C. Both types

ANS: B

The blood chemistry of individuals with rheumatoid arthritis will identify the presence of an autoantibody against gamma globulin, also known as serologic rheumatoid factor, or RF.

REF: 30

49. This type of arthritis may occur when an organism may spread from a bone infected with osteomyelitis.
- A. Acute arthritis
 - B. Rheumatoid arthritis
 - C. Both types

ANS: A

Infectious agents in infectious arthritis may enter the joint through a break in the skin, via extension from an adjacent infection such as osteomyelitis or an infected wound, or as a result of bacteremia.

REF: 29

50. This type of arthritis may be classified as a degenerative disease.
- A. Acute arthritis
 - B. Rheumatoid arthritis
 - C. Both types

ANS: C

By definition, both rheumatoid arthritis and acute arthritis are classified as a degenerative disease.

REF: 29