CHAPTER 1: OVERVIEW AND PRINCIPLES OF DIAGNOSTIC IMAGING

1. The first recorded diagnostic use of x-rays was in 1896.
   A True  B False

2. Radiographic ——— refers to the degree of blackness of a film.
   A density  B contrast  C opaqueness  D scatter

3. The RIS (——— information system) is used for scheduling examinations, communicating clinical data to the radiologists.
   A radon  B regional  C roentgen  D radiology

4. Barium sulfate suspensions may be administered either by mouth (———) or by rectum (retrograde).
   A antegrade  B axialgrade  C postgrade  D axillarygrade

5. Myelography is performed by inserting a needle between the ——— of lumbar vertebrae and entering the subarachnoid space.
   A transverse processes  B superior articular facets  C spinous processes  D pedicles

6. The half-life of an element is the time necessary for its degradation to ——— of its original activity.
   A one-eighth  B one-half  C one-tenth  D one-sixteenth

7. ——— emission tomography (PET) uses cyclotron- or generator-produced isotopes.
   A Positive  B Peripheral  C Positron  D Percutaneous

8. In MR, tissues high in hydrogen, such as fat or cartilage, have high signal intensity and appear:
   A dark grey  B white  C black  D in a range of colors

9. Ultrasound is an operator-dependent modality, and a high degree of technical skill is required to perform state-of-the-art examinations.
   A True  B False

10. In ———, imaging (x-rays) influenced the management of 1 patient in 12.
    A 1950  B 1940  C 1960  D 1970

11. In 1993, the American ——— of Radiology (ACR) formed the ACR Task Force on Appropriateness Criteria.
    A Cooperative  B Consortium  C College  D Conference

CHAPTER 2: RADIOGRAPHIC CONTRAST AGENTS

12. For MR arthrography, a very dilute mixture of Gd (———) is used because of its intense paramagnetic effect.
    A 2.4%  B 0.4%  C 3%  D 7%

13. Nephrogenic ——— fibrosis (NSF) is a rare and progressive fibrosing syndrome, involving the skin, joints, eyes, and internal organs.
    A spinal  B string  C supportive  D systemic

CHAPTER 3: INTERVENTIONAL RADIOLOGY

14. The vast majority of conventional arteriograms are performed by accessing the common femoral artery with an ——— needle.
    A 25G to 27G  B 18G to 21G  C 21G to 25G  D 27G to 29G

15. Digital ——— angiography (DSA) is typically used to improve contrast resolution.
    A sectional  B short  C subtraction  D stereotactic
16. Acute mesenteric ischemia is characterized by abdominal pain out of proportion to physical findings in combination with bloody diarrhea.
   A True  B False

17. ——— is the most common etiology of stenoses or occlusions leading to claudication.
   A High blood pressure  B An enlarged heart  C Chronic bowel syndrome  D Atherosclerosis

18. An ——— vena cava (IVC) filter may be placed in patients with DVT or PE who have a contraindication for anticoagulation.
   A inguinal  B intravenous  C inferior  D internal

19. A post-embolization syndrome (nausea, vomiting, pain, and ———) often occurs following uterine artery embolizations.
   A marked dehydration  B diffuse rash  C high fever  D low-grade fever

20. All radiographic images should be analyzed for density, motion, and rotation.
   A True  B False

21. The x-ray tube is positioned ——— behind the patient for the standard CXR.
   A 8 feet  B 6 feet  C 4 feet  D 7 feet

22. Failure to observe that a CXR was done with shallow lung volumes could easily lead to a mistaken diagnosis of ——— heart failure (CHF).
   A chest  B compound  C congestive  D coronary

23. Obtaining a two-view chest x-ray before ordering a V/Q study is:
   A never needed  B seldom needed  C always recommended  D usually recommended

24. On a well-penetrated frontal radiograph, the carina (tracheal bifurcation) may be found at the level of the ——— interspace.
   A T2–T3  B T7–T8  C T4–T5  D T9–T10

25. Microscopic communications between the distal portions of the bronchiolar tree and surrounding alveoli are known as the canals of:
   A Lambert  B Morrison  C Ciampa  D Cento

26. The ——— refers to the portion of lung distal to the terminal bronchiole where gas exchange takes place.
   A upper lobe  B bronchiole zones  C inferior lobe  D acinus

27. Cervical transverse processes point down; thoracic transverse processes point up.
   A True  B False

28. Basic pathologic patterns may alter the normal appearance of the lungs. For example, emphysema normally leads to:
   A collapse  B consolidation  C overinflation  D effusion

29. The cervicothoracic sign is a variant of the:
   A fat pad sign  B Mumoli's sign  C Cœur en sabot  D silhouette sign

30. Linear or “———-like” atelectasis, a less severe form of partial collapse, may occur throughout the lungs.
   A star  B triangular  C cup  D plate

31. A ——— may be recognized by its tapered margins at a fissure as well as the fact that it changes shape with positioning.
   A metastatic tumor  B hepatic tumor  C pseudotumor  D lobular tumor
32. A cavitary mass with a wall thickness greater than ——— mm is more likely to be malignant.
A 3 B 7 C 10 D 15

33. ——— is the most useful imaging tool for evaluating patients with pulmonary and mediastinal masses.
A CT B MRI C US D NM

34. The most common neoplasms in the anterior mediastinum are:
A thymoma B lymphoma C (met) testicular cell tumors D (met) ovarian cell tumors

35. One does not need a chest radiograph to make a diagnosis of emphysema.
A True B False

36. Pneumonia may involve any lobe, an entire lung, or be unilateral or bilateral.
A True B False

37. Pneumothorax may result from iatrogenic factors, as in a:
A stab B laceration by fractured rib C lung biopsy D bullet wound

38. The sensitivity of CT for pulmonary embolism is 86% - with a specificity of:
A 75% B 85% C 89% D 96%

39. Thoracoplasty and plombage are procedures that were once performed to eliminate dead space within the chest.
A True B False

40. A pacemaker generator is an oval metal box usually visualized over the:
A lower chest wall B upper chest wall C right lung - middle lobe D right lung - lower lobe

41. Radiation pneumonitis is a form of inflammatory lung disease that is usually found ——— after radiation therapy for lymphoma.
A 1 - 6 months B 1 year C 2 years D 5 - 10 years

42. The evaluation of a patient with suspected TB should begin with a ——— skin test (purified protein derivative [PPD]) and a chest x-ray.
A Messina B Mialto C Morrison D Mantoux

43. Critically ill patients frequently develop a serious pulmonary complication known as ARDS (Adult Respiratory ——— Syndrome).
A Dermatitis B Deficiency C Distress D Decubitus

44. BPD, also known as chronic lung disease of ———, is a complication of prolonged ventilator therapy and RDS.
A teenagers B men over 50 C premature infants D women over 40

45. A popular method used to determine cardiac size is the cardiothoracic:
A delta B ratio C difference D algorithm

46. With SPECT, a ——— camera acquires the data in multiple circular rotations around the patient.
A delta B sigma C alpha D gamma

47. PET studies with F ——— fluoro-2-deoxyglucose are used to assess the viability of myocardial tissue.
A 18 B 11 C 20 D 27
48. Cardiac MR for ischemic heart disease should be obtained with gadolinium enhancement.
A True  B False

49. On the PA view of a CXR, most of the cardiac silhouette is made up almost exclusively of the ——— side of the heart.
A left  B right  C superior  D inferior

50. In the normal lateral view, the anterior border of the cardiac silhouette consists of the:
A right atrium  B left atrium  C left ventricle  D right ventricle

51. The ——— anomaly is a form of congenital heart disease where the right atrium protrudes into the right ventricle.
A Eboli  B Eccheli  C Ebstein  D Epperson

52. Many cardiologists or critical care physicians will insert a ——— catheter into the pulmonary artery to measure pressures.
A Springer-Geier  B Schön  C Swan-Ganz  D Scheffler

53. Patients with screening-detected breast cancer have a survival rate at least ——— greater than symptomatic patients.
A 33%  B 20%  C 12%  D 48%

54. The term ——— is a catchall category of changes that include cysts, benign fibrous tissue, and dilated ducts in various configurations.
A schistosomiasis disease  B cryptococcosis disease  C anisakiasis disease  D fibrocystic disease

55. ——— percent of breast cancer begins in the ductal epithelium.
A Thirty  B Forty  C Ninety  D Eighty

56. A supine KUB is also known as a “——— plate”.
A flat  B horizontal  C even  D flush

57. Free air will rise beneath the diaphragm in the upright position and above the ——— edge on the left lateral decubitus radiograph.
A duodenum  B pancreas  C spleen  D liver

58. Mild bowel stasis may be defined as multiple slightly dilated loops with ——— or more air-fluid levels.
A three  B two  C five  D six

59. Gas within the rectum does not rule out bowel obstruction.
A True  B False

60. Air outlining both sides of the bowel wall is known as the “double wall sign” or “——— sign.”.
A Rehm  B Rigler  C Rosenberg  D Runge

61. Mucosal thickening is generally present when the valvulae conniventes of the small intestine or the colonic haustra are thicker than:
A 5 mm  B 3 mm  C 7 mm  D 15 mm

62. The classic appearance of ascites has been described as a diffuse, “———” density of the abdomen.
A pillowy  B triangulated  C cuboid  D ground glass

63. Regarding the displacement of surgical clips, scarring and fibrosis result in the clips:
A moving together  B moving further apart  C sinking in surrounding tissues  D extruding forward
64. ——— are simple bone spurs that extend horizontally initially before pointing vertically.
A Osteoblasts  B Osteophytes  C Osteomastii  D Osteostones

CHAPTER 8: GASTROINTESTINAL IMAGING

65. The speed of modern multidetector CT scanners now allows a complete examination of the abdomen to be performed in:
A a few seconds  B a few minutes  C under 10 minutes  D under an one half hour

66. In general, a fluoro examination is best for eval. of the esophagus, stomach, and duodenum with CT as an adjunct for staging purposes.
A True  B False

67. Overnight fasting or fasting for at least ——— is essential for evaluation of the hepatobiliary system under US.
A 2 hours  B 3 hours  C 4 hours  D 1 hour

68. A technetium ——— scan, also known as a Meckel scan, is used primarily in the pediatric setting for diagnosis of a Meckel diverticulum.
A 89m pertechnetate  B 79m pertechnetate  C 99m pertechnetate  D 49m pertechnetate

69. Dilation does not always have a distal obstruction as in toxic megacolon seen in patients with ulcerative colitis or toxoplasmosis.
A True  B False

70. Crohn disease classically involves ——— of the bowel wall.
A the submucosa  B all layers  C the muscularis propria  D the adventia layer

71. The ——— was one of the most elusive organs to image in the past.
A small intestine  B large intestine  C stomach  D pancreas

72. Bilious vomiting in the newborn can be a surgical emergency and results from obstruction distal to the ampulla of:
A Vaci  B Villa  C Vater  D Vaporeon

73. ——— disease is the result of congenital absence of the intramural ganglion cells in the distal bowel.
A Hilpert  B Hirschsprung  C Harcombe  D Holtby

CHAPTER 9: URINARY TRACT IMAGING

74. Previously, intravenous ——— (IVU) was the primary imaging modality of the urinary tract.
A urethrography  B uretograms  C urography  D ureterography

75. The ——— urogram has almost entirely replaced the traditional IVU for most renal and ureteral applications.
A CT  B MRI  C US  D NM

76. The ——— cystourethrogram (VCUG) is commonly used to evaluate for vesicoureteral reflux, especially in children.
A venous  B voiding  C vascular  D visceral

77. ——— is used to assess renal parenchymal blood flow.
A CT  B IVP  C Doppler US  D MRI

78. ——— is the preferred modality in cases of suspected renal trauma.
A CT  B IVP  C Doppler US  D MRI

79. ——— of the urinary tract can be used to evaluate renal masses, the effects of pelvic neoplasms on the bladder, and renal transplants.
A CT  B IVP  C Doppler US  D MRI
80. --- typically employs compounds of technetium 99m to evaluate the urinary tract in both adults and children.
   A CT urography       B Functional MRI       C Renal scintigraphy       D IVP

81. --- renal vein(s) drains each kidney.
   A A single       B 2       C 4       D 7-10

82. --- urethral valves are considered the most common cause of urethral obstruction in male children.
   A Lateral       B Anterior       C Inferior       D Posterior

83. --- is a term used to denote the abnormal position of one kidney with regard to the other.
   A Renal ectopia       B Adenovirus nephritis       C Cryoglobulinemia       D MELAS Syndrome

84. While many cases of acute pyelonephritis are diagnosed clinically, the preferred imaging modality is:
   A contrast-enhanced CT       B IVP       C Doppler US       D MRI

85. Inflammation of the urinary bladder is referred to as:
   A dysuria       B extrophy-epispadias complex       C paraureteral diverticula       D cystitis

86. In autosomal dominant polycystic kidney disease, renal cysts may result in nephromegaly due to near-complete replacement of the:
   A cortical vasculature       B renal cortex       C renal column       D renal nerve

87. The typical Wilms tumor manifests as a very small, heterogeneously enhancing mass on CT and MRI.
   A True       B False

88. --- is a malignant tumor of primitive neural crest cells.
   A Neuroblastoma       B Chordoma       C Craniopharyngioma       D Medulloblastoma

89. Neuroblastoma accounts for approximately --- of childhood tumors.
   A 20%       B 10%       C 40%       D 25%

90. Renal artery stenosis is an uncommon cause of hypertension, affecting approximately --- of hypertensive patients.
   A 1% to 4%       B 10% to 14%       C 20% to 24%       D 35%

91. VUR (--- reflux) is most frequently observed during voiding and may be demonstrated by either the VCUG or radionuclide cystogram.
   A voiding       B vesicoureteral       C visceral       D vesicant

**CHAPTER 10: OBSTETRIC AND GYNECOLOGIC IMAGING**

92. --- is the primary tool for investigation of the gravid uterus.
   A Contrast-enhanced CT       B IVP       C Diagnostic ultrasound       D MRI

93. --- is the premature separation of the placenta from the wall of the uterus.
   A Fetal Demise       B Placental Abruption       C Preeclampsia       D Abruptio placenta

94. Fibroids are extremely common and occur in up to --- of women over the age of 35 years.
   A 40%       B 60%       C 10%       D 80%

**CHAPTER 11: MUSCULOSKELETAL IMAGING**

95. MRI has eliminated most conventional arthrography.
   A True       B False
96. Angiography is used seldom to evaluate patients with suspected bone tumors because ——— has largely superseded it for this purpose.
A Contrast-enhanced CT  B NM  C US  D MRI

97. A 10-year-old child with a permeative lesion of the shaft of a long bone is likely to have:
A Ellerby tumor  B Eggleston tumor  C Emsden tumor  D Ewing tumor

98. Infantile cortical hyperostosis (——— disease) does not occur in patients over age 1 year.
A Caffey  B Cochrane  C Calveley  D Collett

99. A laminated periosteal reaction indicates a(n) ——— injury to bone.
A oblique  B comminuted  C repetitive  D compound

100. ——— is a term used to define a decrease in mineralization of bones as demonstrated on radiographs.
A Achondroplasia  B Osteopenia  C Osteomalacia  D Osteopetrosis

101. ——— is a term that defines a specific pathologic state in which there is diminution of bone substance.
A Achondroplasia  B Osteopenia  C Osteomalacia  D Osteoporosis

102. A curious mixed pattern of osteopenia and fluffy sclerosis in the skull is known as “———” skull.
A salt and pepper  B black dots  C thousand lakes  D chocolate chip

103. Rheumatoid arthritis affects the cervical vertebral column in at least ——— of patients with the disease.
A 50%  B 30%  C 10%  D 15%

104. A particularly aggressive form of osteoarthritis that affects middle-aged and elderly women is known as ——— osteoarthritis.
A crumbling  B frictional  C erosive  D degrading

105. Gout arises from abnormal ——— metabolism.
A calcium  B urate  C cocarboxylase  D glucagon

106. Injuries about the physis are described according to the Salter-Harris——— (S-H-O) classification.
A Oatway  B Owens  C Okten  D Ogden

107. The Salter-type ——— injury is a vertical fracture of the epiphysis with epiphysiolsis of the fracture fragment.
A 1  B 2  C 3  D 4

108. ——— capital femoral epiphysis (SCFE) is an S-H-O type 1 injury that occurs most frequently in boys in their early teens.
A Salter  B Subluxed  C Serrated  D Slipped

109. The torus fracture of the of a bone shaft resembles:
A the base of a Greek column  B a pyramid of sorts  C a twisting  D a crushed can

110. Stress fractures may be the result of normal muscle activity on bone with compromised mineral content (——— fracture).
A insufficiency  B tin can  C pillow  D marshmallow

CHAPTER 12: CRANIAL IMAGING

111. Most commonly, CTA is employed for the acute workup of subarachnoid ——— (SAH) for the detection of aneurysm.
A hematopoiesis  B helix  C hematoma  D hemorrhage
112. Nuclear imaging of the brain was the only noninvasive cranial procedure before the development of CT and MRI.
A True   B False

113. A blow to the malar region (from a fist) is most likely to produce a zygomaticomaxillary ——— (ZMC) fracture.
A circular   B complex   C compound   D comminuted

114. Ischemia accounts for approximately ——— of all strokes.
A 87%   B 65%   C 52%   D 44%

115. Multiple sclerosis (MS) is a demyelinating disease that predominantly affects:
A older females   B older males   C young females   D young males

CHAPTER 13: SPINE IMAGING

116. The distances between spinous processes and between the laminae are uniform and should not vary by more than:
A 4 mm   B 2 mm   C 5 mm   D 1 mm

117. ——— is used intraoperatively to evaluate spinal cord lesions.
A Contrast-enhanced CT   B Fluoroscopy   C Diagnostic ultrasound   D MRI

118. The vertebral column is a collection of ——— extending from the base of the skull through the entire length of the neck and trunk.
A 33 sesamoid bones   B 33 round bones   C 33 flat bones   D 33 irregular bones

119. The area between the facets is called the pars interarticularis, or simply the:
A foramina   B pedicle   C IA   D pars

120. Developmental abnormalities are not uncommon, occurring in an estimated ——— live births.
A 1 in 4,000   B 1 in 3,000   C 1 in 1,000   D 1 in 2,000
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