CHAPTER 1 – BASIC PHYSICS OF ULTRASOUND

1. What is the frequency used to examine the abdominal area?
   a. 1-2 MHz
   b. 3-5 MHz
   c. 7-10 MHz
   d. 15-20 MHz

2. Velocity of sound depends on what?
   a. Resolution and density of the medium
   b. Compressibility and resolution of the medium
   c. Density and compressibility of the medium
   d. Density and wavelength of the medium

3. What is the black zone behind the bone called?
   a. Acoustic impedance
   b. Refraction
   c. Acoustic shadow
   d. Reflection

4. What is the usual term for the back-scattered parts of the emitted ultrasound that reaches the transducer?
   a. Resolution
   b. Reflection
   c. Wavelength
   d. Echo

5. Doppler techniques are used to analyze what?
   a. Organs
   b. Bone
   c. Blood flow
   d. Tissue

6. The phased-array technique is used mainly for what type of imaging?
   a. Abdominal
   b. Vascular
   c. Echocardiography
   d. Fetal

7. What is used as a contrast agent to obtain stronger signals from blood flow?
   a. Iodine
   b. Microbubbles
   c. Isotopes
   d. gadolinium

8. Ultrasound that produces a rise of less than _________ is deemed without risk.
   a. 0.5 °C
   b. 1.0 °C
   c. 1.5 °C
   d. 2.0 °C

CHAPTER 2 – EXAMINATION TECHNIQUES

9. Transcutaneous ultrasound is used to evaluate which of the following?
   a. Neck and chest
   b. Abdomen and extremities
   c. Brain
   d. A & B
10. Which of the following should not be used to ensure good contact between the transducer and the skin?
   a. Disinfectant
   b. Water
   c. Water-soluble gel
   d. Oil

11. The standard mechanical index should be set less than what for adults?
   a. < 0.5
   b. < 0.6
   c. < 0.7
   d. < 0.8

12. Each organ, structure or tumor should be examined in at least two planes.
   a. True
   b. False

13. What is the term for an echo pattern consisting of only a few weak echoes?
   a. Echo free
   b. Echo rich
   c. Echo average
   d. Echo poor

14. An angle of __________ must be used for the ultrasound beam to reach the vessel of interest if measurements are to be made.
   a. < 20 °
   b. < 40 °
   c. < 60 °
   d. < 80 °

15. The gain of the Doppler signals should be __________ so that single color pixels are seen in the tissue.
   a. Low
   b. High
   c. Standard
   d. Adjusted

CHAPTER 3 – INTERVENTIONAL ULTRASOUND

16. Before any ultrasound-guided procedure, what coagulation parameter checks are mandatory?
   a. Prothrombin activity, 50% or greater
   b. International normalized ratio less the 1.5
   c. Platelet count 50,000 per ml
   d. All the above

17. Performing a double biopsy of the liver for metastasis raises the diagnostic sensitivity to ______percent and the specificity to ______percent
   a. 67.5, 50
   b. 77.5, 60
   c. 88.7, 70
   d. 97.5, 100

18. Spleen biopsies are performed ________ because of the risk of post-procedural bleeding.
   a. Carefully
   b. Infrequently
   c. Routinely
   d. Expertly

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19. How many methods are there to insert a catheter into an abscess?
   a. 1
   b. 2
   c. 3
   d. 4

20. What are the most frequent liver malignancies where surgical resection is the only prospect for a cure?
   a. Hepatocellular carcinoma (HCC)
   b. Colorectal cancer
   c. Breast cancer
   d. A&B

21. What is the 5-year survival rate for percutaneous ethanol injection or radiofrequency ablation for liver metastasis?
   a. 5-10%
   b. 15-20%
   c. 25-30%
   d. 40-50%

22. What is the estimated major complication rate after a diagnostic procedure?
   a. 0.02%
   b. 0.03%
   c. 0.05%
   d. 0.08%

23. In two large studies therapeutic radio frequency procedures resulted in a mortality rate ranging from _______ to ________.
   a. 0.07% to 0.1%
   b. 0.08% to 0.15%
   c. 0.09% to 0.3%
   d. 0.10% to 0.35%

CHAPTER 4 – NECK

24. How many follicles are in a thyroid lobule?
   a. 10
   b. 15
   c. 20
   d. 25

25. What is the peak flow velocity in thyroid arteries?
   a. Less than 10 cm/s
   b. Less than 15 cm/s
   c. Less than 20 cm/s
   d. Less than 25 cm/s

26. The lymph pattern becomes increasingly echo-rich in ________ due to fatty degeneration.
   a. Children
   b. Young adults
   c. Adults
   d. Older adults

27. An **echo-rich** pattern is a common sonographic finding in autoimmune disorders.
   a. True
   b. False
28. Hyperthyroidism results when the volume of autonomic tissue is greater than _______.
   a. 1-3 ml  
   b. 2-4 ml  
   c. 5-10 ml  
   d. 6-11 ml  

29. Papillary carcinoma accounts for what percent of thyroid carcinomas?
   a. 50%  
   b. 60%  
   c. 70%  
   d. 80%  

30. Examination of the ____________ is the main objective of follow-up checks after thyroid surgery.
   a. Surgical site  
   b. Lymph nodes  
   c. Cancer  
   d. Gland  

31. Small thyroids, less than _______ in adults are consequences of inflammatory disease or therapy.
   a. 3 ml  
   b. 5 ml  
   c. 10 ml  
   d. 12 ml  

32. Which of the following are some of the criteria for malignant focal lesions of the thyroid?
   a. Micro calcifications and no halo  
   b. Greater sagittal diameter  
   c. Size < 3 cm  
   d. A & B  

CHAPTER 5 – CHEST  

33. Reactive and inflammatory lymph nodes are seldom larger than what size?
   a. 5 mm  
   b. 10 mm  
   c. 15 mm  
   d. 20 mm  

34. How often are rib and sternum fractures diagnosed by ultrasound than by chest x-ray?
   a. Two times  
   b. Three times  
   c. Four times  
   d. Five times  

35. Which of the following is not a direct sign of rib and sternum fractures?
   a. Gap  
   b. Step  
   c. Pleural effusion  
   d. Dislocation  

36. What is the thickness of a normal pleura?
   a. 0.1 - 0.2 mm  
   b. 0.1 - 0.3 mm  
   c. 0.2 - 0.3 mm  
   d. 0.2 - 0.4 mm
37. The extent of a lung collapse and the breadth of a major pneumothorax can be seen by sonography.
   a. True
   b. False

38. What is the overall sensitivity of chest sonography in pulmonary embolism?
   a. 50%
   b. 65%
   c. 80%
   d. 95%

39. Which of the following are some of the features of pulmonary carcinomas?
   a. Hypoechoic, inhomogeneous
   b. Infiltration of the chest wall, irregular vascularization
   c. Pulmonary edema
   d. A & B

40. In traumatic serial rib fractures, what is seen better in sonography than in radiography?
   a. Pulmonary effusion
   b. Pulmonary obstruction
   c. Pulmonary edema
   d. Pulmonary contusions

CHAPTER 6 – ABDOMINAL SAFETY AND RETROPEROTIUM

41. The lower part of the abdominal aorta ranges in diameter from _______ to _______.
   a. 5 mm, 8 mm
   b. 10 mm, 15 mm
   c. 12 mm, 18 mm
   d. 15 mm, 20 mm

42. Abscesses are associated with which of the following?
   a. Trauma
   b. Laparotomy
   c. Enterocutaneous fistula
   d. All the above

43. The presence of what in the abdominal cavity is a common symptom of many types of disorders?
   a. Air
   b. Ascites
   c. Blood
   d. A & B

44. Peritonitis may arise from which of the following?
   a. Infection of an abdominal organ
   b. Bowel perforation
   c. Blood loss
   d. A & B

45. Peritoneal tuberculosis is a common extrapulmonary manifestation seen in advanced stages of what infection?
   a. Herpes
   b. HIV
   c. Fungal
   d. Staph aureus
46. Aneurysms are a significant complication with a transverse diameter of greater than what?
   a. 1.5 cm
   b. 2.0 cm
   c. 3.0 cm
   d. 3.5 cm

47. The distance between an abdominal aneurysm and the ___________ is particularly important.
   a. Vena cava
   b. Superior mesenteric artery
   c. Inferior mesenteric artery
   d. Renal arteries

48. Dissecting aneurysms cause only a sight dilatation of the aorta.
   a. True
   b. False

CHAPTER 7 – LIVER

49. Hepatomegaly is present when the liver exceeds what measurement?
   a. 10 cm
   b. 15 cm
   c. 20 cm
   d. 25 cm

50. Hepatitis is the general term for inflammatory and infectious disease of the liver.
   a. True
   b. False

51. Which of the following are specific sonographic findings of cirrhosis?
   a. Course liver pattern and increased attenuation
   b. Diffuse steatosis
   c. Hepatosplenomegaly
   d. All the above

52. How is hepatic candidiasis transmitted?
   a. Silva
   b. Airborne
   c. Bloodstream
   d. Contact

53. Which of the following are sonographic features of diffuse fatty liver disorder?
   a. Bright liver and hepatomegaly
   b. Decreased portal vein visualization
   c. Poor penetration of the posterior liver
   d. All the above

54. What is the most common benign tumor of the liver?
   a. Focal nodular hyperplasia
   b. Hepatic adenoma
   c. Hemangioma
   d. Biliary cystadenoma

55. What percentage of patients with hepatocellular carcinoma (HCC) have cirrhosis?
   a. 10%
   b. 30%
   c. 60%
   d. 80%
56. Metastatic liver disease is most commonly associated with what primary site?
   a. Lung
   b. Breast
   c. Colon
   d. Brain

CHAPTER 8 – GALLBLADDER AND BILE DUCTS

57. The intrahepatic ducts are considered normal if their diameter is ________ or less and not more than ______ of the diameter of the adjacent portal vein.
   a. 1 mm, 20%
   b. 2 mm, 30%
   c. 2 mm, 40%
   d. 3 mm, 50%

58. What is the internal diameter of the common hepatic duct?
   a. < 2 mm
   b. < 3 mm
   c. < 4 mm
   d. < 5 mm

59. What percentage of patients with acute cholecystitis have gangrenous changes develop?
   a. 5-8%
   b. 10-14%
   c. 15-19%
   d. 20-30%

60. What is the mortality rate associated with gallbladder perforation?
   a. 5%
   b. 10%
   c. 15%
   d. 20%

61. Multiple gallbladder polyps less than ______ are usually benign.
   a. 10 mm
   b. 15 mm
   c. 20 mm
   d. 25 mm

62. How many times more likely is a woman to have gallbladder carcinoma than a man?
   a. Two times
   b. Three times
   c. Four times
   d. Five times

63. The extrahepatic duct is considered to be dilated when the common hepatic duct is more than _____ in diameter.
   a. 2 mm
   b. 4 mm
   c. 6 mm
   d. 8 mm

64. Which of the following is not a symptom of bacterial cholangitis?
   a. Chills
   b. Fever
   c. Right upper quadrant pain
   d. Jaundice
CHAPTER 9 – PANCREAS

65. What is the normal internal diameter of the pancreatic duct?
   a. 1 – 1.5 mm
   b. 2 – 2.5 mm
   c. 3 – 3.5 mm
   d. 4 – 4.5 mm

66. With ageing and obesity, in what percent of cases is the pancreas as echogenic as the adjacent retroperitoneal fat?
   a. 30%
   b. 35%
   c. 40%
   d. 45%

67. What is considered the normal size of the head of the pancreas?
   a. 2.0 cm
   b. 2.5 cm
   c. 3.0 cm
   d. 3.5 cm

68. Alcohol abuse is not a cause of acute pancreatitis.
   a. True
   b. False

69. Pseudocysts account for what percentage of acute pancreatitis?
   a. 5 – 10%
   b. 10 – 20%
   c. 25 – 30%
   d. 35 – 40%

70. Pancreatic carcinoma is the _______ leading cause of death among both males and females in western countries.
   a. Third
   b. Fourth
   c. Fifth
   d. Sixth

71. Microcystic cystadenoma is always benign and frequently found in older women.
   a. True – page 203, paragraph 4
   b. False

72. Mucinous cystic neoplasms have __________ potential.
   a. Infection
   b. Malignant
   c. Necrotic
   d. Obstructive

CHAPTER 10 – SPLEEN

73. How long should a patient fast before an ultrasound of the spleen?
   a. 6 hours
   b. 8 hours
   c. 10 hours
   d. 12 hours
74. Accessory spleens occur in what percent of the population?
   a. 3%
   b. 5%
   c. 8%
   d. 10%
75. Which of the following may be mistaken for a splenic lesion?
   a. Kidney lesion, tail of the pancreas
   b. Adrenal tumors, stomach
   c. Small bowel
   d. A & B
76. Splenomegaly is considered when the length of the spleen measures longer than what length from pole to pole?
   a. 6 cm
   b. 8 cm
   c. 10 cm
   d. 12 cm
77. Splenomegaly may be due to which of the following?
   a. Sickle-cell disease
   b. Neoplasm
   c. Infection
   d. All the above
78. What is the most common neoplasm involving the spleen?
   a. Hemangioma
   b. Lymphoma
   c. Hamartoma
   d. Pseudotumor
79. Portal hypertension strongly correlates with a portal vein larger than what size?
   a. 8 mm
   b. 9 mm
   c. 13 mm
   d. 15 mm

CHAPTER 11 – GASTROINTESTENIAL TRACT

80. The pylorus region of the stomach wall can measure up to what thickness?
   a. 4 mm
   b. 6 mm
   c. 8 mm
   d. 10 mm
81. What is the thickness of the duodenum?
   a. < 1 mm
   b. < 2 mm
   c. < 3 mm
   d. < 4 mm
82. Absence of the esophageal-gastric junction and a digestive track diameter great than ______ at the diaphragm is considered a hiatus hernia.
   a. 16 mm
   b. 18 mm
   c. 20 mm
   d. 22 mm
83. What is the antrum cross-sectional area for patients with non-ulcer dyspepsia?
   a. > 3.5 cm
   b. > 4.0 cm
   c. > 4.5 cm
   d. > 5.0 cm

84. Gastric ulcers are usually situated on the small curvature of the distal part of the stomach.
   a. True
   b. False

85. Large vessels in the base of a duodenal ulcer indicates a high risk of what?
   a. Cancer
   b. Ulcer
   c. Perforation
   d. Bleeding

86. Diffuse growing carcinomas cause thickening of the entire gastric wall by __________.
   a. 10 – 15 mm
   b. 20 – 25 mm
   c. 30 – 35 mm
   d. 40 – 45 mm

87. The 14-16 loops of small bowel are situated in what part of the abdomen?
   a. Upper
   b. Middle
   c. Lower
   d. Lateral

88. Ulcerative colitis is limited to what area?
   a. Small bowel
   b. Stomach
   c. Colon
   d. Esophagus

89. Acute appendicitis has a blind end and a diameter greater than what?
   a. 6 mm
   b. 8 mm
   c. 10 mm
   d. 12 mm

CHAPTER 12 – ADRENAL GLANDS

90. The adrenal gland in neonates may be ______ the size of the kidneys.
   a. One eighth
   b. One fourth
   c. One third
   d. One half

91. The left adrenal is above and medial to the left kidney and is usually easily seen.
   a. True
   b. False
CHAPTER 13 – KIDNEYS AND URETERS

92. What is the length of a normal adult kidney?
   a. 3 – 5 cm
   b. 6 – 8 cm
   c. 9 – 12 cm
   d. 14 – 17 cm

93. What percentage of kidneys have an accessory renal artery supplying the lower lobe?
   a. 5%
   b. 8%
   c. 10%
   d. 15%

94. What percent of renal cysts are due to benign cystic disease?
   a. 20%
   b. 40%
   c. 60%
   d. 70%

95. What criteria is consistent with autosomal dominant polycystic kidney disease for 30 – 59-year-old?
   a. Two or more renal cysts
   b. Two or more cysts in each kidney
   c. Three or more cysts in each kidney
   d. Four or more cysts in each kidney

96. What percent of patients with multilocular cystic tumors are boys under the age of two?
   a. 60%
   b. 75%
   c. 80%
   d. 90%

97. What is the most common type of malignant renal tumor?
   a. Sarcoma
   b. Wilms tumor
   c. Lymphoma
   d. Renal cell carcinoma

98. Sonography is accurate for detecting renal calculi larger than what size?
   a. 3 mm
   b. 5 mm
   c. 7 mm
   d. 8 mm

99. Small end-stage kidneys measuring less than _______ will not recover any significant function.
   a. 5 cm
   b. 7 cm
   c. 8 cm
   d. 9 cm

100. What is the diameter of ureters?
    a. 1 – 3 mm
    b. 4 – 6 mm
    c. 7 – 9 mm
    d. 10 – 12 mm
101. In what percentage of girls does a ureterocele occur as a duplex ureter draining the upper pole of the kidney?
   a. 50%
   b. 70%
   c. 75%
   d. 90%

102. What percentage of retroperitoneal fibrosis are idiopathic?
   a. 52%
   b. 55%
   c. 68%
   d. 72%

CHAPTER 14 – URINARY BLADDER, URETHRA, PROSTATE AND SEMINAL VESSELS

103. How much fluid does a normal bladder hold when full?
   a. 100 ml
   b. 200 ml
   c. 400 ml
   d. 500 ml

104. What is the most common reason for an ultrasound of the bladder?
   a. Bladder cancer
   b. Bladder tumors
   c. Bladder emptying
   d. Bladder pain

105. Ultrasound is a valuable tool to image the urethra.
   a. True
   b. False

CHAPTER 15 – SCROTUM

106. What percentage of palpable intratesticular masses are malignant?
   a. 60%
   b. 70%
   c. 90%
   d. 95%

107. How are the majority of epididymo – orchitis managed?
   a. Surgery
   b. Pain relief
   c. Antibiotics
   d. No intervention

108. What percent of men have a large straight artery and vein run between the periphery of the testes and the hilum?
   a. 3%
   b. 6%
   c. 10%
   d. 12%
109. What is the length of a normal testes?
   a. 1 – 3 cm  
   b. 2 – 4 cm  
   c. 3 – 5 cm  
   d. 6 – 8 cm

110. With testicular torsion how long before the testes can infarct?
   a. 1 – 3 hours  
   b. 5 – 8 hours  
   c. 6 – 12 hours  
   d. 6 – 24 hours

111. The term “incomplete torsion” describes a twist of the spermatic artery of __________ or less.
   a. 60°  
   b. 90°  
   c. 180°  
   d. 360°

112. Seminomas and teratomas are rare above what age?
   a. 40 years  
   b. 50 years  
   c. 60 years  
   d. 70 years

113. Teratomas **never** vary in appearance.
   a. True  
   b. False

114. What is the most common testicular tumor in older men?
   a. Lymphoma  
   b. Stomal tumor  
   c. Epidermoid cysts  
   d. Sarcoidosis

115. The testes are a sanctuary site for what disease?
   a. Lymphoma  
   b. HIV  
   c. Leukemia  
   d. Malaria

116. Testicular cysts can sometime grow to what size?
   a. > 2 cm  
   b. > 4 cm  
   c. > 5 cm  
   d. > 8 cm

117. What does bilateral ectasia in younger men suggest?
   a. Malignancy  
   b. Infertility  
   c. Leukemia  
   d. Lymphoma

118. Testicular epidermoid cysts comprise what percent of testicular tumors?
   a. 1%  
   b. 2%  
   c. 3%  
   d. 4%
119. What can cause an intratesticular hematoma?
   a. Tumors
   b. Trauma
   c. HIV
   d. Lymphoma

CHAPTER 16 – SPECIAL ASPECTS OF ABDOMINAL ULTRASOUND

120. Which of the following are possible causes of an acute abdomen?
   a. Inflammatory disease
   b. Bowel obstruction
   c. Perforation
   d. All the above