

超音波測驗

Ultrasonography

2019 年 8 月 25 日 星期日

1. 除題意不清楚或是圖片有問題，禁止詢問與試題有關的問題。
2. 應答時禁止使用任何文件。
3. 請在電腦答案卡上圈選作答

項目	填寫內容
姓名	您的中文與英文姓名
試題名稱	US Test
項目	不用填寫
科目	不用填寫
受試者識別代碼	您的准考證號碼 <u>25XXX</u> 將您選定之數字的圓圈塗滿。
科目代碼	不用填寫
地點代碼	不用填寫
作答方式	本測驗共有 90 題問題。請使用 1 到 90 作答欄位。 請將測驗卷 Q1 的答案填入答案卷的答案選擇 1。Q2 = 答案選擇 2，Q3 = 答案選擇 3...Q90 = 答案選擇 90。

- Q1. Which of the following is the correct description about the frequencies of ultrasonic waves?
1. >2KHz
 2. >10KHz
 3. >20KHz
 4. >100KHz
 5. >200KHz
- Q2. Which of the following is the wrong description about an advantage of ultrasonography ?
1. There is no radiation exposure, which is harmless to the human body.
 2. Cost is low compared with CT and MRI. And there is in portability
 3. It is possible to observe in real-time
 4. It is possible to blood flow measured by Doppler method
 5. It is possible to observe any part of the whole body
- Q3. Which of the following is the wrong description about an disadvantage of ultrasonography?
1. Air
 2. Bone
 3. Blind spot
 4. Ultra high-speed blood flow measurement
 5. Examiner ability
- Q4. Which of the following is correct of characteristic ultrasound?
1. The more wavelength is longer, the more attenuation gets large
 2. The speed of sound is different with medium and temperature
 3. Frequency is product for sound speed and wavelength
 4. Acoustic impedance is inverse proportion to the sound speed of the medium
 5. It attenuates at the interface where the difference in acoustic impedance is large
- Q5. Which of the following is correct of transmission of ultrasonic?
1. Ultrasonic beam within a living body is transverse wave.
 2. Ultrasonic beam attenuate markedly in the medium is large acoustic velocity
 3. The cause of ultrasonic beam attenuation within a living body is sound refraction.
 4. Then sound pulse width become narrow, frequency band width becomes wide.
 5. On same frequency, wavelength become long in the medium is large acoustic velocity
- Q6. The ultrasonic device is based on the assumption that sound velocity is constant. Nearest speed, Choose from the following?
1. 1230m/s
 2. 1330m/s
 3. 1530m/s
 4. 1630m/s
 5. 1730m/s
- Q7. Which of the following is the correct value about frequency of the display of the waveform?

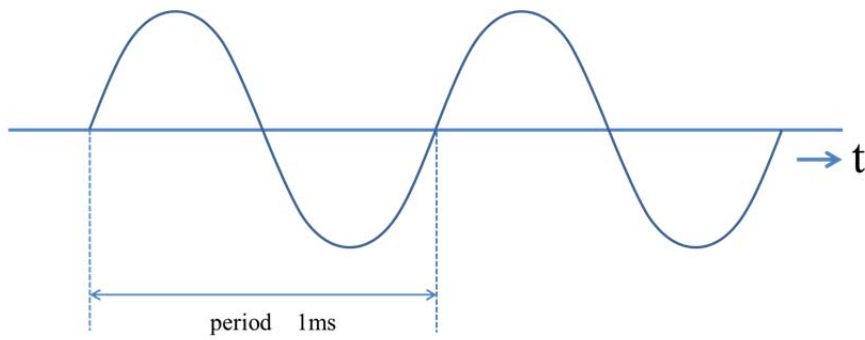


Fig.1.

1. 10Hz
2. 100Hz
3. 1,000Hz
4. 10,000Hz
5. 100KHz

Q8. Which of the following is the correct value about the pulse repetition frequency of the display of the waveform?

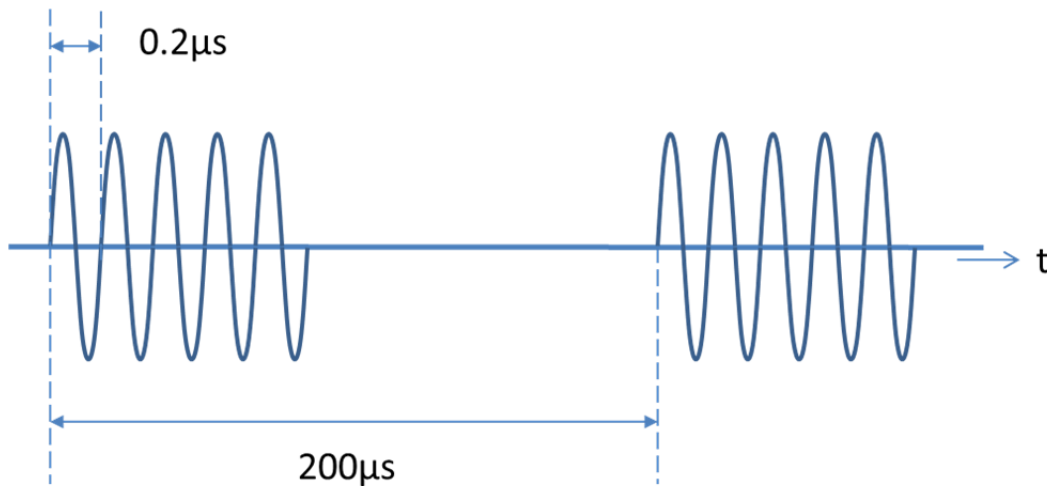


Fig.2

1. 1KHz
2. 5KHz
3. 10KHz
4. 50KHz
5. 5MHz

Q9. The wavelength of the acoustic wave propagating in a medium of sound velocity 1500 m / s was 0.5 mm. Which of the following is the correct value as the frequency of the sound waves?

1. 0.15MHz
2. 0.3MHz
3. 1.5MHz
4. 3MHz
5. 15MHz

Q10. Which of the following is the wrong value at the speed of sound that propagates in the body tissue?

1. Bone 1,480m / s
2. Fat 1,450m / s
3. Kidney 1,560m / s

4. Blood 1,570m / s
5. Water 1,480m / s

Q11. Which of the following is the correct value in the magnitude relation of the speed of sound in the body?

1. Bone> Muscle> Fat
2. Bone> Fat> Muscle
3. Fat> Bone> Muscle
4. Muscle> Fat> Bone
5. Muscle> Bone> Fat

Q12. What is the average diameter of common bile duct among infant patients?

1. 2mm
2. 4mm
3. 5mm
4. 6mm
5. 7mm

Q13. Which of the following statements is **not** true regarding the propagation of ultrasound?

1. Acoustic impedance is the product of density and sound velocity
2. Ultrasonic reflection occurs at the boundaries of biological tissue with different acoustic impedances
3. In vivo, the speed of sound of bones and muscles is similar
4. The attenuation of ultrasound in living tissue is greater at higher frequencies
5. Distance resolution improves as frequency increases

Q14. Which of the following is the correct distance resolution of 5MHz in the display of the waveform?

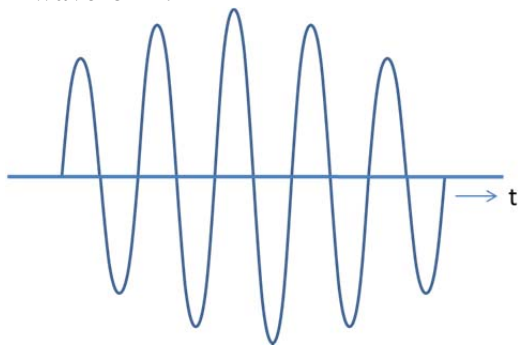


Fig.3

1. About 0.015mm
2. About 0.075mm
3. About 0.15mm
4. About 0.75mm
5. About 1.5mm

Q15. A pulse repetition frequency of the device was set to 3KHz. Which of the following is the correct depth of field? However, the speed of sound in the body is defined as the 1500m / s.

1. 5cm
2. 10cm
3. 20cm
4. 25cm
5. 50cm

Q16. The flow of blood is flowing in the 30cm / s. The center frequency is set to 3MHz. Which of the following is the correct as the Doppler shift frequency? However, the speed of sound is defined as the 1500m / s.

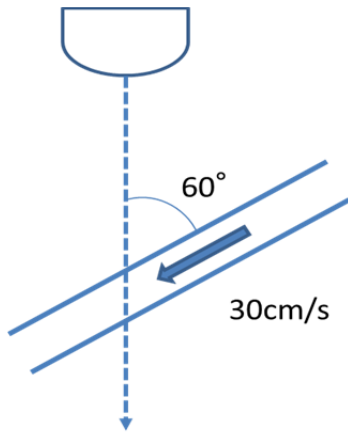


Fig.4

1. 0.2KHz
2. 0.3KHz
3. 0.4KHz
4. 0.5KHz
5. 0.6KHz

Q17. At Doppler examination showed the Doppler waveform (image). Choose this phenomenon from the following?

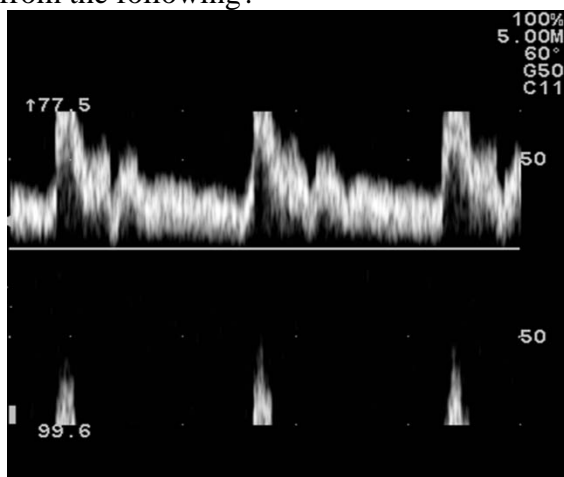


Fig.5

1. Mirror effect
2. Side lobe
3. Main lobe
4. Aliasing
5. Multiple reflection

Q18. The following image, Choose what you did adjustment of the device.



Fig.6

1. Gain
2. Center frequency
3. STC (sensitivity time control), TGC (time gain control)
4. Dynamic range
5. Focus

Q19. The following image, Choose what you did adjustment of the device.

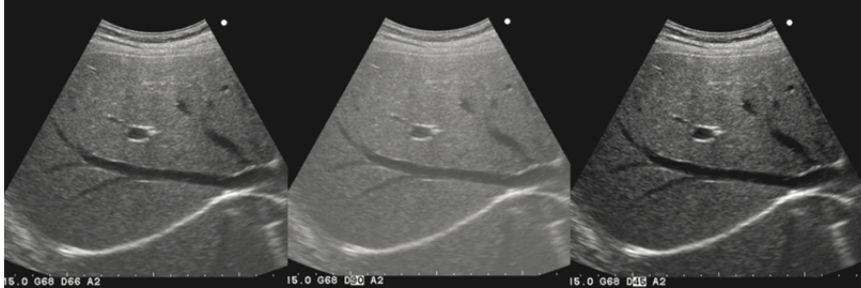


Fig.7

1. Gain
2. Center frequency
3. STC (sensitivity time control), TGC (time gain control)
4. Dynamic range
5. Focus

Q20. Which of the following is NOT the factor of Doppler effect?

1. Moving sound source
2. RBC corresponding to reflector
3. PRF
4. Entering frequency corresponding to sound source
5. Listener that can listen to the sound source

Q21. Which of the following description is NOT correct about thyroid US scan?

1. Patient's neck needs to be extended back a little.
2. High frequency Linear probe (7-15Mhz) should be used.
3. Longitudinal, transverse and oblique scan need to be performed.
4. Using 'Gel pad' will be helpful for reducing 'Far field artifact'.
5. If the patient swallows his/her saliva, the thyroid will go upside, and it would be helpful for scanning the lower pole.

Q22. Which of the artifacts occur in color Doppler?

1. Chemical shift
2. Aliasing
3. Beam hardening
4. Ring Artifacts
5. Halation

Q23. Which of the following is the wrong in the characteristics of the pulsed Doppler?

1. Transmission and reception can be performed in the same element.
2. Intermittently to transmit and receive in one direction.
3. There is a position information (such as any of the depth can measure the flow of a particular site).
4. Can respond to the measurement of the high flow rate.
5. Can real-time display superimposed on the B-mode image.

Q24. Which of the following is the wrong in the characteristics of the color flow mapping?

1. Transmission and reception can be performed in the same element.
2. Intermittently to transmit and receive in one direction.
3. There is not a position information (such as any of the depth can not measure the flow of a particular site).
4. Can respond to the measurement of the high flow rate.
5. Can real-time display superimposed on the B-mode image.

Q25. Choose what are the artifacts shown in the figure below.

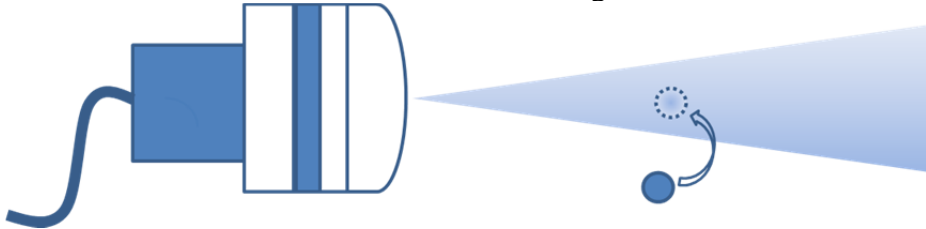


Fig.8

1. Grating lobe
2. Side lobe
3. Main lobe
4. Mirror effect
5. Multiple reflection

Q26. Choose What are the artifacts shown in the figure below.



Fig.9

1. Grating lobe
2. Side lobe
3. Main lobe
4. Mirror effect
5. Multiple reflection

Q27. Choose What are the artifacts shown in the figure below.



Fig.10

1. Grating lobe
2. Side lobe
3. Main lobe
4. Mirror effect
5. Multiple reflection

Q28. Choose What are the artifacts shown in the figure below.

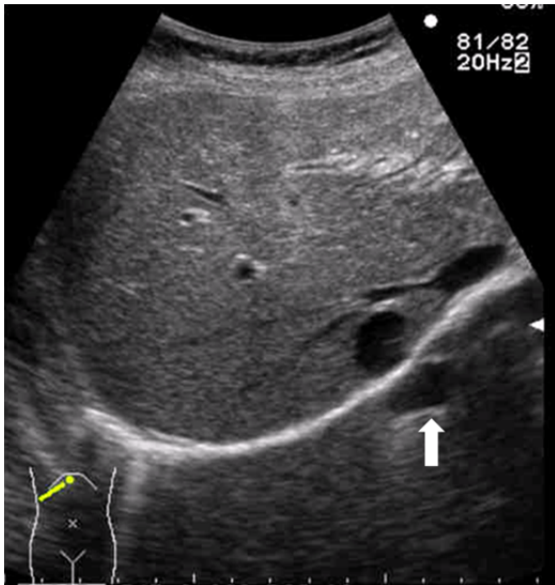


Fig.11

1. Grating lobe
2. Side lobe
3. Main lobe
4. Mirror effect
5. Multiple reflection

Q29. Which artifact is not related to ultrasound?

1. Multiple reflection
2. Side lobe
3. Acoustic shadow
4. Mirror image
5. Beam hardening

Q30. Which of following point is an appropriate focus point?

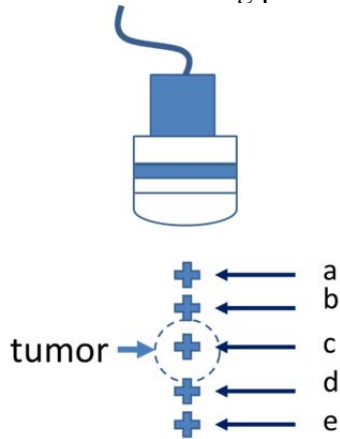


Fig.12

1. a
2. b
3. c
4. d
5. e

Q31. By harmonic imaging effect, which of following is relieved?

1. Grating lobe
2. Side lobe
3. Main lobe
4. Mirror effect
5. Multiple reflection

Q32. Which of following is the correct sentence about pulse propagation?

1. The more frequency is high, the more a wavelength gets longer.
2. At the pulse wave with the same frequency, the more pulse length gets shorter, the more bandwidth becomes narrower.
3. The more frequency of pulse wave is high, the more attenuation gets less.
4. At a pulse wave of low frequency, an amplitude is small.
5. At a pulse wave of low frequency, an amplitude is big.

Q33. Which of the following, posterior echo enhancement is less likely to occur.

1. Mucus
2. Blood
3. Water
4. Air
5. Abscess

Q34. When it is able to observe to depth of 15 cm, What times transmit and receive is it able to get per 1 sec? The speed of sound within an organism is 1500 m/s.

1. 100 times
2. 500 times
3. 1000 times
4. 5000 times
5. 10000 times

Q35. Choose the correct one for the ultrasound device

1. Acoustic lens uses glass
2. The acoustic impedance is affected by the density of a substance
3. The speed of sound in the same substance change with frequency
4. High frequency probe (transducer) can get the fine imaging of deep part.
5. MI is an abbreviation for maximum index.

Q36. When an ultrasound image (B mode) gets dark as a deep part, which of following is appropriate adjustment of ultrasound machine?

1. Gain
2. STC
3. Frame rate
4. Contrast
5. Acoustic power

Q37. Which of following is correct method of getting frame rate higher?

1. It increases repetition frequency.
2. It increases line density.
3. It makes observation depth shallow.
4. It makes field of view widely..
5. It increases transmit frequency.

Q38. With color doppler method, Which of following is correct adjustment for coloration by motion artifact?

1. Frame rate
2. Gain
3. STC
4. MTI filter
5. Acoustic power

Q39. The image is monitor image of linear probe. Which of following is correct reason of breakdown?

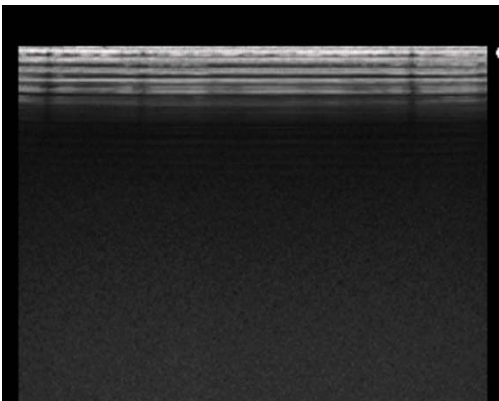


Fig.13

1. One part of monitor device won't turn on.
2. One part of probe is destroyed.
3. STC
4. Receiving circuit
5. Artifact

Q40. Which of following is the main reason of using jelly in ultrasound examination?

1. For protection from the generation of heat from probe
2. For increasing the sensitivity
3. For deadening the vibrations
4. For clearing the air gap between probe and patient surface
5. For decreasing the surface roughness

Q41. In cardiac ultrasonography, which method is appropriate method of blood flow measurement for high grade stenosis of valve?

1. Pulsed wave Doppler
2. Continuous wave Doppler
3. Color Doppler
4. Power Doppler
5. M-mode

Q42. Which waveform is with the highest similarity receiving waveform from the transmitter waveform?

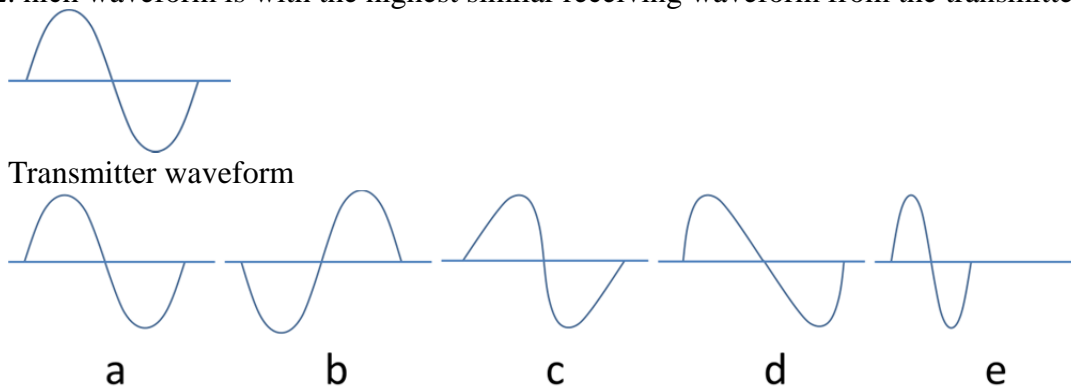


Fig.14

1. a
2. b
3. c
4. d
5. e

Q43. Using color Doppler with vascular ultrasonography, it gets mosaic echo in center of vascular. Which of following is correct?

1. An establishment of color gain is high.
2. The incident angle of ultrasound with the direction of blood flow is similar to 90° .
3. A velocity in center of vascular is late.
4. It is noise.
5. It springs up a turbulent flow.

Q44. Which of following does it have high ability to absorb?

1. Calculus
2. Bone
3. Air
4. Metal
5. Calcification

Q45. Which of following is NOT correct factor influencing to ultrasound heat effect?

1. Transmission output (acoustic power)
2. Pulsed repetition frequency (PRF)

3. Pulse range
4. Gain
5. Examination time

Q46. In this image, What is the black shadow (indicated by the white arrow)

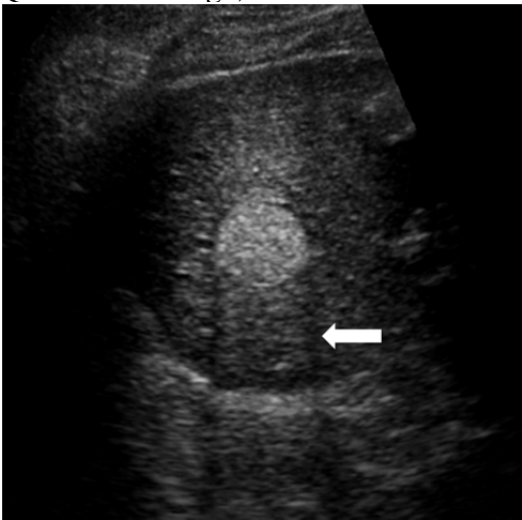


Fig.15

1. Posterior echo enhancement
2. Boundary shadow
3. Surrounding echo
4. Lateral shadow
5. Marginal echo

Q47. Choose what can be thought of as the cause of deeper calculus larger than it actually is.

1. Grating lobe
2. Side lobe
3. Main lobe
4. Mirror effect
5. Multiple reflection

Q48. Choose the correct one in the description of aliasing and Nyquist frequency.

1. To prevent aliasing, set to high center frequency
2. To prevent aliasing, PRF was set low
3. To prevent aliasing, the angle between the probe and the blood vessel was set small
4. Nyquist frequency is half the repetition frequency
5. Nyquist frequency is the repetition frequency

Q49. In the following image, what is the correct description for the arrow pointing at?



Fig.16

1. It's the Upper area of Left lobe
2. It's 'Cantlie's line' which connect the GB and IV
3. It's located at mostly same axis with middle hepatic vein
4. It's a kind of 'Landmark' to divide the Right lobe and Left lobe.
5. It will be connected with anterior branch of Right portal vein

Q50. Which of the following is the wrong description for the image?



Fig.17

1. IVC can be observed
2. Porta hepatis is observed well
3. Hepatic artery cannot be observed
4. Middle hepatic vein is observed
5. Liver echo texture is homogeneous

Q51. In the blood test, which of the following is the most representative cancer marker that related with Liver cancer?

1. PSA
2. CA-125
3. a-Fetoprotein (AFP)
4. CEA
5. HBsAg

Q52. Which of the following is the correct description for the image?



Fig.18

1. Its liver parenchyma has coarse echo
2. The arrow suggests the calcification that is not accompanied by clinical symptoms.
3. Pointing by the arrow is 'Intrahepatic bile duct calculus', and it can induce the 'Biliary atresia'.

4. The surface that arrow pointing at is expressed 'echogenic area' and it accompanies posterior acoustic enhancement.
5. Pointing by the arrow is 'Hemangioma' and it accompanies posterior acoustic shadowing.

Q53. Which of the following is the correct description that arrow pointing at?

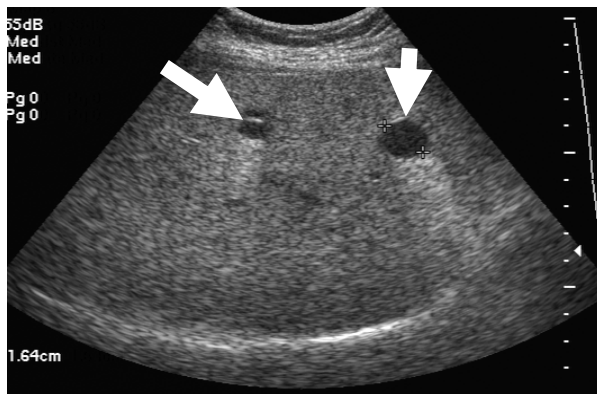


Fig.19

1. It's Cavernous hemangioma
2. Its inner part consists of Fibroid material
3. Those are cysts of Bosniak category II type
4. Posterior shadowing are clearly observed.
5. It can be observed like oval shape, and it's benign tumor.

Q54. In the following image, what kind of diagnosis can be considered as 'Hepatic benign tumor'?



Fig.20

1. Simple cyst
2. Hepatic adenoma
3. Focal fatty sparing
4. Biliary cystadenoma
5. Cavernous hemangioma

Q55. This patient has a notable shrunken liver and splenomegaly, but it also has abdominal distention in the whole abdomen area with a lot of ascites. What is the arrow pointing at?



Fig.21

1. Reverberation artifact
2. Floating bowel
3. Falciform ligament
4. Collateral varicous vein
5. Ligamentum venosum

Q56. What is the arrow pointing at?



Fig.22

1. Biliary stone in GB scanning in longitudinal plane
2. Thrombosis in IVC
3. Biliary stone in Intrahepatic portion of CBD
4. Biliary stone in Suprapancreatic portion of CBD
5. Thrombosis in Portal vein

Q57. Following image is image of adenomyomatosis. Which of the following description is NOT correct about it?

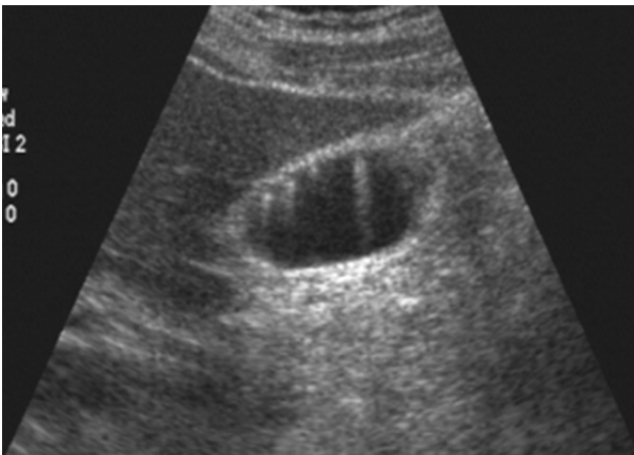


Fig.23

1. GB wall has wall thickening
2. It contains cholesterol crystals
3. There's Rokitansky Ashcoff sinuses with over-proliferation
4. There are anechoic nodules with comet tail artifact
5. There's reverberation artifact derived from sludge or stone

Q58. In blood sample test, which cancer marker is most related with pancreas cancer?

1. BUN
2. CA19-9
3. Ferritin
4. Triglyceride
5. Somatostatin

Q59. This US images derived from acute pancreatitis patient, what anatomical structure is the arrow pointing at?



Fig.24

1. Ascites
2. Common bile duct
3. Pancreatic artery
4. Peripancreatic fat
5. Pancreatic pseudocyst

Q60. Which of the following is correct description about this image?



Fig.25

1. It can be observed due to a tumor in liver
2. It can be observed when it has any malfunction of intrahepatic duct
3. It can be observed due to a tumor in cystic duct
4. It can be observed due to a pancreatic head cancer
5. It can be observed due to an obstruction in cystic duct

Q61. Following is an US image of Right kidney scanning in intercostal plane, what is the anatomical structure that arrow pointing at?

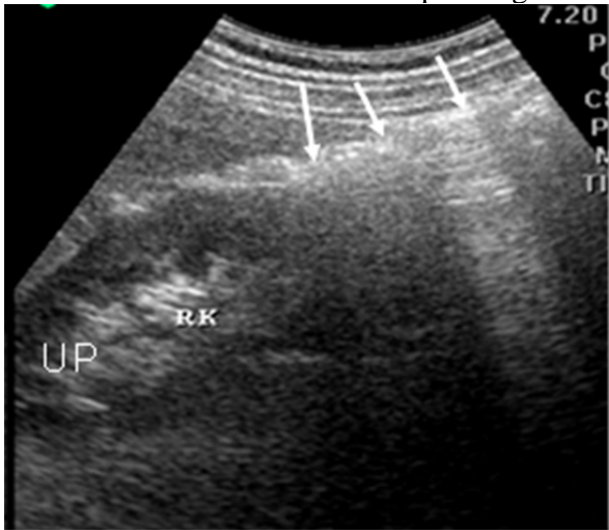


Fig.26

1. Stomach
2. Sigmoid colon
3. Transverse colon
4. Splenic flexure
5. Hepatic flexure

Q62. Echo phase of both kidney is entirely increased, and the gap of echo between cortex and medullar has been decreased. What is the appropriate diagnosis?

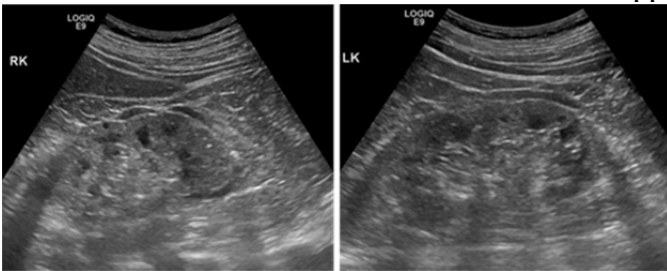


Fig.27

1. R/O unilateral agenesis
2. R/O hypoplastic kidney
3. R/O multiple renal cysts
4. R/O medical renal disease
5. R/O chronic pyelonephritis

Q63. Which of the following is correct about vesical diverticulum?



Fig.28

1. It contains muscle layer
2. It occurs due to the injury of mucosa
3. It is congenital disease, and commonly observed in adult
4. It's volume will decrease after voiding while bladder volume decreasing
5. It rarely has calculus

Q64. Which of the following statements is ***not*** true regarding this sonogram ?



Fig.29

1. It is the image of right intercostal scan.
2. The right hepatic vein is visible.
3. The right diaphragm is visible.
4. The mass has a bull's-eye sign.
5. The mass is a typical benign tumor.

Q65. Followings are Sonography images taken from 8 years old boy. Which is the correct answer that mostly related to these images?

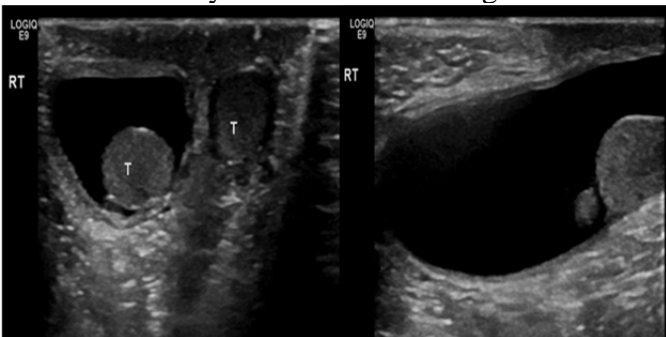


Fig.30

1. Hydrocele
2. Varicocele
3. Inguinal Hernia
4. Testicular tumor
5. Testicular torsion

Q66. What is the anatomical structure that arrow pointing at?

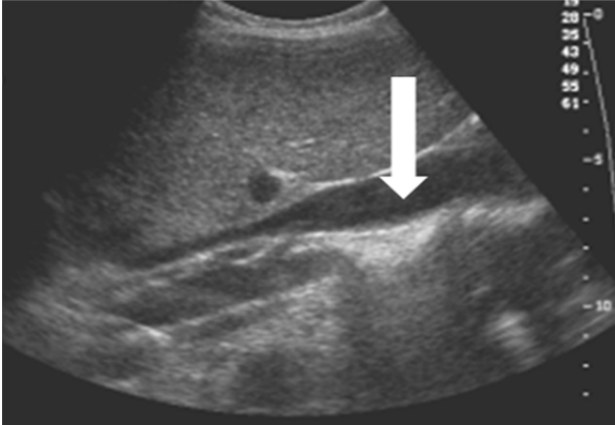


Fig.31

1. Aorta
2. Left renal vein
3. Left hepatic vein
4. Main portal vein
5. Inferior vena cava

Q67. This is an US image of Metastatic Liver disease, what sign is related with?



Fig.32

1. Shell sign
2. Triangle sign
3. Apple core sign
4. Pseudo kidney sign
5. Bull's eye or Target

Q68. Which of the following is NOT correct about the image?

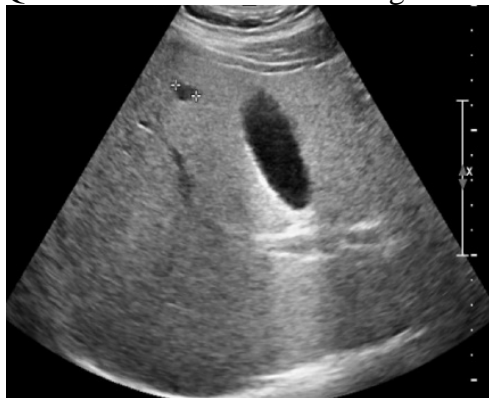


Fig.33

1. Multiple reflection is being observed
2. Cystic structure is being observed

3. Sonographer used a convex probe
4. Attenuation of Ultrasound wave is being observed
5. 3-5MHz transducer usually used

Q69. This image is derived from liver US scan, what is the clinical sign that arrow pointing at?

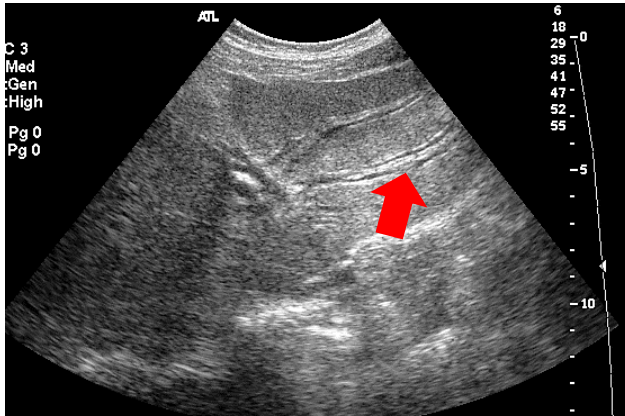


Fig.34

1. Those are normal structures.
2. Hump sign is being observed
3. Keyhole sign is being observed.
4. Pinhole sign is being observed
5. Portal vein and Intra hepatic duct are being observed.

Q 70. The image of ultrasound examination shows the gallbladder. Choose the most likely disease.



Fig.35

1. Gallbladder stone
2. Cholesterol polyp
3. Adenomyomatosis
4. Adenoma of the gallbladder
5. Cancer of the gallbladder

Q71. The following image shows the pancreas. Which of the following is not correct description?

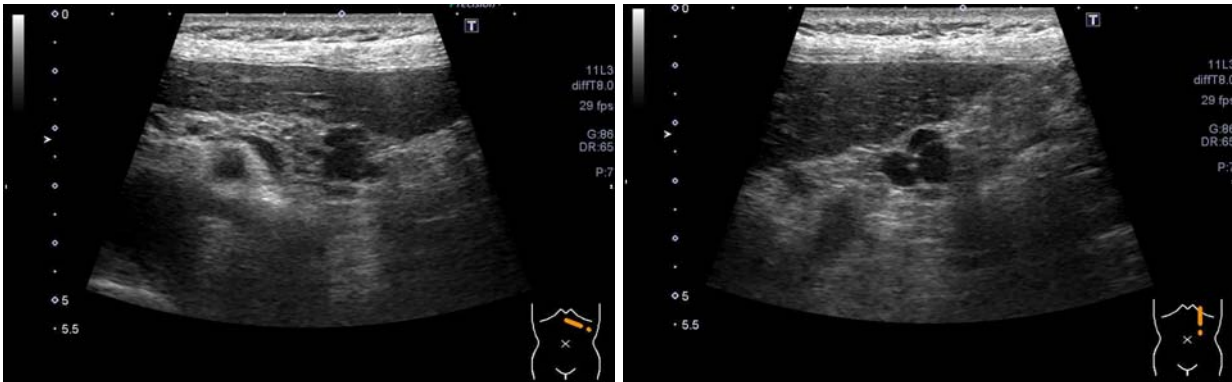


Fig.36

1. Mucinous cystic neoplasm (MCN)
2. Main ductal type IPMN
3. Branch ductal type IPMN
4. Pseudocyst
5. Serous cystic neoplasm (SCN)

Q72. The following image shows the appendix. Which of the following is correct description?



Fig.37

1. Appendix swelling is 3mm or more.
2. Appendix diverticulum can not be observed in an extracorporeal ultrasonic examination
3. Appendicitis sometimes hyperechoic zone is observed around the appendix.
4. Fecalith is not seen in the appendix.
5. Layer structure of the appendix will be observed in the three layers.

Q73. The following image shows the Pelvic cavity. Which of the following is not correct description?



Fig.38

1. Water species can be seen in the uterus (Hydrometra)
2. Douglas fossa exist in men.
3. Acknowledge the residual urine in the bladder.
4. A large amount of ascites in Douglas fossa.
5. In the standing and supine position, Douglas fossa is at the bottom of the peritoneal cavity.

Q74. Choose the correct description in following ultrasound image



Fig.39

1. Penetrating duct sign
2. Parallel channel sign
3. Pseudo parallel channel sign
4. Shotgun sign
5. Target sign

Q75. Which choose symptoms occur when following image



Fig.40

1. Abdominal pain
2. Back pain
3. Stomach pain
4. Stool
5. Hematuria

Q76. Ultrasound image shows right lobe the liver. Which of the following is correct description?

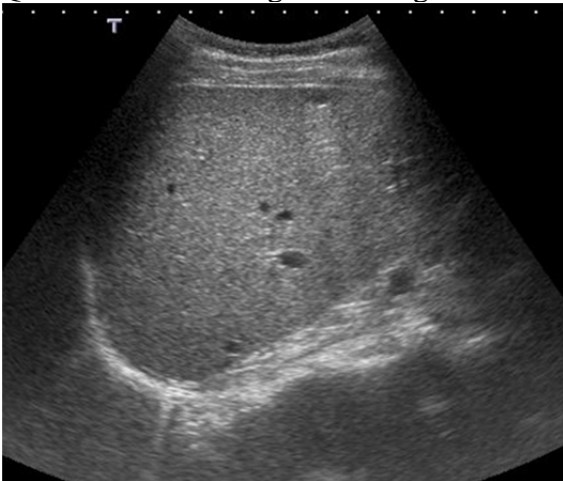


Fig.41

1. Normal
2. Liver cyst
3. Liver abscess
4. Liver hemangioma
5. Free air

Q77. Ultrasound image shows the right kidney. Which of the following is correct description?

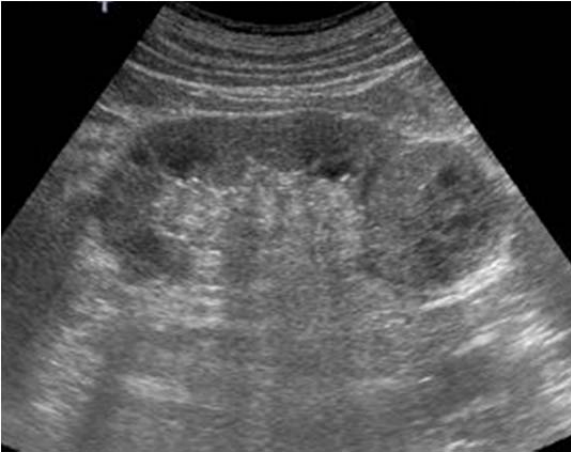


Fig.42

1. Hydronephrosis
2. Renal pelvic tumor
3. Benign tumor
4. Post kidney biopsy complication
5. A case is often accompanied by renal vein thrombosis and IVC thrombosis.

Q78. Which of the following is the correct description of the ultrasound image?



Fig.43

1. Ovarian tumor
2. Rectovesical fistula
3. Bladder diverticulum
4. Bicornuate uterus
5. Inguinal hernia

Q79. Which of the following is the correct description of the ultrasound image?



Fig.44

1. Benign prostate hyperplasia
2. Serous cystadenoma
3. Bladder tumor

4. Uterine leiomyoma
5. Malignant lymphoma

Q80. Ultrasound image is 9yer girl with right lower quadrant abdominal pain. Which of the following is correct?

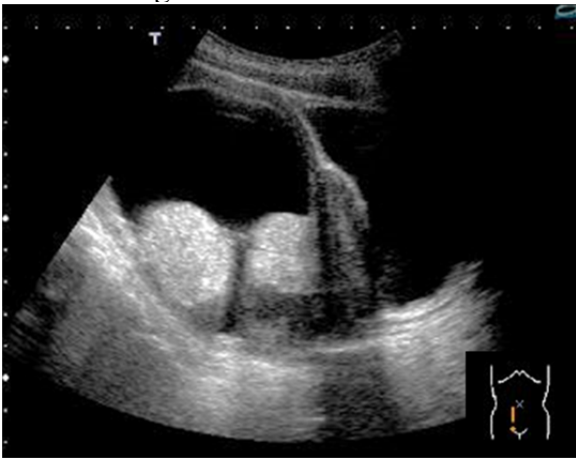


Fig.45

1. Ovarian torsion
2. Intussusception
3. Gangrenous appendicitis
4. Ectopic pregnancy
5. Meckel's diverticulum

Q81. The following ultrasound image shows the gallbladder. Which of the following is not correct description?



Fig.46

1. Stone is seen in the gallbladder.
2. Stones are depicted accompanied by acoustic shadow
3. Mass lesion seen in the gallbladder.
4. There is no thickening on the gallbladder wall.
5. Debris (biliary sludge) is not found in the gallbladder.

Q82. Choose the disease with the low frequency as the cause of epigastricgia

1. Duodenal ulcer
2. Acute cholecystitis
3. Renal carcinoma
4. Gastric ulcer
5. Appendicitis

Q83. Which is the occurrence site of Meckel's diverticulum?

1. Stomach
2. Duodenum
3. Ileum
4. Sigmoid colon
5. Rectum

Q84. Which is most closely related to hepatocellular carcinoma ?

1. Fatty liver
2. Liver cirrhosis
3. Cholangiolithiasis
4. Hepatitis A
5. Hepatic parenchymal calcification

Q85. Which of the following is the not correct combination ?

1. Hemangioma — bright loop pattern
2. Liver cirrhosis — portal hypertension
3. Wilson disease — inborn error of copper metabolism
4. FNH — spoke-wheel pattern
5. Obstructive jaundice — parallel channel sign

Q86. Which of following is not correct description of portal hypertension?

1. Esophageal varices are often rupture
2. With splenomegaly
3. Consequence include portosystemic encephalopathy.
4. Causes caused only liver cirrhosis
5. A case is often accompanied bloody stool

Q87. If you struggle with observing GB, what kind of structure can be the reference index for its location?

1. Superior mesenteric artery
2. Common hepatic duct
3. Ligamentum venosum
4. Main lobar fissure
5. Left intersegmental fissure

Q88. Which of the following is NOT correct about congenital abnormalities of Kidney?

1. Horseshoe kidney has more tendency to be hypertension
2. Renal column of Bertin which have hypertrophy will occur clinical problem.
3. 'Duplicated collecting system' means two divided renal sinuses in one kidney
4. Dromedary hump means mass shaped left kidney due to the pressure to its lateral margin from its spleen
5. Extrarenal pelvis means that the renal pelvis is not located in renal sinus but inner portion of perinephric fat.

Q89. Which of following is NOT related with the cause of the 'Splenic infarct'?

1. Leukemia
2. Thrombosis
3. Pancreatitis
4. Sarcoidosis
5. Splenomegaly

Q90. Which of the following is correct order suggesting the stage of dominant follicles?

1. Follicle - Corpus luteum - Corpus albicans
2. Corpus luteum - Follicle - Corpus albicans
3. Follicle - Corpus albicans - Corpus luteum
4. Corpus albicans - Follicle - Corpus luteum
5. Corpus luteum - Corpus albicans - Follicle