超音波測驗

Ultrasonography

2023 年 8 月 27 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 23XXX 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. Fill in of an anechoic structure such as a cyst is known as all of the following EXCEPT?
1. Partial volume artifact
2. Ghosting artifact
3. Refraction artifact
4. Slice thickness artifact
5. Acoustic enhancement

Q2. Multiple reflections that are equally spaced are called:
1. Refractions
2. Reverberations
3. Shadows
4. Enhancement
5. All of the above

Q3. You are performing a quality assurance study on an ultrasound system using a tissue equivalent phantom. You make an adjustment using a knob on the system console that changes the appearance of reflector brightness from fully bright to barely visible. What are you evaluating?
1. Resolution
2. Dynamic range
3. System sensitivity
4. Vertical calibration
5. Slice thickness

Q4. What can pulsed Doppler measure that continuous wave cannot?
1. Frequency
2. Velocity
3. Duration
4. Wavelength
5. Location

Q5. When Doppler gain is set too high, which artifact is likely to occur?
1. Spectrum mirror
2. Aliasing
3. Location mirror imaging
4. Range ambiguity
5. Clutter

Q6. From a safety standpoint, which one of the following methods is best?1230m/s
1. Low transmitter output and high receiver gain
2. High transmitter output and low receiver gain
3. High near gain and low far gain
4. Low near gain and high far gain
5. High reject and high transmitter output

Q7. The dynamic range of the receiver of an ultrasound instrument refers to the:
1. Ability of the receiver to track a rapidly moving structure
2. Range of echo signal frequencies that can be processed without distortion
3. Speed with which the receiver recovers following the excitation pulse to the transducer
4. Depth range in tissue over which moving echoes can be received
5. Range of echo signal amplitudes that can be processed without distortion

Q8. Which of the following properties of ultrasound forms the basis for intermittent imaging with contrast agents?

1. Harmonic scattering from microbubbles
2. Solid
3. Soft
4. Stress/strain of tissue
5. Shear wave

Q9. Steering the color window to the right or left changes:

1. Frame rate
2. PRF
3. Doppler angle
4. All of the above
5. None of the above

Q10. At Doppler examination showed the Doppler waveform (Fig 1). Choose this phenomenon from the following?

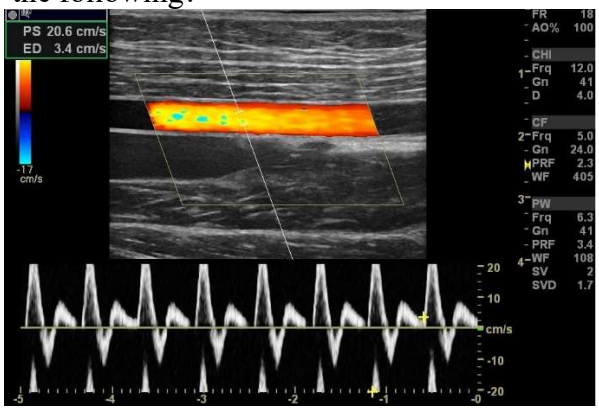


Fig.1

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

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

1. Bone > Kidney > Fat
2. Bone > Fat > Liver
3. Fat > Bone > Muscle
4. Gallbladder > Fat > Bone
5. Muscle > Bone > Fat

Q12. A 60-year-old man with type B elasticity (elasticity score of 2). The lesion shows a *mosaic* pattern with dominant green areas. What is the possible diagnosis? (see Fig 2)

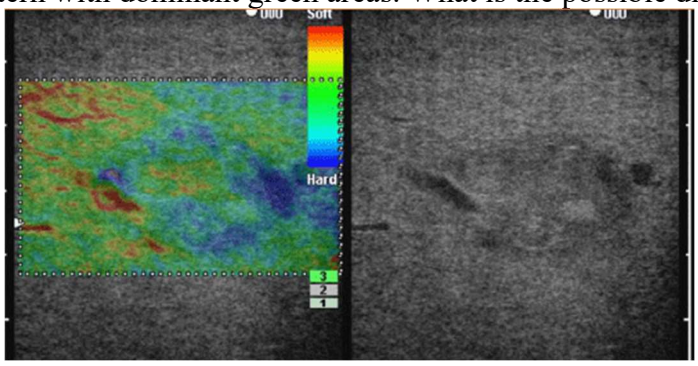


Fig 2

1. Hepatocellular carcinoma
2. Hemangioma
3. Hepatic cyst
4. Hepatic abscess
5. Abscess

Q13. A 39-year-old female complained of digestive disorders and dyspepsia. She related occasional pain in the right upper quadrant of the abdomen. An ultrasound exam was performed (Fig 3. The possible diagnosis might be

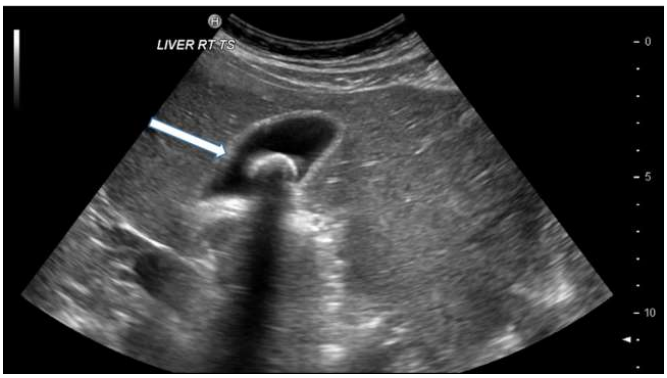


Fig 3

Acoustic impedance is the product of density and sound velocity

1. Acute Cholecystitis
2. Gallbladder Carcinoma
3. Gallbladder Adenomyomatosis
4. Hepatocellular carcinoma
5. Cholelithiasis

Q14. The arrow (Fig 4) indicates:

Fig.4

1. portal vein
2. gastroduodenal artery
3. common bile duct
4. hepatic artery
5. SMA

Q15. The maximum inner diameter of the pancreatic duct in young adult is:

1. 2 mm
2. 5 mm
3. 1 cm
4. 2 cm
5. 5 cm

Q16. Please answers in the right order, A first through to E last (Fig 5)

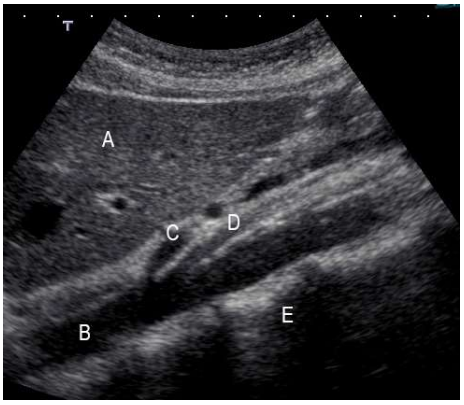


Fig.5

1. Liver, Aorta, Celiac axis, SMA, Vertebra
2. Liver, Vertebra, Aorta, Celiac axis, SMA,
3. Liver, Celiac axis, SMA, Aorta, Vertebra
4. Liver, Aorta, SMA, Celiac axis, Vertebra
5. Liver, SMA, Aorta, Celiac axis, Vertebra

Q17. Almost every ultrasound image contains these values (Fig 6). What do TI and MI stand for?

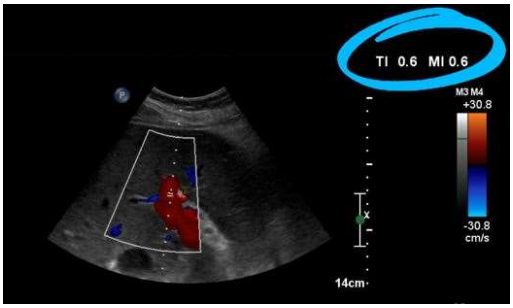


Fig 6

1. TI =Thermal Index; MI = Motion Index
2. TI = Temporal Index; MI = Motion index
3. TI = Temporal Index; MI = Mechanical Index
4. TI = Thermal Index; MI = Mechanical Index
5. None of the above

Q18. What do A and B correspond to (Fig 7)?

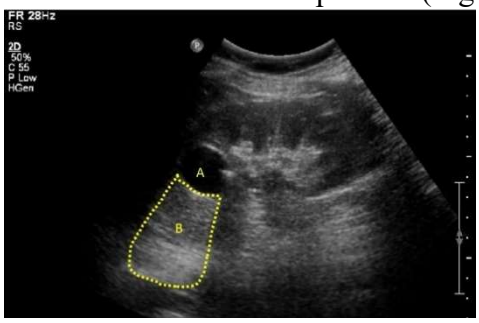


Fig 7

1. A = kidney cyst, B = acoustic enhancement
2. A = kidney stone, B = acoustic enhancement
3. A = Hydronephrosis, B = acoustic enhancement
4. A = Hydronephrosis, B = acoustic shadowing
5. A = kidney stone, B = acoustic shadowing

Q19. What structures do A, B and C correspond to (Fig 8)?

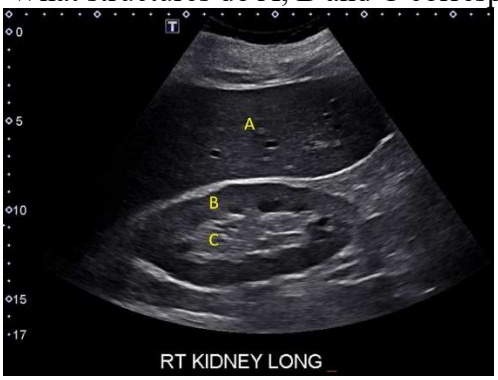


Fig.8

1. A = liver, B = peri-renal fat, C = renal parenchyma
2. A = liver; B = kidney parenchyma, C = hydronephrosis
3. A = liver, B = kidney parenchyma, C = renal sinus fat
4. A = liver, B = peri-renal fat, C = renal sinus fat
5. A = Liver, B = kidney parenchyma, C = renal sinus fat

Q20. What does this image demonstrate (Fig 9)?

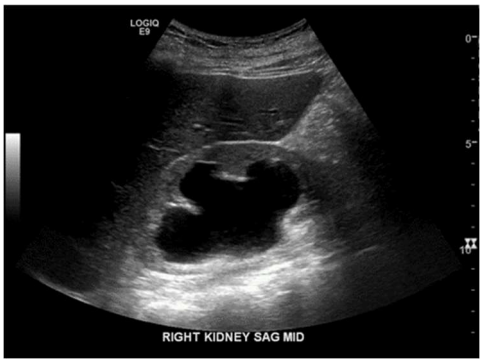


Fig 9

1. Renal cyst
2. Mild hydronephrosis
3. Renal abscess
4. Moderate-severe hydronephrosis
5. Ascites

Q21. Which of the following is the most echo-free imaging finding if seen on ultrasound of the thyroid?

1. Numerous cysts
2. Microcalcifications
3. Coarse, central calcifications
4. Invasion of adjacent structures
5. “Grinch-like”

Q22. Ultrasound is the first choice technique for any pain in the upper right quadrant of the abdomen and, the most reliable when gallbladder pathology is suspected. All of the following are associated with Cholelithiasis except

1. Cholelithiasis is more frequent in women
2. Its incidence increases with age
3. All of the patients with cholelithiasis develop biliary colic
4. In obese persons
5. None of the above

Q23. When Doppler gain is set too high, which artifact is likely to occur?

1. Aliasing
2. Range ambiguity
3. Spectrum mirror imaging
4. Location mirror imaging
5. All of the above

Q24. Which vessel ***do not*** affected by respiration on Doppler waveform?

1. Hepatic vein
2. Portal vein
3. Jugular
4. Inferior vena cava
5. Aorta

Q25. As the supervisor, what should you do in response to complaints of poor clinical image quality by a single sonographer?

1. Call for service
2. Purchase a new scanner
3. Investigation if the problem is associated with a particular transducer or sonographer
4. Providing skills course to sonographer
5. Fire the staff

Q26. What are the artifacts shown in figure 10?

Fig.10

1. Grating lobe
2. Side lobe
3. Main lobe
4. Mirror effect
5. Comet-tail

Q27. The possible diagnosis in Fig 10 (Q26) might be

1. Acute Cholecystitis
2. Cholelithiasis
3. Gallbladder Carcinoma
4. Gallbladder Adenomyomatosis
5. Parasites

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

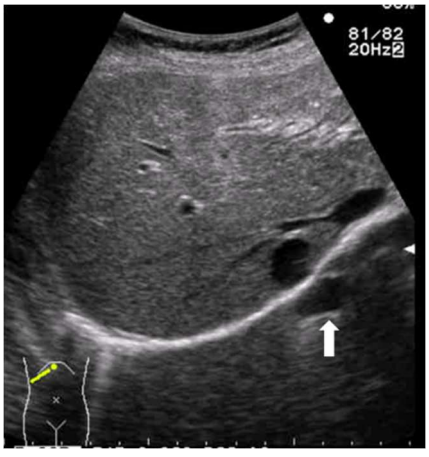


Fig.11

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

Q29. Sonographically, enlarge lymph nodes typically appear as ultrasound?

1. Solid mass
2. Complex masses
3. Anechoic masses with no demonstration of through transmission
4. Cystic masses with demonstration of through transmission
5. Hyperechoic masses

Q30. An US examination of the right lower quadrant was performed (Fig 12). The possible diagnosis might be

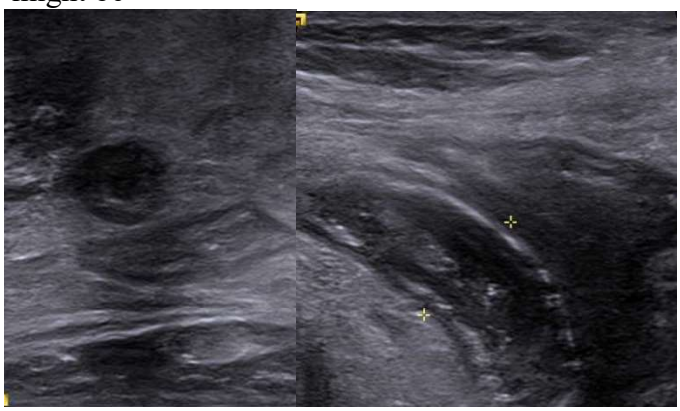


Fig.12

1. Appendicitis
2. Acute Colonic Diverticulitis
3. Mesenteric Metastases
4. Mesenteric Lymphoma
5. None of the above

Q31. A hypertrophied column of Bertin is:

1. benign tumor of the kidney
2. malignant tumor of the kidney
3. normal kidney variant
4. benign tumor of adrenal origin
5. metastasis

Q32. Which of the following is NOT related to influence the cancer that was occurred in pancreas head?

1. Common bile duct obstruction
2. Couvoisier's sign
3. The dilatation of ampulla of Vater
4. The obstruction of pancreatic duct
5. The obstruction of common bile duct

Q33. Splenomegaly is diagnosed when the spleen is greater than (1) (2)

1. 5cm
2. 1 cm
3. 13 cm
4. 8 cm
5. 3 cm

Q34. Tissue mimicking phantoms are composed of materials designed to exhibit:

1. the same density and acoustic impedance of tissue
2. the same acoustic velocity as ultrasound in tissue without regard to attenuation so that distance accuracy can be evaluated
3. the same attenuation rate without regard to velocity of propagation so that sensitivity can be evaluated
4. the same acoustic properties for ultrasound propagation through tissue, including attenuation, velocity, and scattering
5. all of the above

Q35. The best way to distinguish hepatic veins from portal veins is by

1. size, the hepatic veins are much small than the portal veins
2. tracing them to their point of origin
3. visualizing the pulsations of the hepatic veins
4. visualizing the wall thickness of the vessels knowing that hepatic veins have thicker walls
5. visualizing the color

Q36. You are scanning a patient with a known mass in the left medial segment of the liver. What anatomical landmark can you use to identify the left medial segment separate from the right anterior segment of the liver?

1. left portal vein
2. ligamentum teres
3. ligamentum venosum
4. middle hepatic vein
5. commom bile duct

Q37. Compare the echogenicities of the following structures and place them in decreasing echogenic order.

1. renal sinus > pancreas > liver > spleen > renal parenchyma
2. renal sinus > liver > spleen > pancreas > renal parenchyma
3. pancreas > liver > spleen > renal sinus > renal parenchyma
4. renal parenchyma > spleen > liver > pancreas > renal sinus
5. renal parenchyma > pancreas > liver > spleen > renal sinus

Q38. Acute cholecystitis is associated with

1. RUQ pain
2. Murphy's sign
3. stone impacted within the cystic duct
4. fever
5. all of the above

Q39. What is the artifact of this image (Fig 13)?

Fig.13

1. reverberation artifact
2. side lobe
3. ghost image
4. acoustic enhancement
5. refraction

Q40. Which is hyperechoic during scanning pancreas?

1. acute pancreatitis
2. adenocarcinoma
3. pseudocyst
4. chronic pancreatitis
5. atrophy

Q41. Column of Bertin may be confused with psedotumor. These may be found:

1. in the cortex surrounding and separating the renal pyramids and are usually large
2. in the major calyces as a rudimentary ureter
3. in the major calyces as a rudimentary calix
4. outside the renal capsule
5. inside the renal capsule

Q42. Name the "sign" associated with a dilated common bile duct (Fig 14).

Fig.14

1. Trademark
2. Too many tubes
3. Murphy's
4. Shotgun
5. Target

Q43. The halo sign as it pertains to thyroid masses is defined as a rim of sonolucency surrounding an intrathyroidal mass. It is most commonly encountered in

1. cyst
2. carcinoma
3. thyroiditis
4. adenoma
5. goiter

Q44. Carotid bruit is heard because of

1. arteriovenous malformation
2. disease of the vessels
3. audible turbulence localized at the carotid bifurcation
4. valvular stenosis
5. aneurysm

Q45. An increased resistivity index (RI) in the common carotid artery may indicate

1. stenotic disease proximal to the sample size
2. stenotic disease distal to the sample size
3. disease at the sample site
4. sample volume placement too close to the arterial wall
5. too large sample volume size

Q46. What is possible diagnosis at the sonography image (Fig 15)?

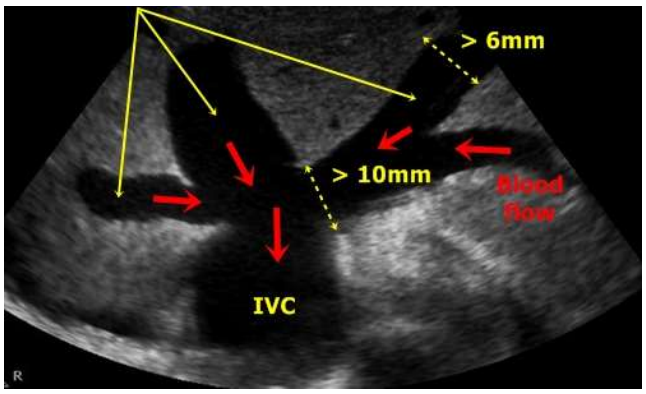


Fig.15

1. right-side heart failure
2. fatty liver
3. HCC
4. portal hypertension
5. ascites

Q47. The minimum anterior-posterior diameter for the diagnosis of abdominal aortic aneurysm is

1. 0.5 cm
2. 1 cm
3. 2 cm
4. 3 cm
5. above 3 cm

Q48. Which of the following is typical sign for carcinoma in GI

1. target sign
2. hump sign
3. pseudokidney sign
4. star sign
5. halo sign

Q49. A 55-year-old male is suffering from cirrhosis. This spleen ultrasound image (Fig 16) demonstrates

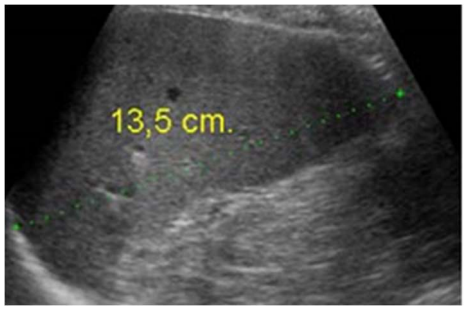


Fig.16

1. metastasis
2. splenomegaly
3. hematoma
4. splenic abscess
5. lumphoma

Q50. Which of the following is the correct description for the image (Fig 17)?

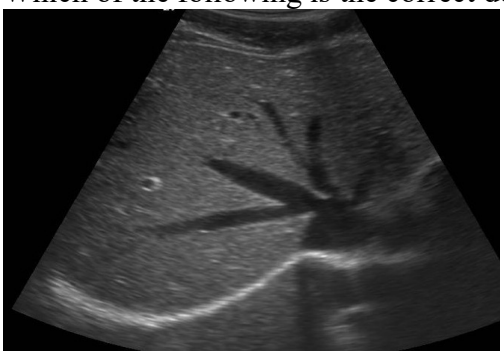


Fig.17

1. IVC cannot be observed
2. Fatty liver image
3. Hepatic artery can be observed
4. Middle hepatic vein is observed
5. Liver echo texture is heterogeneous

Q51. Which of the following is the correct description for common carotid artery (CCA)?

1. has no branches
2. divides into the internal carotid artery (ICA) and external carotid artery (ECA) always at the same level in the neck
3. originates from the innominate artery
4. 1 and 2
5. 1, 2 and 3

Q52. A 50-year-old male presents abdominal pain radiating to the back. The ultrasound image (Fig 18) demonstrate all of the following except

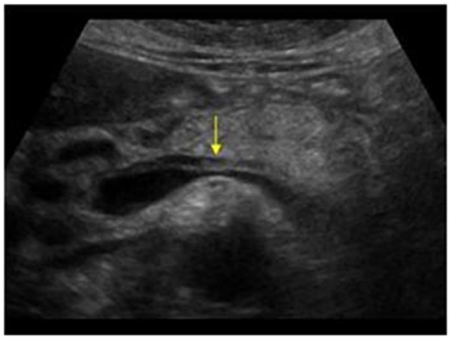


Fig.18

1. edema between the pancreas and splenic vein
2. chronic pancreatitis
3. acute pancreatitis
4. dilated pancreatic duct
5. 1 and 3

Q53. Which of the following statements is ***not*** true regarding this sonogram (Fig 19) ?

Fig.19

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.

Q54. This is an US image (Fig 20) of metastatic liver disease, what sign is related with?

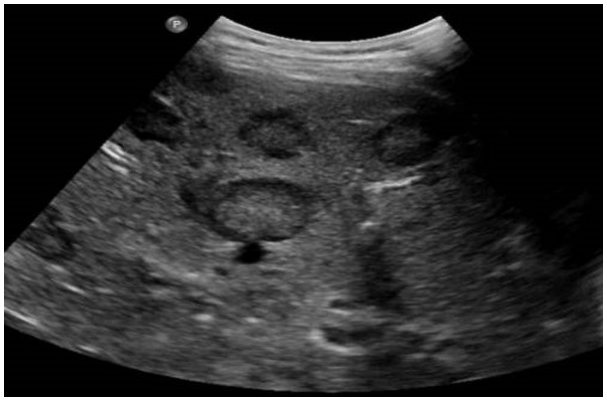


Fig.20

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

Q55. Anatomic landmarks helpful in locating the left adrenal gland are:

1. aorta, spleen, and left kidney
2. gastric antrum, left kidney and inferior vena cava
3. left kidney, spleen, and inferior vena cava
4. left kidney, left psoas muscle, and left hemi-diaphragm
5. gastric antrum, left kidney and left psoas muscle

Q56. According Fig 21, what is number 3?

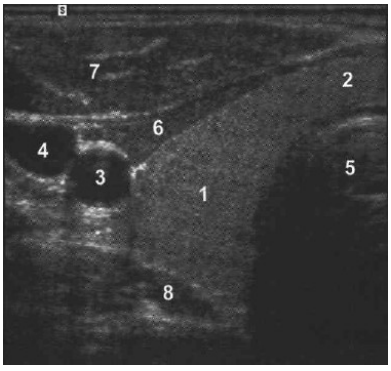


Fig. 21

1. Right lobe
2. Longus coli
3. Strap muscles
4. SCM
5. RCCA

Q57. The position of the parathyroid glands are variable. Most often they are located:

1. posterior to the thyroid lobes and medial to the common carotid arteries
2. posterior to the thyroid lobes and anterior to the strap muscles
3. anterior to the thyroid lobes and lateral to the anterior scalene muscles
4. lateral to the thyroid lobes
5. anterior to common carotid artery

Q58. According to strain elastography, thyroid appears hard with a strain ratio of 8.25 (Fig 22). What is possible diagnosis?

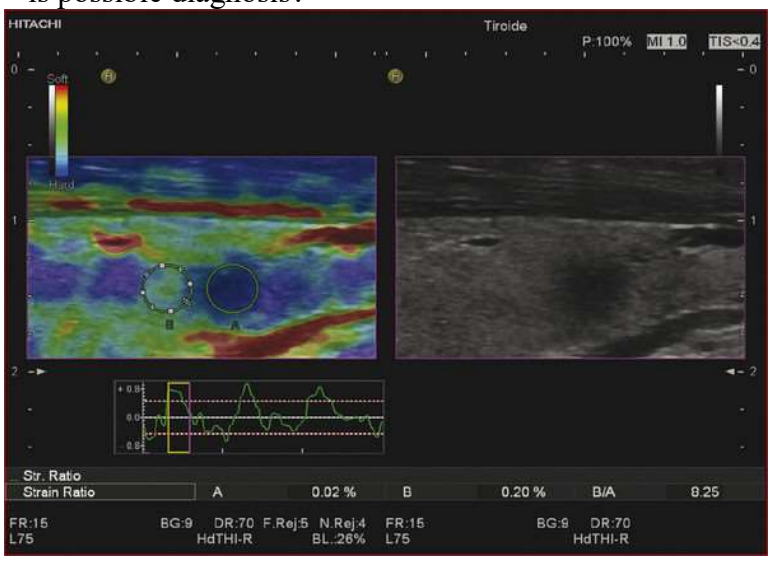


Fig.22

1. hemorrhagic cyst
2. thyroid carcinoma
3. goiter
4. thyroiditis
5. adenoma

Q59. Triphasic flows are seen in:

1. hepatic veins
2. portal veins
3. hepatic artery
4. Superior mesentery Artery
5. Aorta

Q60. The below image indicates 14.8 mm _____ at spleen (Fig 23). What should be written in the blank?

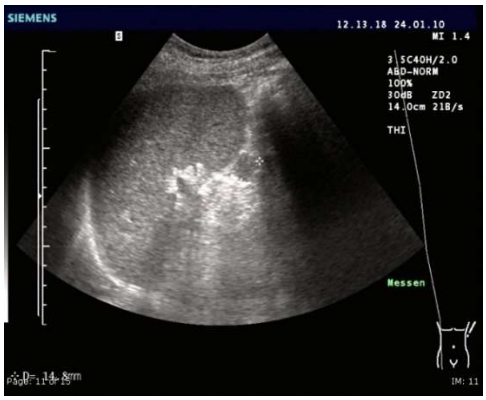
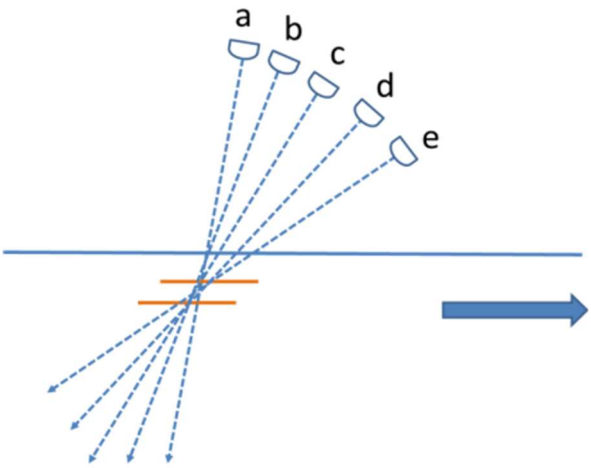


Fig.23

1. accessory spleen
2. lymphoma
3. splenomegaly
4. splenic abscess
5. splenic infarct

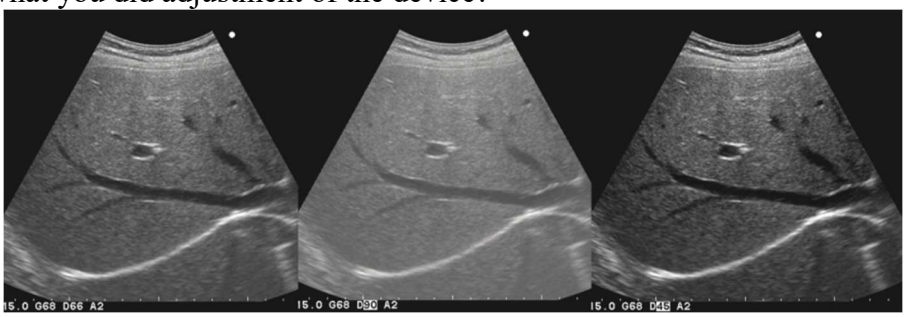
Q61.About angle correction of doppler, which point of probe do you get the smallest error?

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



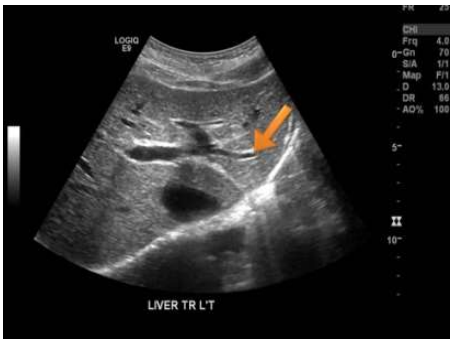
Q62.The following image, choose what you did adjustment of the device?

1. gain
2. center frequency
3. TGC (time gain control)
4. dynamic range
5. focus



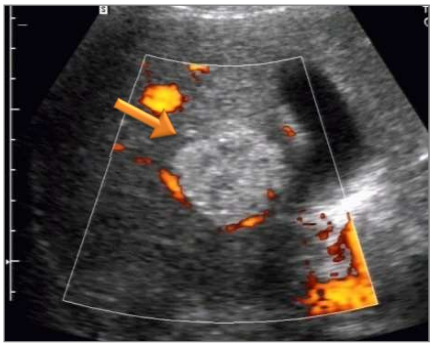
Q63.The arrow in this image indicates:

1. left main branch of portal vein
2. left hepatic vein
3. segment-3 branch of left portal vein
4. segment-2 branch of left portal vein
5. segment-2 branch of left hepatic vein



Q64.The possible diagnosis in the liver image is:

1. Hemangioma
2. HCC
3. Metastasis
4. Focal nodular hyperplasia
5. Focal fatty sparing

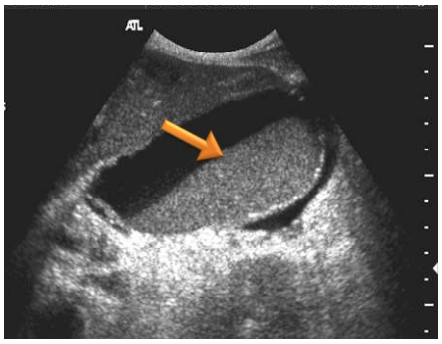


Q65.The possible diagnosis in the liver image is:

1. Right-side heart failure
2. Fatty liver
3. HCC (Hepatocellular Carcinoma)
4. Portal hypertension
5. Liver cirrhosis

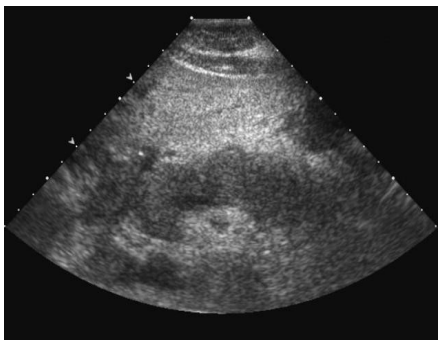
Q66.The possible diagnosis in the gallbladder image is:

1. Adenomyomatosis
2. Cholesterol Polyps
3. Gallbladder CA
4. Cholelithiasis
5. Sludge



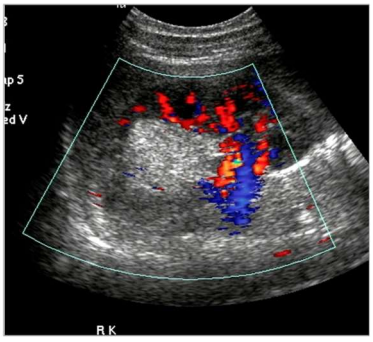
Q67.The possible diagnosis in this pancreas image is:

1. Acute pancreatitis
2. Chronic pancreatitis
3. Pancreas duct stone
4. Pancreas CA
5. Abnormal fatty change



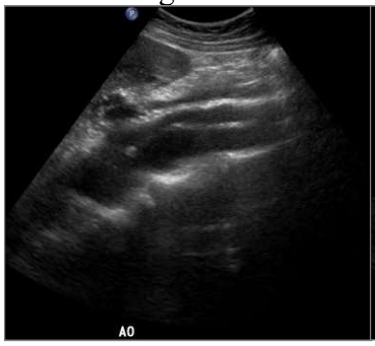
Q68.The possible diagnosis in the kidney image is:

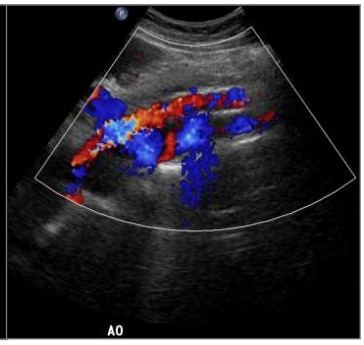
1. Renal stone
2. Medullary nephrocalcinosis
3. AML (Angiomyolipoma)
4. RCC(Renal Cell Carcinoma)
5. UC (Urothelial carcinoma)



Q69.The possible diagnosis in the abdominal aorta image is:

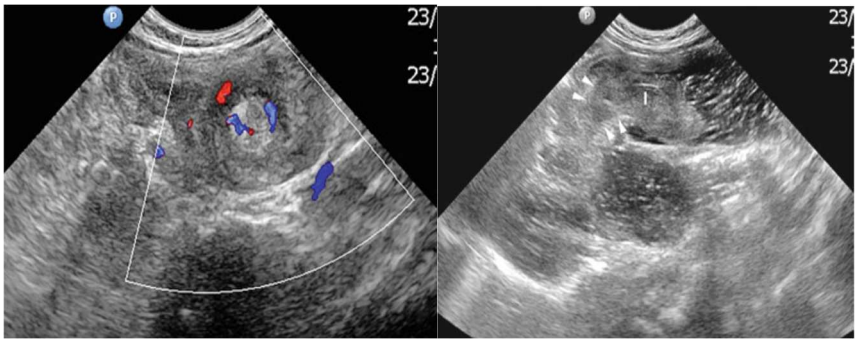
1. Abdominal aortic aneurysm
2. Abdominal aortic stenosis
3. Aotric dissection
4. Aotric pseudoaneurysm
5. AV fistula





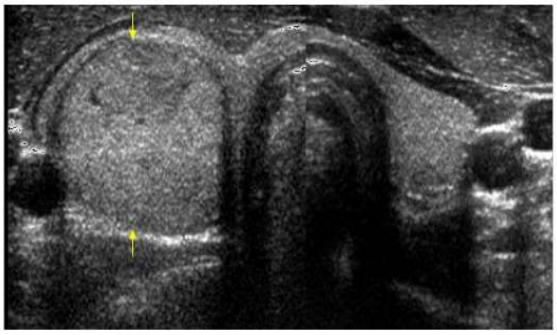
Q70.A 9-month-old boy with nausea, vomiting, and abdominal pain. A 3-week-old male with repeated vomiting. The possible diagnosis of this patient is:

1. Appendicitis
2. Acute Colonic Diverticulitis
3. Mesenteric Metastases
4. Mesenteric Lymphoma
5. Intussusception



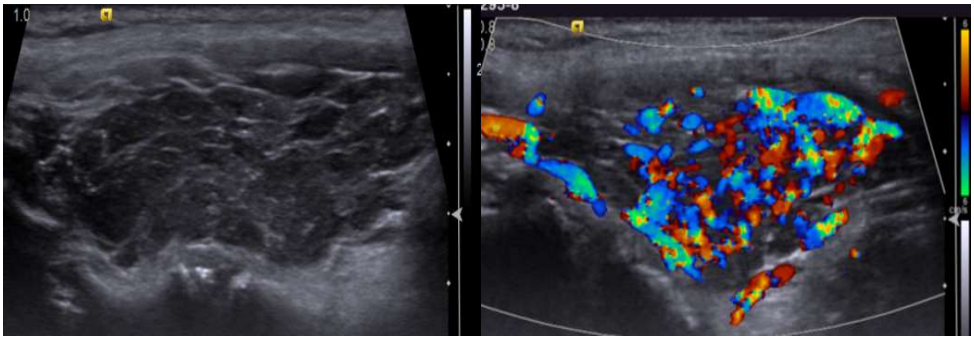
Q71.The 30-year-old female patient complained of a hard mass in front of her neck. Which of the following is the most accurate diagnosis indicated by the arrow?

1. Abscess
2. Adenoma
3. Parathyroid goiter
4. Normal thyroid hypertrophy
5. Lymphadenopathy



Q72.A 45-year-old female patient complained of an enlarged neck with the higher TSH and lower free-T4, T3. Which of the following is the most accurate diagnosis?

1. Subacute thyroiditis
2. Hashimoto thyroiditis
3. Graves disease
4. Hyperthyrodism
5. Hypothyrodism



Q73.Which of the following is typical sign for carcinoma in GI

1. Target sign
2. Hump sign
3. Pseudokidney sign
4. Star sign
5. Apple core sign

Q74.Which of the following is anatomical indicators to check the back of the head of the pancreas?

1. Gastroduodenal artery
2. Splenic artery
3. Splenic vein
4. Common bile duct
5. Common hepatic artery

Q75.Which is most closely related to hepatocellular carcinoma ?

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

Q76.Which vessel do not affected by right atrial diastole on Doppler waveform?

1. Hepatic vein
2. Porta hepatis
3. Jugular vein
4. Inferior vena cava
5. Subclavian vein

Q77.In liver cirrhosis, which one is not typical ultrasound findings?

1. Ascites
2. Splenomegaly
3. Porta hepatis dilatation
4. Hepatic vein dilatation
5. Esophageal varices

Q78.Choose the disease with the low frequency as the cause of epigastralgia.

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

Q79.The following ultrasound image shows the Urinary bladder, which of the following is the correct artifact description?

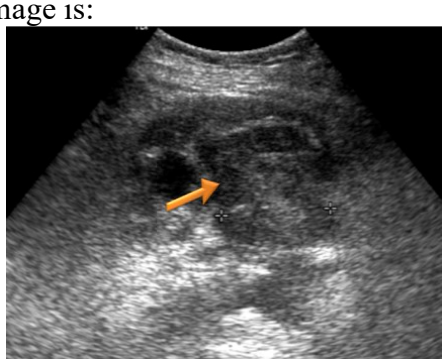
1. Attenuation shadowing
2. Edge shadowing
3. Comet tail
4. Ring down
5. Twinkling artifact

Q80.The arrow in this image indicates:

1. Splenic vein
2. Left renal vein
3. Left renal artery
4. Superior mesenteric vein
5. Superior mesenteric artery

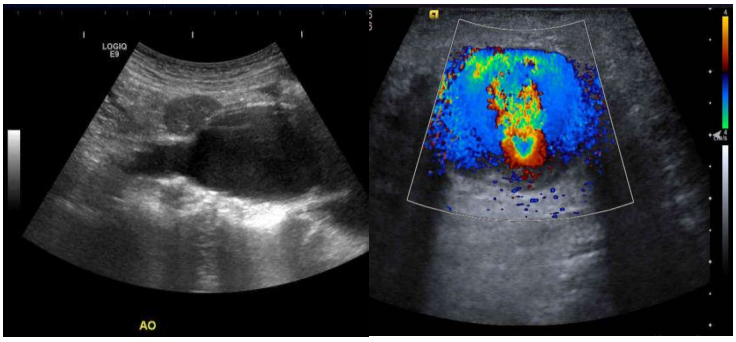
Q81.The possible diagnosis in the kidney image is:

1. Renal stone
2. Medullary nephrocalcinosis
3. AML (Angiomyolipoma)
4. RCC(Renal Cell Carcinoma)
5. UC (Urothelial carcinoma)



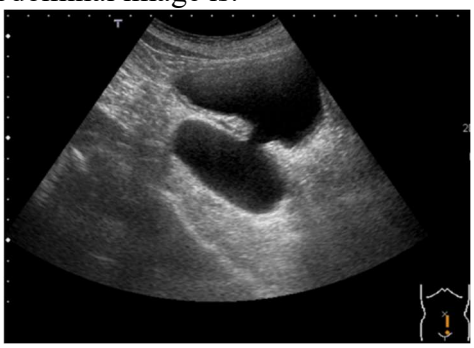
Q82.The possible diagnosis in the abdominal aorta image is:

1. Abdominal aortic aneurysm
2. Abdominal aortic stenosis
3. Aotric dissection
4. Aotric pseudoaneurysm
5. AV fistula



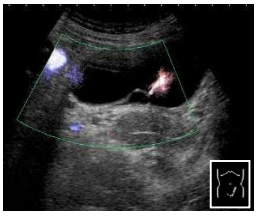
Q83.The possible diagnosis in the lower abdominal image is:

1. ovarian tumor
2. rectovesical fistula
3. bladder diverticulum
4. bicornuate uterus
5. inguinal hernia



Q84.Which of the following is the correct description of ultrasound image?

1. a case is male patient
2. ureterocele
3. Suspected of ruptured aneurysm
4. No abnormal findings
5. more men than women



Q85.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

Q86.In liver cirrhosis, which one is not typical ultrasound findings?

1. Ascites
2. Splenomegaly
3. Porta hepatis dilatation
4. Hepatic vein dilatation
5. Esophageal varices

Q87.Choose the disease with the low frequency as the cause of epigastralgia.

1. Acute cholecystitis
2. Gastric ulcer
3. Polyp in the fundus of the gallbladder
4. Obstructive stone in the cystic duct
5. Lymphadenopathy in the portal hepatis
6. A huge tumor in the pancreas head

Q88.Which vessel do not affected by right atrial diastole on Doppler waveform?

1. Hepatic vein
2. Porta hepatis
3. Jugular vein
4. Inferior vena cava
5. Subclavian vein

Q89.Which of the following is the correct description of the ultrasound image?

1. benign prostate hyperplasia
2. serous cystadenoma
3. bladder tumor
4. uterine leiomyoma
5. malignant lymphoma

Q90.The artifacts usually occur behind stones or calcifications:(A) Twinkling (B) Comet tail (C) Attenuation shadowing (D) Edge shadowing (E) Aliasing Which of the following is correct?

1. ABC
2. ADE
3. BCD
4. AB
5. BC