

LABSRT2016 US

1. Which of the following is the correct description about the frequencies of ultrasonic waves?

- ① >2,000Hz
- ② >10,000Hz
- ③ >20,000Hz
- ④ >100,000Hz

2. 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 observe any part of the whole body

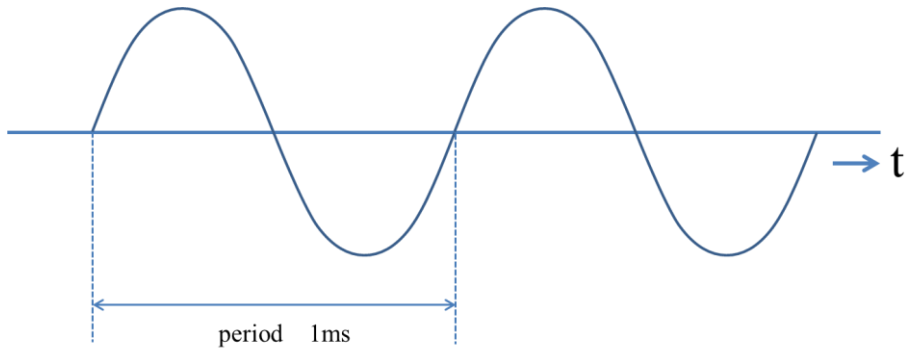
3. Which of the following is the wrong description about an disadvantage of ultrasonography ?

- ① air
- ② bone
- ③ blind spot
- ④ high-speed blood flow measurement

4. The ultrasonic device is based on the assumption that sound velocity is constant. Nearest speed, Choose from the following

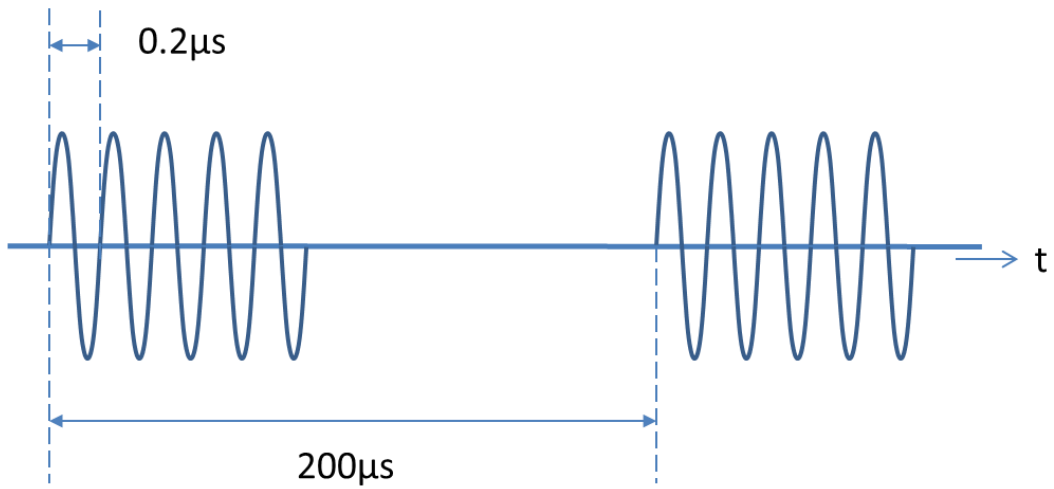
- ① 1000m/s
- ② 1250m/s
- ③ 1530m/s
- ④ 1840m/s

5. Which of the following is the correct value about frequency of the display of the waveform?



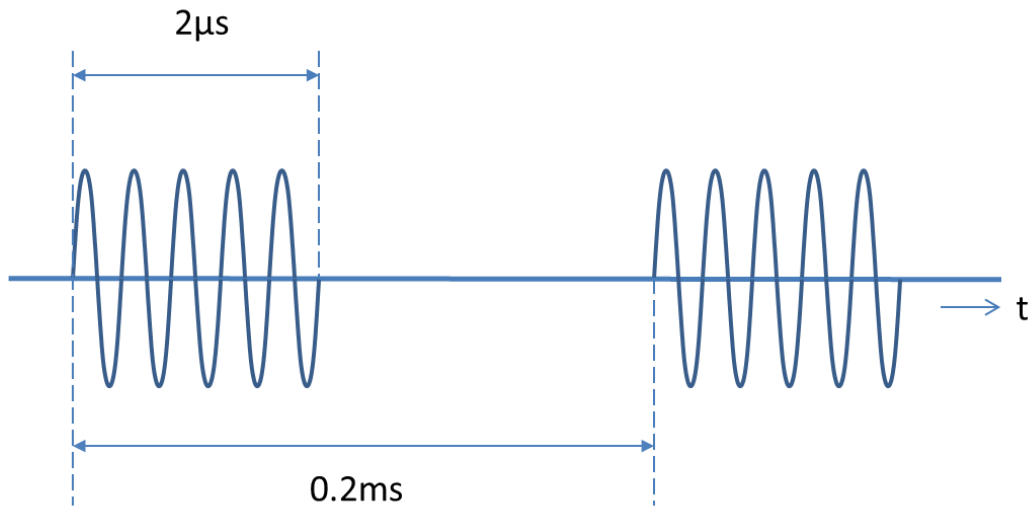
- ① 10Hz
- ② 100Hz
- ③ 1,000Hz
- ④ 10,000Hz

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



- ① 1KHz
- ② 5KHz
- ③ 10KHz
- ④ 50KHz

7. Which of the following is the correct value about the center frequency of the display of the waveform?



- ① 1MHz
- ② 10MHz
- ③ 5MHz
- ④ 10MHz

8. 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

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

- ① air 340m / s
- ② fat 1,450m / s
- ③ kidney 1,560m / s
- ④ bone 1,580m / s

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

- ① bone> fat> muscle
- ② bone> muscle> fat
- ③ fat> bone> muscle
- ④ muscle> bone> fat

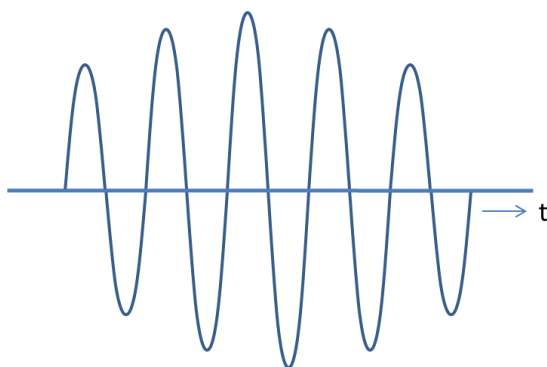
11. Which of the following is the correct value in the magnitude relation of the attenuation coefficient in the body

- ① bone> soft tissue> blood
- ② bone> blood> soft tissue
- ③ soft tissue> bone> blood
- ④ blood> soft tissue> bone

12. At a frequency of 3.5MHz, the attenuation in the depth of 1cm is 2.8dB. Which of the following is the correct attenuation at a frequency of 5MHz?

- ① 0.28dB
- ② 2.8dB
- ③ 0.4dB
- ④ 4.0dB

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



- ① about 0.075mm
- ② about 0.15mm
- ③ about 0.75mm
- ④ about 1.5mm

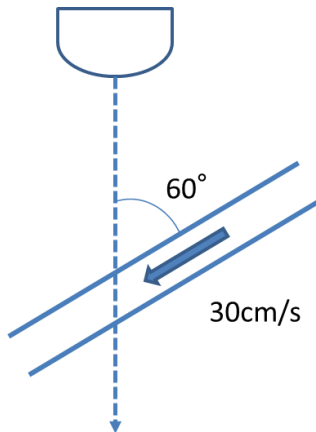
14. There is an observation apparatus capable of up to depth 8cm at the center frequency 3.5MHz. Which of the following is the correct value in observation depth at 5MHz? Decay rate is a $1\text{db} / \text{cm} \cdot \text{MHz}$

- ① about 4.0cm
- ② about 4.5cm
- ③ about 5.0cm
- ④ about 5.5cm

15. 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 $1500\text{m} / \text{s}$.

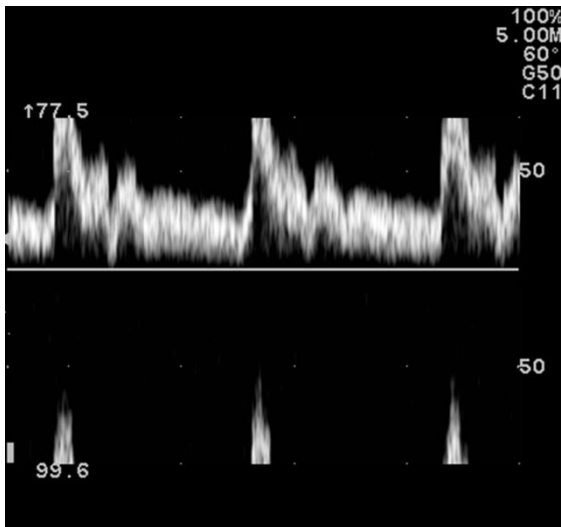
- ① 2.5cm
- ② 5cm
- ③ 20cm
- ④ 25cm

16. The flow of blood is flowing in the $30\text{cm} / \text{s}$. 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 $1500\text{m} / \text{s}$.



- ① 0.3KHz
- ② 0.4KHz
- ③ 0.5KHz
- ④ 0.6KHz

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



- ① aliasing
- ② side lobe
- ③ main lobe
- ④ mirror effect

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



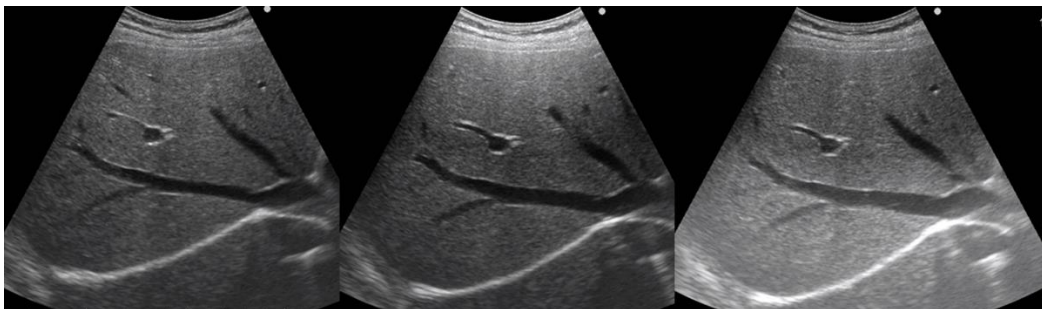
- ① gain
- ② center frequency
- ③ STC (sensitivity time control), TGC (time gain control)
- ④ dynamic range

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



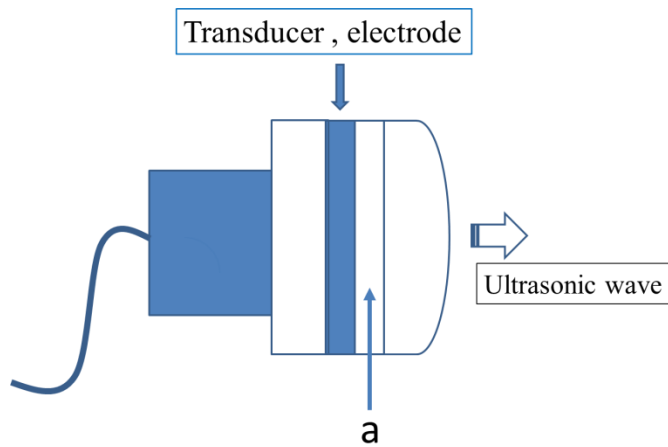
- ① focus
- ② center frequency
- ③ STC (sensitivity time control), TGC (time gain control)
- ④ dynamic range

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



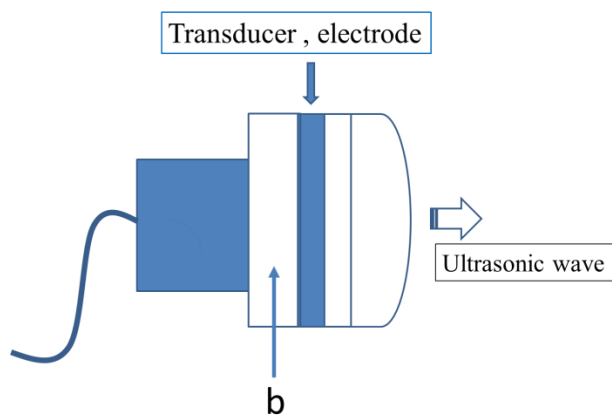
- ① focus
- ② center frequency
- ③ STC (sensitivity time control), TGC (time gain control)
- ④ dynamic range

21. Figure shows the structure of a probe (non-semiconductor type). Choose from the following about the structure a (Answer ④)



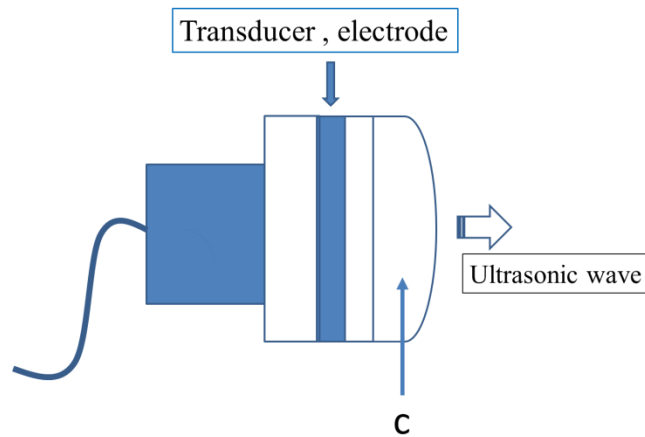
- ① backing material
- ② acoustic lens
- ③ attachment
- ④ acoustic matching layer

22. Figure shows the structure of a probe (non-semiconductor type). Choose from the following about the structure b



- ① backing material
- ② acoustic lens
- ③ attachment
- ④ acoustic matching layer

23. Figure shows the structure of a probe (non-semiconductor type). Choose from the following about the structure c



- ① backing material
- ② acoustic lens
- ③ attachment
- ④ acoustic matching layer

24. 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.

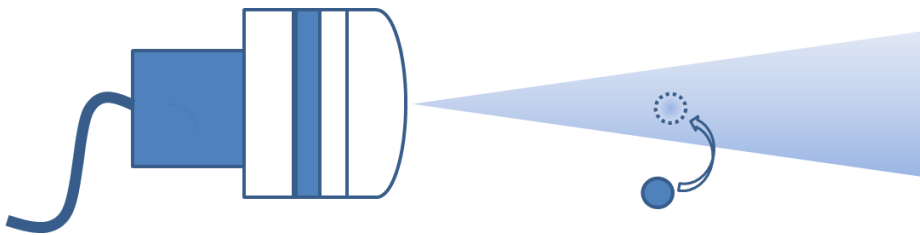
25. Which of the following is the wrong in the characteristics of the continuous wave Doppler?

- 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.

26. 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 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.

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



- ① grating lobe
- ② side lobe
- ③ main lobe
- ④ mirror effect

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



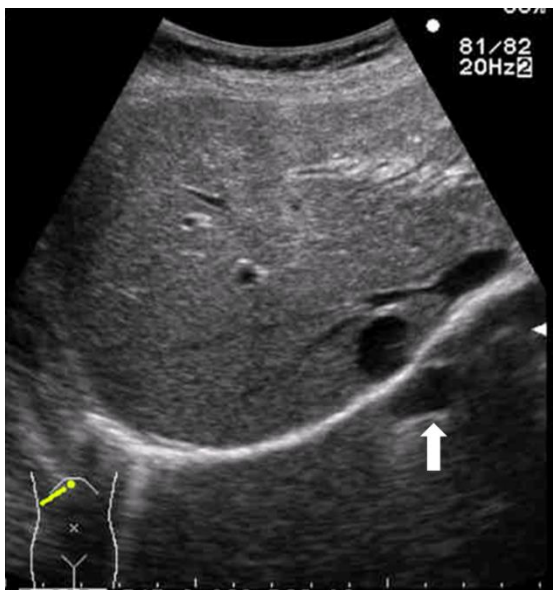
- ① grating lobe
- ② side lobe
- ③ multiple reflection
- ④ mirror effect

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



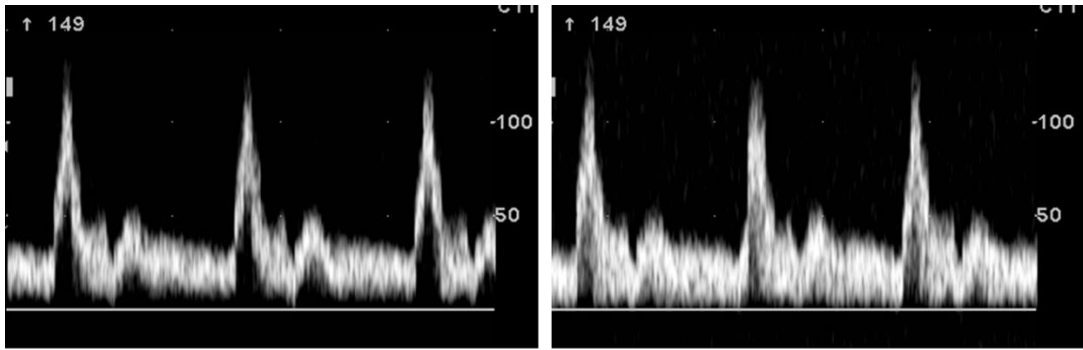
- ① grating lobe
- ② side lobe
- ③ main lobe
- ④ multiple reflection

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



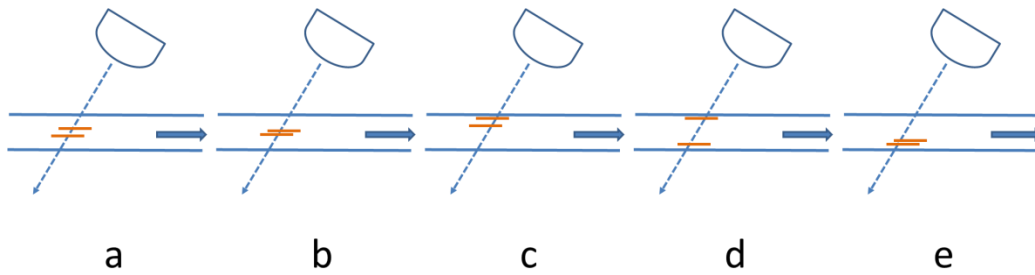
- ① grating lobe
- ② side lobe
- ③ main lobe
- ④ mirror effect

31. The image A is an appropriate doppler waveform. Which of the following is the setting of Sample volume for image B?



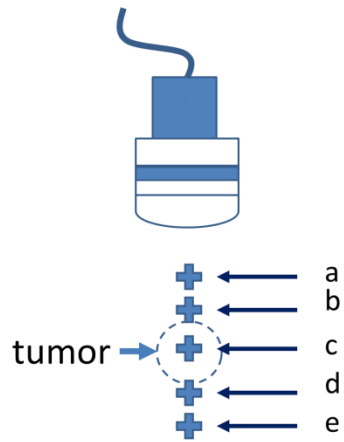
A

B



- ① a
- ② b
- ③ c
- ④ d

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

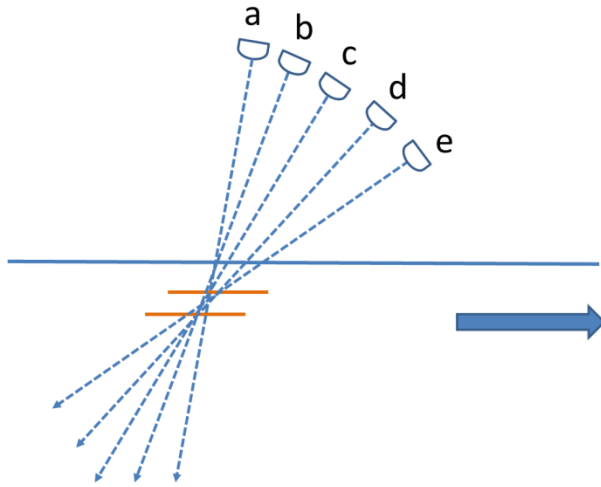


- ① a
- ② b
- ③ c
- ④ d

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

- ① grating lobe
- ② side lobe
- ③ main lobe
- ④ mirror effect

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



- ① b
- ② c
- ③ d
- ④ e

35. 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.

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

- ① mucus
- ② blood
- ③ water
- ④ air

37. 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

38. 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

39. 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.

40. 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

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

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

42. 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

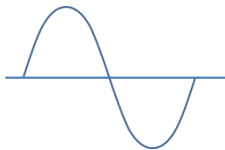
43. Which of the following materials (A to C) is the unnecessary material for start-up inspection? A. power cord B. probe C. monitor

- ① A
- ② B
- ③ C
- ④ There is NOT the unnecessary material in A to C.

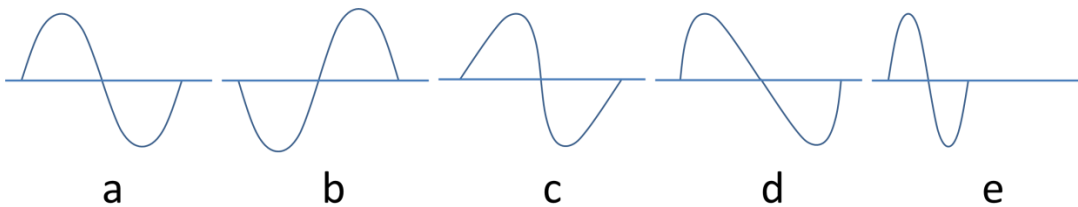
44. With cardiac ultrasonography, which method is appropriate method of blood flow measurement for high grade stenosis of valve?

- ① pulsed wave Doppler
- ② continuous wave Doppler
- ③ color Doppler
- ④ power doppler

45. Which waveform is with the highest similar receiving waveform from the transmitter waveform?



transmitter waveform



- ① a
- ② b
- ③ c
- ④ d

46. 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 springs up a turbulent flow.

47. Which of following dose it have high ability to absorb?

- ① calculs
- ② bone
- ③ air
- ④ metal

48. Which tumor is easy to get lateral shadow?

- ① A margin of tumor is flat, and it has coat.
- ② A margin of tumor is flat, and it doesn't have coat.
- ③ A margin of tumor is irregular, and it doesn't have coat.
- ④ A hard tumor

49. Which of following is correct for second harmonic of 4MHz?

- ① 2MHz
- ② 4MHz
- ③ 6MHz
- ④ 8MHz

50. 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

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

- ① posterior echo enhancement
- ② boundary shadow
- ③ surrounding echo
- ④ lateral shadow



52. For a typical ultrasound findings of cirrhosis of the liver, Choose a description that is wrong

- ① atrophy of the right hepatic lobe and Swelling the left hepatic lobe
- ② narrowing of the hepatic vein
- ③ thickening of the gallbladder wall
- ④ atrophy of the spleen

53. In acute hepatitis, Choose those that are not typical ultrasound findings

- ① hepatomegaly
- ② gallbladder enlargement
- ③ splenomegaly
- ④ reduction of the liver parenchyma echo level

54. In fatty liver, Choose those that are typical ultrasound findings

- ① bright liver
- ② chameleon sign
- ③ clear vessels
- ④ Clarity of intrahepatic vascular

55. As a disease associated with intrahepatic bile duct expansion, Choose the most negative disease

- ① extrahepatic bile duct stones
- ② gallbladder adenomyomatosis
- ③ cholangitis
- ④ cholangioma

56. Ultrasound image shows right lobe of the liver . Choose the most likely disease.



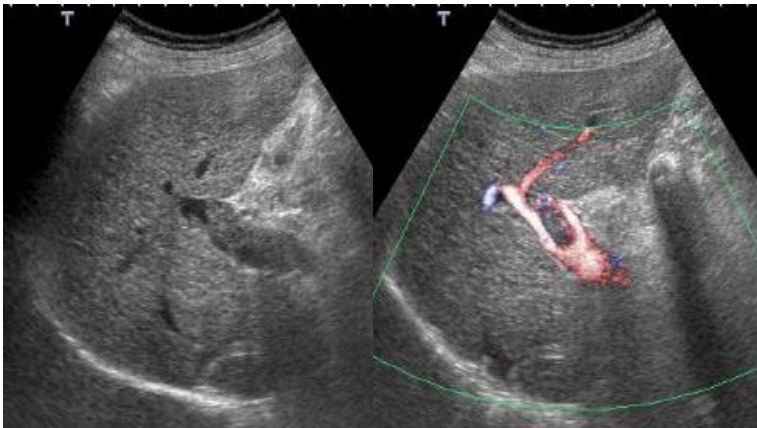
- ① liver calcification
- ② hepatic hemangioma
- ③ hepatocellular carcinoma
- ④ metastatic liver cancer

57. Which of following image not correct description?



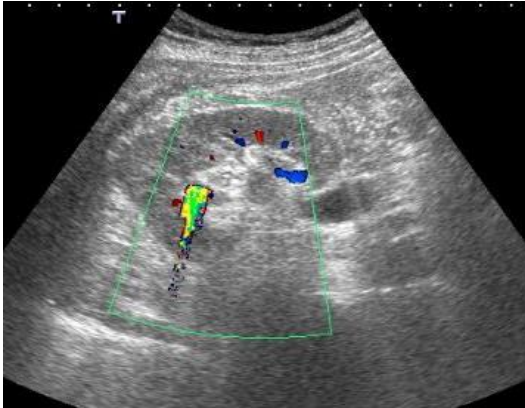
- ① Cause arteriosclerosis
- ② With the expansion of the inferior vena cava
- ③ Splenomegaly that is often
- ④ loss of respiratory variation in diameter of hepatic vein

58. Which of following image correct description?



- ① extrahepatic bile duct cancer
- ② gallbladder cancer
- ③ diffuse hepatocellular carcinoma
- ④ normal portal venous blood flow

59. Ultrasound image shows right kidney. Choose the correct one.



- ① renal stone
- ② renal aneurysm
- ③ renal carcinoma
- ④ renal injury

60. What causes Hydronephrosis ? Choose the NOT correct one.

- ① ureteral stone
- ② ureteral tumor
- ③ renal tuberculosis
- ④ inflammatory aortic aneurysm

61. Choose the disease with the low frequency as the cause of hematuria

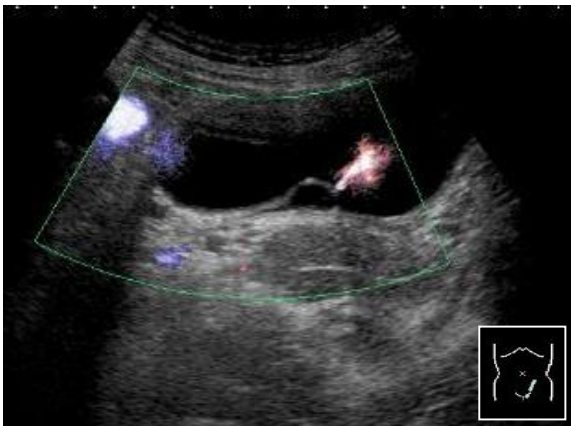
- ① bladder cancer
- ② kidney stones
- ③ kidney cancer
- ④ benign prostatic hyperplasia

62. Ultrasound image shows a midline abdominal horizontal scanning. What do you doubt as disease



- ① pancreatic cancer
- ② malignant lymphoma
- ③ inflammatory arteritis
- ④ horseshoe kidney

63. Ultrasound images showing the lower abdomen left oblique scanning. What do you doubt as disease



- ① left ovarian tumor
- ② left ureterocele
- ③ bladder cancer
- ④ left iliac artery aneurysms

64. For polycystic kidney disease, Choose the wrong sentence.

- ① renal cancer may occur.
- ② polycystic kidney disease is a hereditary disease.
- ③ in the liver and pancreas, cysts may be complications.
- ④ polycystic kidney disease is often on one side kidney.

65. For ultrasound examination of the adrenal glands, Choose the correct sentence

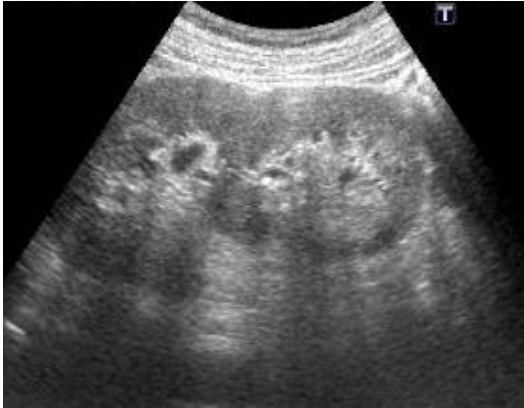
- ① normal adrenal gland is hard to visualize better on the right side
- ② adrenal glands of the newborn is difficult to detect.
- ③ tumor are all benign lesions.
- ④ If the right adrenal gland tumor is increased, there is possible to retraction of the right kidney downwards.

66. In the following ultrasound image, do you doubt what disease? Choose from the following



- ① prostatic hyperplasia
- ② bladder cancer
- ③ ovarian tumor
- ④ abdominal aortic aneurysm

67. In the following ultrasound image, do you doubt what disease? Choose from the following



- ① renal tumor
- ② staghorn calculus
- ③ duplicated renal pelvis
- ④ hydronephrosis

68. Ultrasound images show the median vertical scanning. Choose the correct sentence from the following



- ① myoma of the uterus is seen
- ② ascites is not seen
- ③ bladder tumor is seen
- ④ Urine is not accumulated

69. As ultrasound findings in the uterus and ovaries, Choose the wrong sentence from the following

- ① myoma of the uterus and uterine sarcoma is often difficult differential diagnosis
- ② in uterus bicornis, there is a case of a single kidney
- ③ myoma of the uterus are often depicted as a well-defined solid mass
- ④ in stem torsion of ovarian cyst, ovaries are often atrophy

70. Ultrasound images show a right intercostal scanning. Choose a tumor of the arrow.



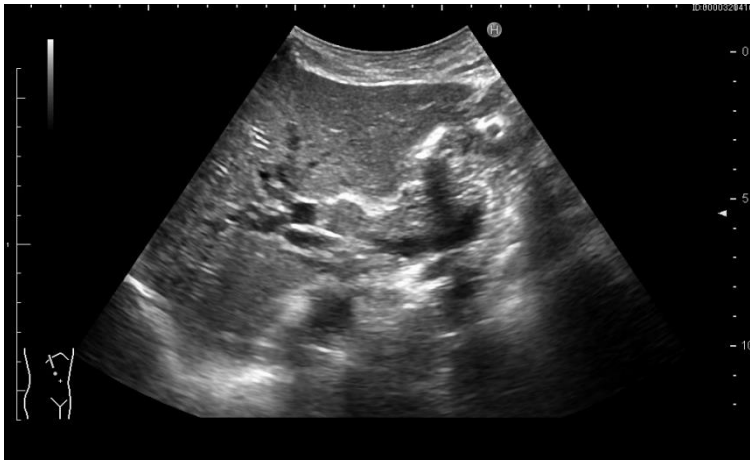
- ① liver tumor
- ② right kidney tumor
- ③ right adrenal gland tumor
- ④ pancreatic head tumor

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



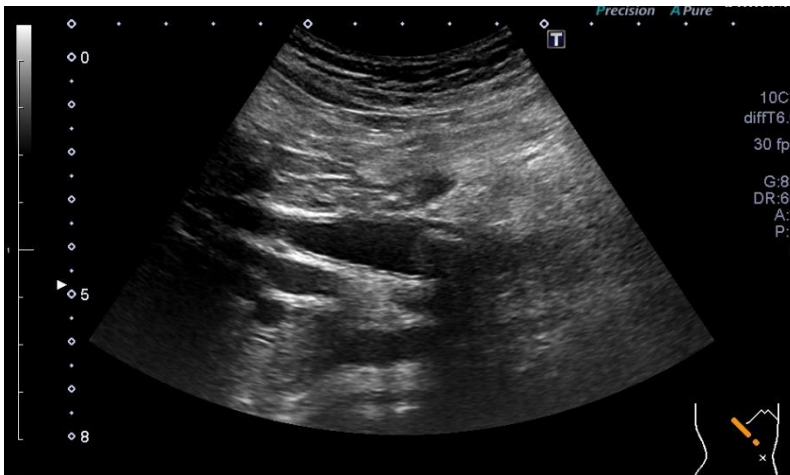
- ① Stone is seen in the gallbladder.
- ② Stones are depicted accompanied by acoustic shadow
- ③ Gallbladder wall is thickened markedly.
- ④ Debris (biliary sludge) is not found in the gallbladder.

72. The following ultrasound image shows the bile duct Which of the following is correct description?



- ① Expansion of intrahepatic bile duct is not.
- ② There is expansion of the extrahepatic bile duct.
- ③ Bile duct tumor is not suspected.
- ④ If the neoplastic lesion, it is not necessary to observe the vertical infiltration and horizontal infiltration.

73. The following image shows the bile duct Which of the following is not correct description?



- ① Extrahepatic bile duct has been extended.
- ② Stone is seen in the bile duct.
- ③ The wall of the bile duct is thickened markedly.
- ④ Doubt the bile duct expansion due to bile duct stones.

74. The following image shows the gallbladder . Which of the following is correct description?



- ① There is no abnormal findings in the gall bladder.
- ② It is not necessary to check the mobility by a change in posture.
- ③ Hyperechoic lesions are seen in the gallbladder.
- ④ Evaluation of Doppler is not necessary.

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



- ① Mass lesion seen in the gallbladder.
- ② It is not necessary to check the mobility by a change in posture.
- ③ Blood flow signal is seen in the tumor lesion.
- ④ The surface of the mass is smooth.

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



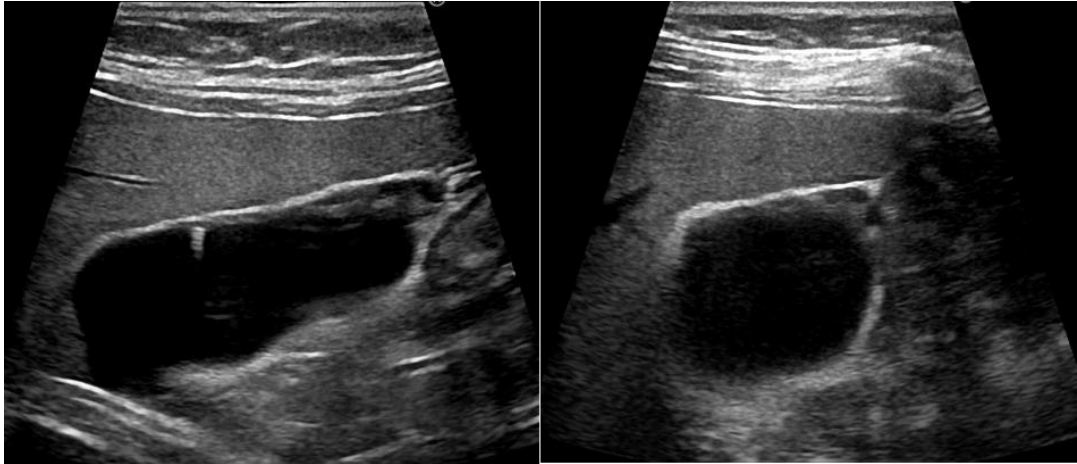
- ① Gallbladder has been enlarged
- ② Gallbladder wall has thickened
- ③ Seen sludge in the gallbladder
- ④ Acute cholecystitis is a negative.

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



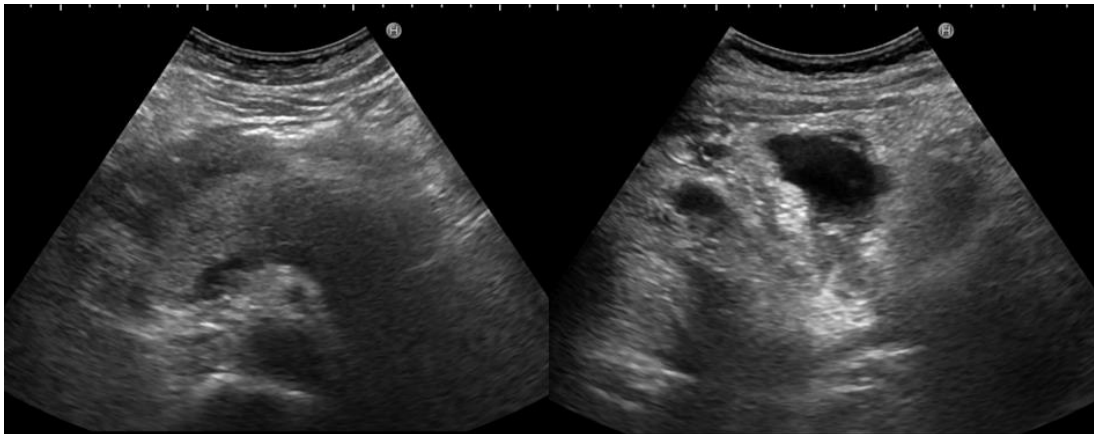
- ① Pancreas has been swelling
- ② Internal echo is uniform.
- ③ Diffuse pancreatic cancer is suspected.
- ④ Autoimmune pancreatitis is suspected.

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



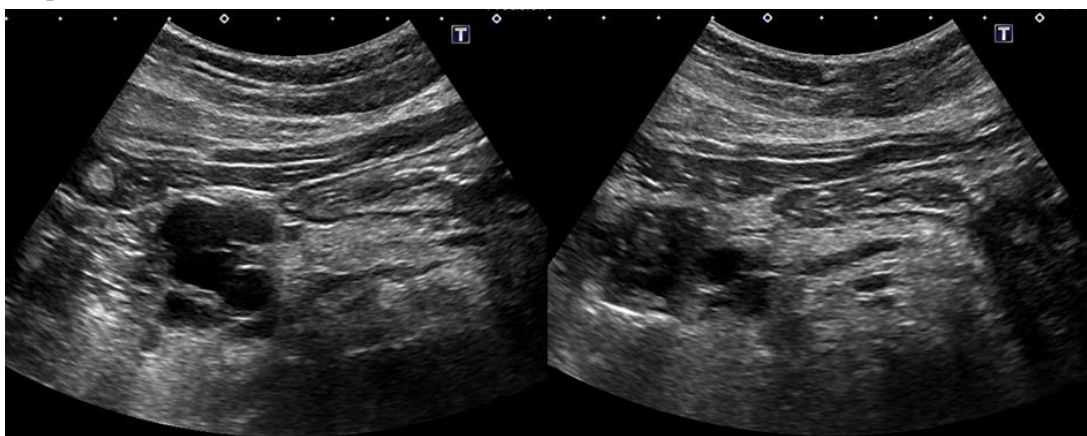
- ① Comet-like echo in the gallbladder body
- ② Localized wall thickening in gallbladder bottom
- ③ Hypoechoic area in the thickened bottom
- ④ RAS is not in normal gallbladder mucosa.

79. The following image shows the pancreas. Which of the following is correct description?



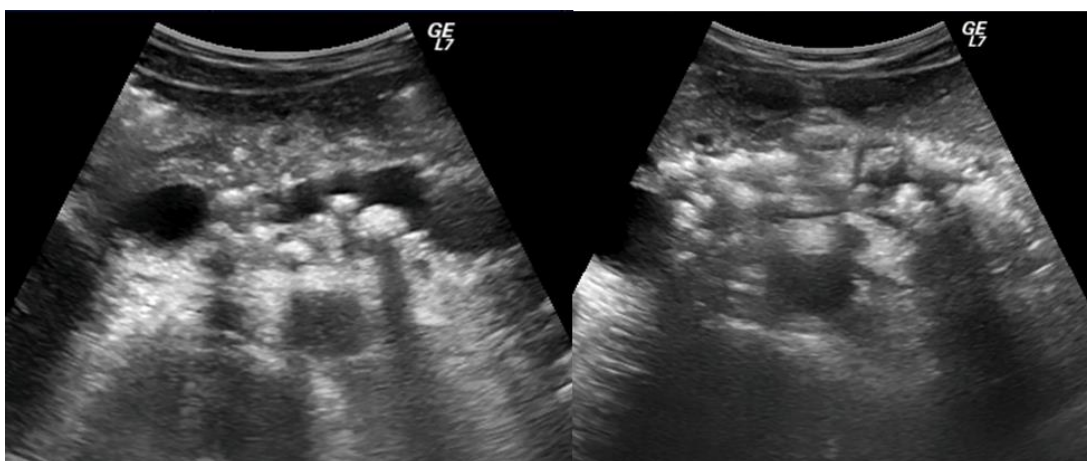
- ① Liquid is not recognized around the pancreas.
- ② The pancreas is not swelling.
- ③ Brightness of the pancreas is not a hypoechoic.
- ④ Suspected acute pancreatitis T

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



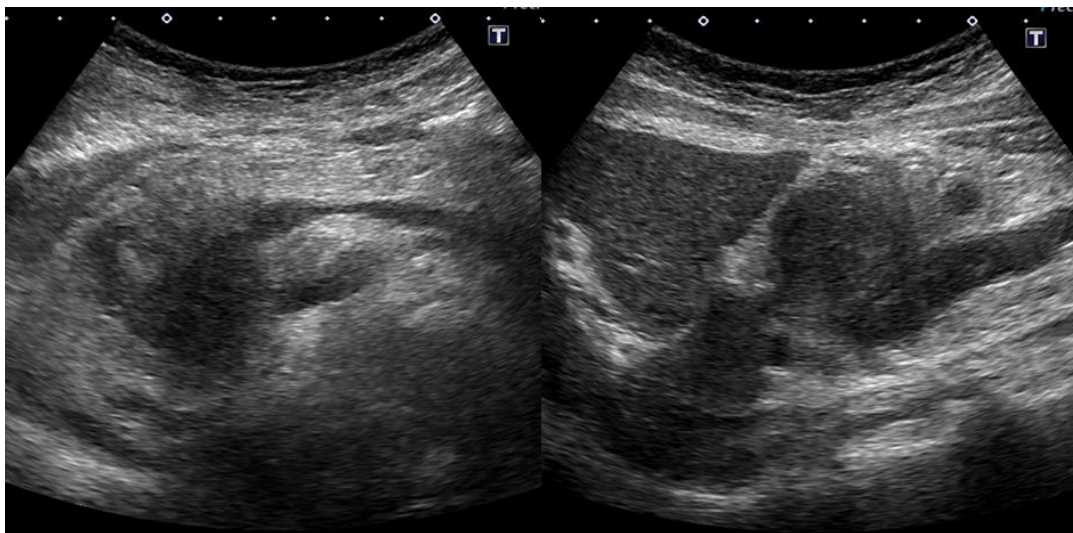
- ① multilocular cyst in the head of the pancreas
- ② expansion of the main pancreatic duct
- ③ To observe the solid lesion within the cyst.
- ④ In the ultrasonic examination of extracorporeal, visualization of the connection of cystic lesions (branch type IPMN) and the main pancreatic duct is possible.

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



- ① Expansion of the main pancreatic duct
- ② Atrophy of the pancreatic parenchyma
- ③ Stones in the main pancreatic duct
- ④ Chronic pancreatitis is a negative.

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



- ① Acknowledge a neoplastic lesion in the head of the pancreas.
- ② Neoplastic lesions are hypoechoic.
- ③ Tumor boundary is clear.
- ④ Invasive pancreatic cancer may be considered.

83. The following image shows the spleen. Which of the following is correct description?



- ① The spleen is a normal size
- ② Lesions are not found within the spleen.
- ③ High-echo area is the abnormal region.
- ④ Spleen malignant lymphoma is most suspected.

84. The following image shows the spleen. Which of the following is not correct description?



- ① Internal echo of the spleen is uniform.
- ② splenomegaly
- ③ There is no need to perform the detection of collateral circulation.
- ④ Expansion of the splenic vein.

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



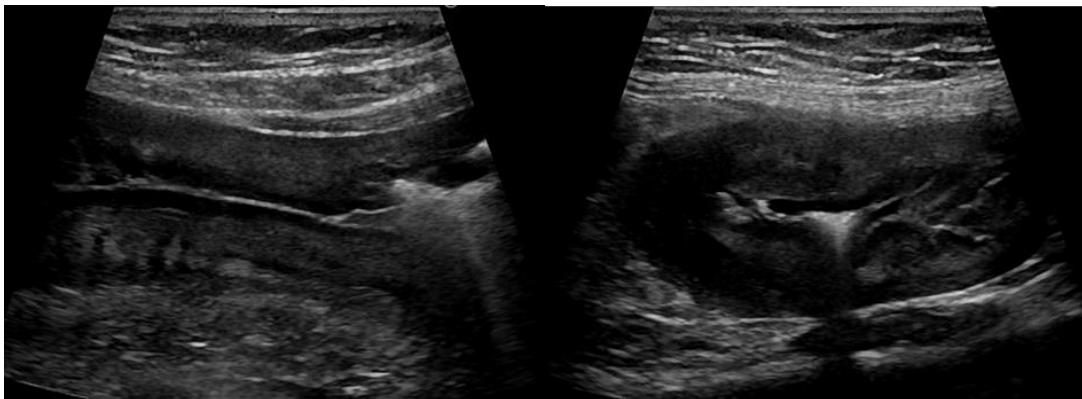
- ① Appendix swelling is 5mm or more.
- ② Appendicitis sometimes hyperechoic zone is observed around the appendix.
- ③ Layer structure of the appendix will be observed in the three layers.
- ④ Fecalith is not seen in the appendix.

86. The following image shows the Umbilical region. Which of the following is not correct description?



- ① There is an expansion in the intestinal tract, which is continuous with the umbilical region.
- ② Umbilical hernia is considered.
- ③ Acknowledge the ascites hernia sac.
- ④ It is not necessary to perform a blood flow evaluation in Doppler.

87. The following image shows the stomach. Which of the following is not correct description?



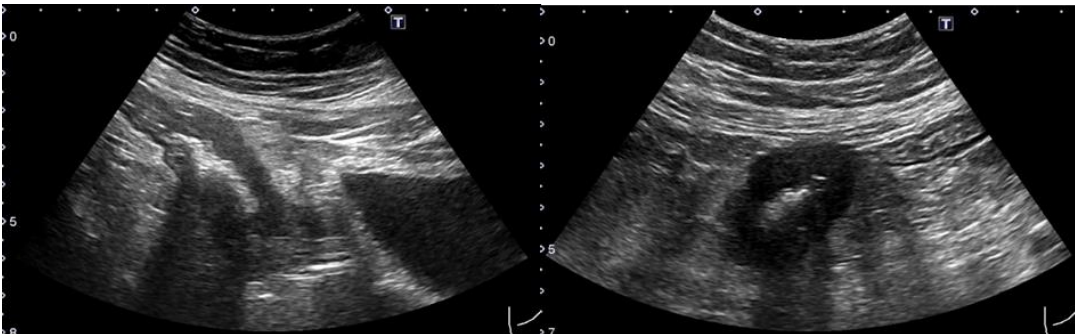
- ① The layer structure is unclear.
- ② Acknowledge the gastric wall thickening.
- ③ AGML and stomach anisakiasis and type 4 advanced gastric cancer is considered as a differential diagnosis.
- ④ Acknowledge irregularities irregularities in the mucosal surface.

88. The following image shows the stomach. Which of the following is not correct description?



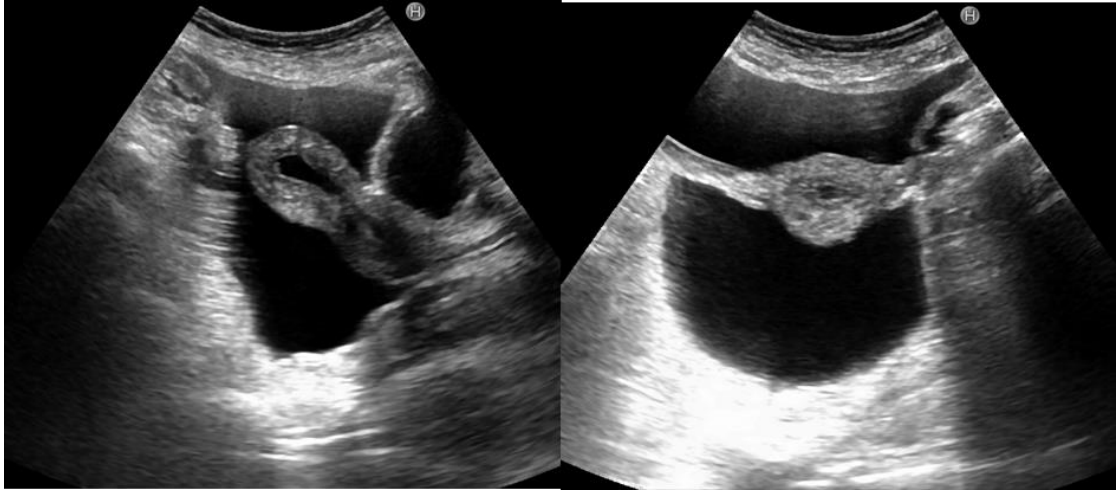
- ① Acknowledge the watery contents into the stomach.
- ② Recognize the tumor lesions in the stomach wall.
- ③ Submucosal tumor is considered.
- ④ Stomach wall layer structure is rendered in three-layer structure.

89. The following image shows the sigmoid colon. Which of the following is not correct description?



- ① Wall thickening admit the entire circumference.
- ② The layer structure is clearly visualized.
- ③ Type 2 advanced colorectal cancer is suspected.
- ④ To observe the presence or absence of lymph node enlargement.

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



- ① A large amount of ascites in Douglas fossa.
- ② Water species can be seen in the uterus (Hydrometra)
- ③ Acknowledge the residual urine in the bladder.
- ④ Douglas fossa exist in men.