

Question **1**

Correct

Mark 0.50 out of 0.50

🚩 Flag question

⚙ Edit question

All of the following are typical of longstanding cirrhosis EXCEPT:

Select one:

- ☐ a. Atrophy of the liver.
- ☒ b. Homogeneous echotexture. ✓
- ☐ c. A nodular outline to the liver.
- ☐ d. Presence of ascites around the liver.
- ☐ e. Hepatofugal flow of the portal veins.

The correct answer is: Homogeneous echotexture.

Question **2**

Correct

Mark 0.50 out of 0.50

🚩 Flag question

⚙ Edit question

The procedure that involves the insertion of a catheter or a cannula into the abdominal cavity under ultrasound guidance for the purposes of draining fluid is known as:

Select one:

- ☒ a. Paracentesis ✓
- ☐ b. Thoracocentesis
- ☐ c. Fine Needle Aspiration
- ☐ d. Transjugular Intrahepatic Portosystemic Stent
- ☐ e. Biopsy

Your answer is correct.

The correct answer is: Paracentesis

Question **3**

Correct

Mark 0.50 out of 0.50

🚩 Flag question

⚙️ Edit question

A 15 year old patient presents with upper abdominal pain in the midline region and an elevated serum amylase level after he was hit in this region by his motorbike handle (blunt trauma) while out riding.

A routine abdominal ultrasound demonstrates that there is a cystic mass in the region of interest. The mass MOST likely represents:

Select one:

- ☐ a. A lymphoma deposit
- ☒ b. A pancreatic pseudocyst ✓
- ☐ c. An aortic aneurysm
- ☐ d. Fluid-filled bowel
- ☐ e. An ovarian cyst

The correct answer is: A pancreatic pseudocyst

Question **4**

Correct

Mark 0.50 out of 0.50

🚩 Remove flag

⚙️ Edit question

The presence of pus in a dilated collecting system of the kidney is known as:

- ☐ a. Focal Pyelonephritis
- ☐ b. Acute Pyelonephritis
- ☐ c. A renal Abscess
- ☐ d. Lobar Nephronia
- ☒ e. Pyonephrosis ✓

Your answer is correct.

The correct answer is:
Pyonephrosis

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question **5**

Correct

Mark 0.50 out of 0.50

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Edit question

This image represents an incidental finding on a 70 year old male patient detected during a routine abdominal ultrasound. What do you need to ensure you have done to complete your investigation of this area?



- ☐ a. Extend the scan to include the iliac arteries.
- ☐ b. Use colour and pulsed doppler.
- ☐ c. Obtain an AP measurement from outer margin to outer margin.
- ☐ d. None of the options as you have demonstrated the findings well with this image.
- ☐ e. Measure the distance to the renal arteries.
- ☐ f. Scan this area in a different imaging plane.
- ☒ g. All of the other options are correct. ✓

Your answer is correct.

The correct answer is:

All of the other options are correct.

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question 6

Correct

Mark 0.50 out of 0.50

Flag question

Edit question

This image demonstrates a benign mass within the cortex of the kidney as indicated by the yellow arrow.



Which of the following is the MOST likely diagnosis?

- ☒ a. Angiomyolipoma ✓
- ☐ b. Renal cell carcinoma
- ☐ c. Cortical cyst
- ☐ d. Parapelvic cyst
- ☐ e. Transitional cell carcinoma

Your answer is correct.

The correct answer is:
Angiomyolipoma

Question 7

Correct

Mark 0.50 out of 0.50

Flag question

Edit question

Which structure separates the rectus abdominal muscles on each side of the anterior abdominal wall?

Select one:

- ☒ a. Linea Alba ✓
- ☐ b. Transversus Abdominus Muscles
- ☐ c. External Oblique Muscles
- ☐ d. Internal Oblique Muscles

Your answer is correct.

The correct answer is: Linea Alba

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Question 8

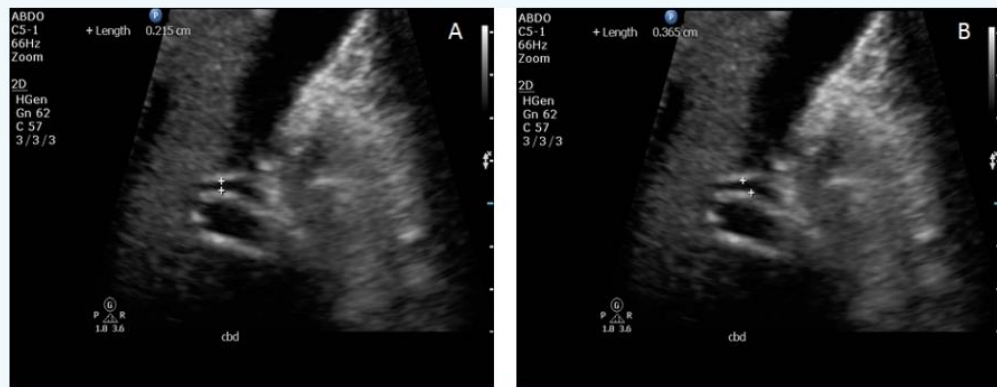
Correct

Mark 0.50 out of 0.50

Flag question

Edit question

Look at these two images of the Common Bile Duct and decide which image displays INCORRECT calliper placement.



Select one:

- ☐ a. Image A
- ☒ b. Image B ✓ Correct answer - well done!

The correct answer is: Image B

Question 9

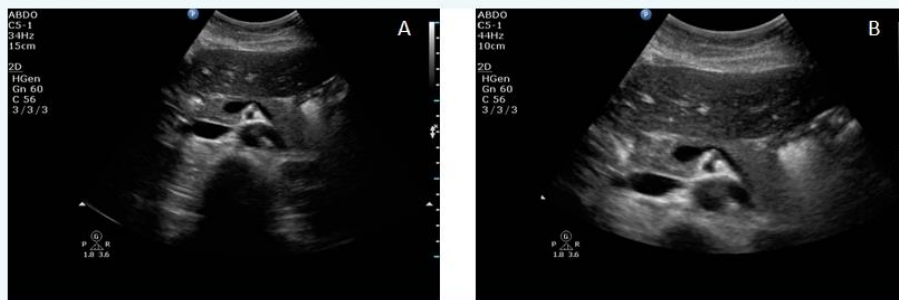
Correct

Mark 0.50 out of 0.50

Flag question

Edit question

You are asked to image a patient's pancreas. Which of these two images displays the OPTIMAL depth of view?



Select one:

- ☐ a. Image A
- ☒ b. Image B ✓ Correct answer - well done!

The correct answer is: Image B

Question 10

Correct

Mark 0.50 out of 0.50

Flag question

Edit question

Which of the following would be considered risk factors for a AAA?

- ☐ a. Hypertension, poor renal function, difficulty emptying bladder.
- ☐ b. Right flank pain, a family history and female aged 25-39.
- ☐ c. Upper right quadrant pain, vomiting and elevated white blood cell count.
- ☒ d. Smoking, male gender and a family history. ✓

Your answer is correct.

The correct answer is:

Smoking, male gender and a family history.

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question 11

Correct

Mark 0.50 out of 0.50

Flag question

Edit question

A condition seen mostly in children in which there is telescoping and subsequent obstruction of the bowel is called:

Select one:

☒ a. Intussusception ✓

In intussusception, a proximal portion of bowel invaginates into more distant bowel and causes gut obstruction

[ref: Sanders R., Dolk J., Miner N. (2002) Exam preparation for diagnostic ultrasound. Baltimore. Lippincott Williams and Wilkins.]

☐ b. Pyloric stenosis

☐ c. Biliary atresia

☐ d. Crohn's disease

☐ e. Obstructive bowel disease

The correct answer is: Intussusception

Question 12

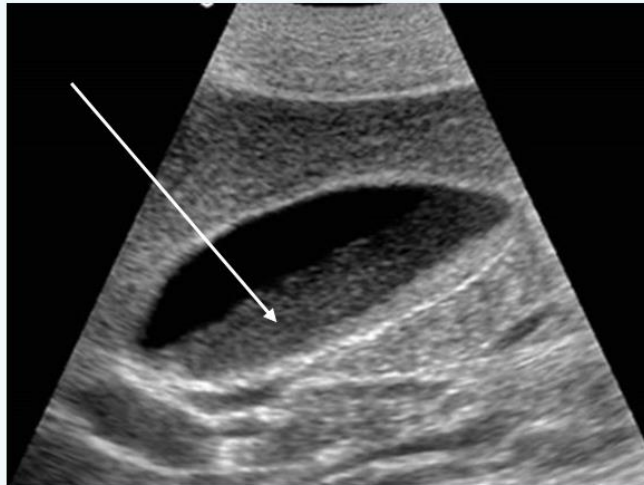
Correct

Mark 0.50 out of 0.50

Flag question

Edit question

Look at this decubitus image of a gallbladder and decide what pathology the arrow is pointing to.



Select one:

☐ a. Adenomyomatosis

☐ b. Choledocholithiasis

☐ c. Cholesterosis

☒ d. Gallbladder Sludge ✓ Correct answer - well done!

The correct answer is: Gallbladder Sludge

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question **13**

Correct

Mark 0.50 out of 0.50

Flag question

Edit question

A 9-year old male attends for an abdominal ultrasound with RIF pain and an elevated white blood cell count. He is visibly unwell and probe pressure in the ROI elicits rebound tenderness.

Below is a representative image of what you see when scanning in the ROI.



The image most likely represents:

- ☒ a. An Appendicitis ✓
- ☐ b. A Pyloric stenosis
- ☐ c. An Intussusception
- ☐ d. The right kidney
- ☐ e. An inflamed iliac vessel

Your answer is correct.

The correct answer is:

An Appendicitis

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question 14

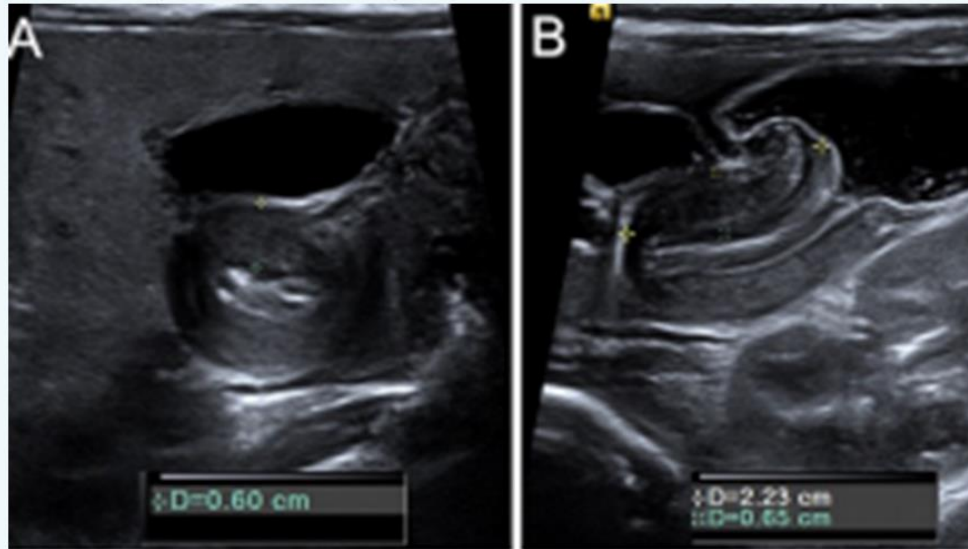
Correct

Mark 3.00 out of 3.00

Flag question

Edit question

Your patient is a 4 week old male that presents with projectile vomiting and failure to thrive. Use the below image to respond to the following questions.



True	False		
☒	☐	This image is demonstrating hypertrophic pyloric stenosis.	✓
☐	☒	This image is demonstrating intussusception.	✓
☒	☐	Image B displays the 'little cervix sign'.	✓
☒	☐	Image A displays the 'target sign'.	✓
☐	☒	In order to diagnose hypertrophic pyloric stenosis, measurements that the pylorus should measure greater than include: >15mm in AP diameter on transverse >4mm in length >12mm muscle wall thickness	✓
☐	☒	Seeing fluid move through the pyloric canal in real time indicates a hypertrophic pyloric stenosis.	✓

SP2 2023 Exam Abdominal Sonography – Questions & Answers

This image is demonstrating hypertrophic pyloric stenosis.

: True

This image is demonstrating intussusception.

: False

Image B displays the 'little cervix sign'.

: True

Image A displays the 'target sign'.

: True

In order to diagnose hypertrophic pyloric stenosis, measurements that the pylorus should measure greater than include:

>15mm in AP diameter on transverse

>4mm in length

>12mm muscle wall thickness

: False

Seeing fluid move through the pyloric canal in real time indicates a hypertrophic pyloric stenosis.

: False

Question 15

Correct

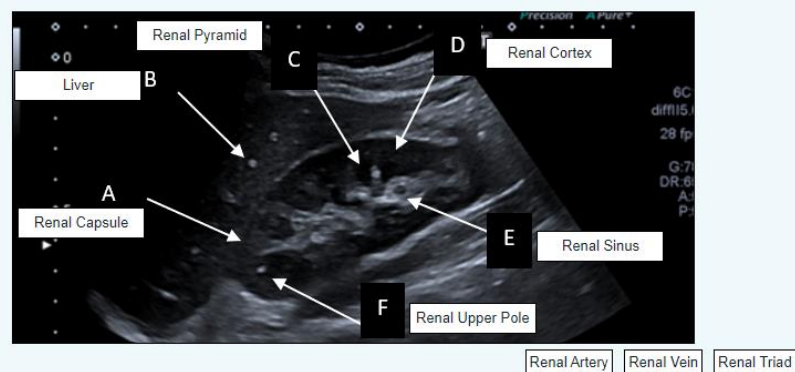
Mark 3.00 out of 3.00

Flag question

Edit question

Identify the following anatomy.

Drop and drag the anatomy names provided into the corresponding position.



Your answer is correct.

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question 16

Correct

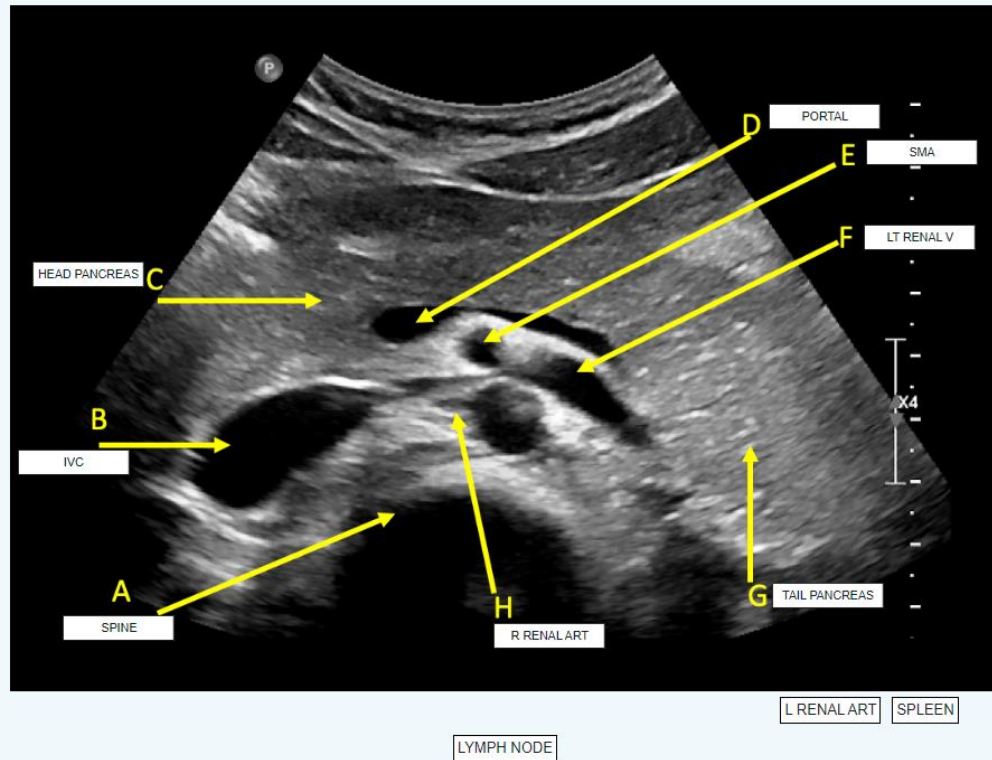
Mark 4.00 out of 4.00

Flag question

Edit question

Identify the following anatomy.

Drop and drag the anatomy names provided into the corresponding position.



Question 17

Partially correct

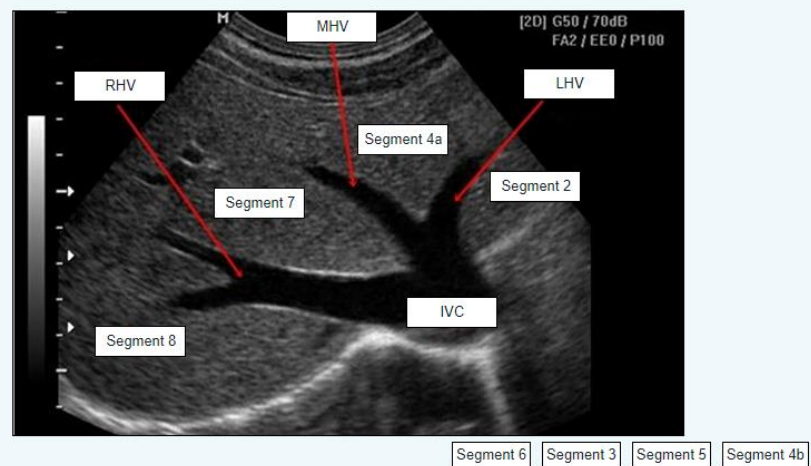
Mark 3.00 out of 4.00

Flag question

Edit question

Identify the following anatomy.

Drop and drag the anatomy names provided into the corresponding position.



SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question 18

Complete

Mark 4.50 out of 4.50

Flag question

Edit question

- a. Describe the probe that you would use to perform an ultrasound of the anterior abdominal wall. [1]
- b. Briefly explain why you might make this selection. [2]
- c. List three (3) reasons why you might be asked to perform a scan on the anterior abdominal wall. [1.5]

Total Marks: 4.5

Please type your answer in the text box provided below.

a. A high-frequency (9-12Mhz), linear array transducer would be used to image the anterior abdominal wall

b. A high-frequency transducer should be used because a higher frequency provides better imaging resolution. However, this is at the expense of decreased/ lower penetration. However because the anterior abdominal wall is a superficial structure, the penetration is enough to provide good and high-resolution imaging of the anterior abdominal wall. A high-frequency, linear array transducer ensures optimal resolution for the penetration depth required.

- c. - Investigation for a mobile, firm lump that could be a lipoma
- Assessment for a hernia
- Assessment for a rectus sheath hematoma

Question 19

Complete

Mark 6.00 out of 6.00

Flag question

Edit question

- a. Which two ultrasound methods can be used to investigate the prostate? Include the probes used for each method. [2]
- b. Give a reason why you might use each method that you have listed for your answer to a. [2]
- c. What would the patient preparation be for each of these methods? [2]

Total Marks: 6

Please type your answer in the text box provided below.

- a. - Transabdominal scan --> Uses a low frequency, curved array transducer (3-6Mhz)
- Transrectal scan --> Uses a higher frequency, endocavity transducer (5-9Mhz)

b. A transabdominal scan is often used as a first line investigation for prostate imaging for indications such as lower urinary tract symptoms, raised PSA or family history. It provides a general overview of the prostate size, shape and volume and it also allows for an assessment of post micturition volume to assess whether patient is emptying adequately. It is also less invasive and preferred by patients.

A transrectal examination enables a much better visualisation of the prostate allowing for more accurate measurement of the prostate for treatment of BPH. It is also used to guide prostate biopsy.

c. For a transabdominal scan, the patient needs to have a full bladder- Instruct patient to drink 1 L of water 1 hour prior to the exam and do not urinate. However, occasionally, a overly full bladder can obstruct the view of the prostate so the bladder should not be overly distended.

For a transrectal scan, the patient needs to have an emptied bladder. Additionally, informed consent is needed prior to performing this exam - this involves providing all information about this exam including a detailed explanation, of the risks and benefits of the examination. Occasionally, an enema may be given prior to the procedure.

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question 20

Complete

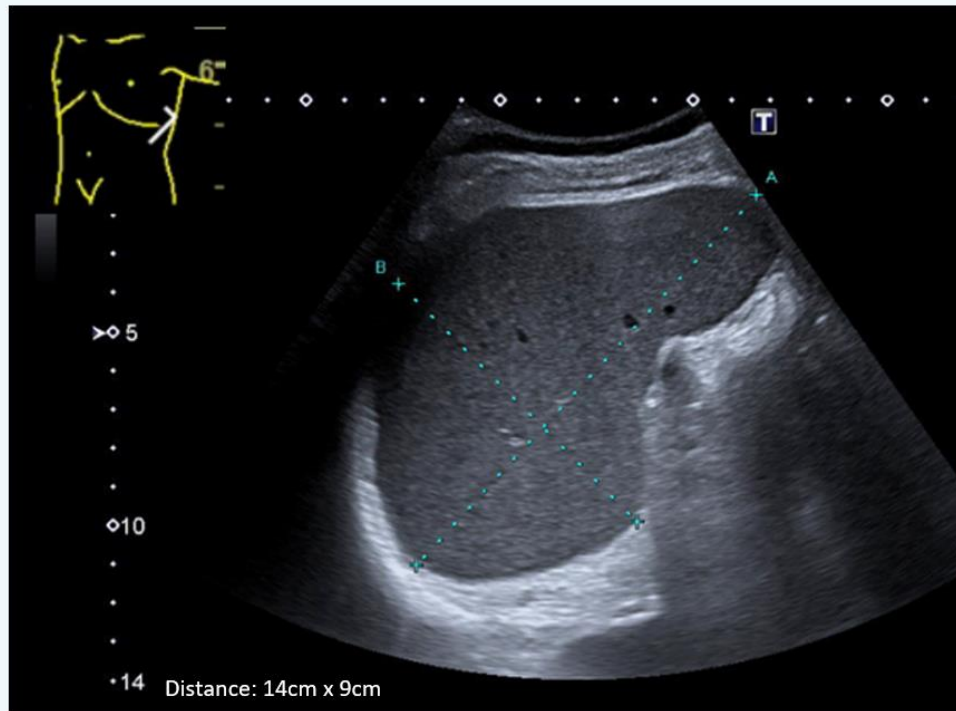
Mark 6.00 out of 6.00

Flag question

Edit question

The following image is taken in the upper left quadrant of your patients abdomen.

Consider the image and respond to the questions provided below.



1. Describe the ultrasound appearances demonstrated. [4]

2. Given these appearances, what is your provisional diagnosis? [1]

3. What is the most common cause of this finding? [1]

Total Marks: 6

1. - A curved array, low frequency transducer has been used to acquire this image

- The image demonstrates the spleen in a longitudinal plane. This is likely a longitudinal image due to the crescentic shape of the spleen with the hilum directed to the right of the image and by the given pictogram.

- The spleen appears homogenous and has smooth borders. It appears rounded and has a bulbous appearance, especially at the inferior portion of the spleen.

- No evidence of internal masses

- Anechoic structures seen at the spleen hilum are likely to be normal splenic vessels but Colour Doppler can be used to confirm this.

- Most superficially, there is a small anechoic area/layer which could represent free fluid/ascites.

- The calipers indicate that the spleen measures 14cm in length and 9cm in transverse. This is considered to be an enlarged spleen - splenomegaly is present.

2. Splenomegaly

3. Portal Hypertension

Question **21**

Complete

Mark 6.50 out of 6.50

Flag question

Edit question

Use the image shown below to respond to the following questions.



- Describe the ultrasound appearances of this image. [4]
- Is what you are seeing on this image normal or abnormal? Justify your response. [2.5]

Total Marks: 6.5

- The image has been taken with a curved array, low frequency transducer
 - The image is a longitudinal image of the liver (as provided by the annotation) with the common portal vein and hepatic artery seen at the level of the porta hepatis.
 - The imaged liver appears homogenous and the liver contours are smooth. Hepatic vasculature appears to be normal.
 - A Colour Doppler box has been placed around the vessels. The Colour Spectral display indicates that red is flowing towards the liver. Although hard to distinguish between them, both the portal vein and the hepatic artery demonstrate a red colour and therefore both vessels are demonstrating blood flow towards the liver.
 - Flow towards the liver is normal for the hepatic artery and the portal vein. In the portal vein, this flow is described as being hepatopedal.
- Normal. The red Colour Doppler signal seen in both the Hepatic Artery and the Portal Vein indicate that flow is going towards the liver. This is normal for both these vessels. In particular, flow towards the liver in a Portal Vein is described as being hepatopedal and is normal. It implies that there is no reversal of normal flow which is often seen in diseases such as portal hypertension.

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question 22

Complete

Mark 5.00 out of 5.00

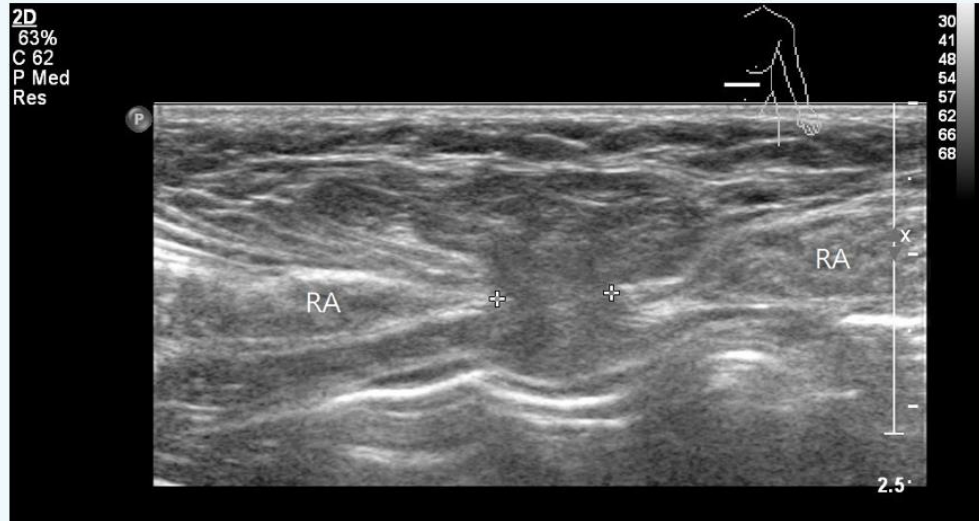
Flag question

Edit question

Your patient arrives for an ultrasound of a painful lump on the midline of their anterior abdomen.

While performing the scan they tell you that the lump increases in size with coughing or sneezing and when they lift heavy objects.

The below image is what you see when you scan in the region of the lump. Use this image to respond to the following questions.



- Describe the sonographic appearances [2]
- Given the ultrasound appearances and patient history, what is your provisional diagnosis? [1]
- What are the callipers indicating? [1]
- Is there anything that you may ask the patient to do to help confirm your diagnosis? [1]

- a. - The image has been taken with a high-frequency, linear array transducer and demonstrates a transverse midline scan of the anterior abdominal wall (Transverse as per the given pictogram).
- Most superiorly, there is subcutaneous tissue seen as a hypoechoic area with echogenic septations seen throughout.
- The rectus abdominus muscles are seen on the left and the right of the image as well-defined, lens-shaped structures of low to medium shades of grey.
- Between these rectus abdominus muscles, there appears to be a ill-defined hypoechoic area/defect protruding through these muscles. Usually, this should be an echogenic line where the linea alba is
- b. Supraumbilical Epigastric Hernia
- c. A measurement of the neck of the hernia
- d. Asking the patient to cough enables a visualisation in real time if there is any peristalsis of the bowel. This will show the contents of the hernia - whether it is just omental fat or bowel content.

Information

Flag question

Edit question

Case Scenario 1:

Your next patient is a **85 year old female**.

The request form indicates they are presenting for an upper abdominal ultrasound study as they have had **"RUQ pain and been feeling unwell"**.

You notice that your patient is **frail** and takes a long time to get out of their seat when you call them from the waiting room.

This case scenario includes questions 23-31. Answer these questions in relation to the information provided above.

Total Marks for Case Scenario 1: 43 marks

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question **23**

Correct

Mark 4.00 out of 4.00

Flag question

Edit question

On collecting your patient from the waiting room you would:

True	False		
☒	☐	Check their date of birth.	✓
☐	☒	Ask whether they have cash or bit coin to pay for their procedure.	✓
☐	☒	As this patient is elderly, you don't worry about obtaining informed consent prior to commencing the study.	✓
☒	☐	Check if they have followed the preparation guidelines for this examination.	✓
☐	☒	Check for their doctors name on the referral, then quickly take your coffee break.	✓
☐	☒	Not speak to them, its not your job as you are a Sonographer.	✓
☒	☐	Confirm the patient's name and address.	✓
☐	☒	Quickly walk off, leaving the patient to find their own way to your scan room.	✓

Check their date of birth.

: True

Ask whether they have cash or bit coin to pay for their procedure.

: False

As this patient is elderly, you don't worry about obtaining informed consent prior to commencing the study.

: False

Check if they have followed the preparation guidelines for this examination.

: True

Check for their doctors name on the referral, then quickly take your coffee break.

: False

Not speak to them, its not your job as you are a Sonographer.

: False

Confirm the patient's name and address.

: True

Quickly walk off, leaving the patient to find their own way to your scan room.

: False

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Question **24**

Correct

Mark 5.00 out of 5.00

Flag question

Edit question

You now have the patient in the scanning room and are about to commence your scan. Considering your patients age, respond to the following questions:

True	False		
☐	☒	You will only use a high frequency linear probe for this patient as a wide field of view is not required for this scan.	✓
☒	☐	You would ensure the patient is comfortable once they are on the examination bed.	✓
☐	☒	You note that the patient is elderly, meaning that the usual preparation of drinking water for an abdominal ultrasound is not required.	✓
☐	☒	You note that you will not need to clean any transducers you have used for the scan as this patient is too old to worry about infection control.	✓
☒	☐	You read the referral to look for important clinical details which will help you with your scan.	✓
☐	☒	You yell at the patient as they are taking too long to get organised for you to do the scan.	✓
☒	☐	You explain what you are going to do during the scan to the patient before commencing.	✓

☒	☐	You explain what you are going to do during the scan to the patient before commencing.	✓
☒	☐	You ask the patient if there are any symptoms and what these are.	✓
☐	☒	You won't need to use gel on this patient as they are elderly.	✓
☒	☐	You try to make the patient feel as comfortable as possible as you can see your patient is feeling nervous.	✓

SP2 2023 Exam Abdominal Sonography – Questions & Answers

You will only use a high frequency linear probe for this patient as a wide field of view is not required for this scan.

: False

You would ensure the patient is comfortable once they are on the examination bed.: True

You note that the patient is elderly, meaning that the usual preparation of drinking water for an abdominal ultrasound is not required.

: False

You note that you will not need to clean any transducers you have used for the scan as this patient is too old to worry about infection control.

: False

You read the referral to look for important clinical details which will help you with your scan.

: True

You yell at the patient as they are taking too long to get organised for you to do the scan.

: False

You explain what you are going to do during the scan to the patient before commencing.

: True

You ask the patient if there are any symptoms and what these are.

: True

You won't need to use gel on this patient as they are elderly.

: False

You try to make the patient feel as comfortable as possible as you can see your patient is feeling nervous.

: True

Question 25

Complete

Mark 7.00 out of 7.00

Flag question

Edit question

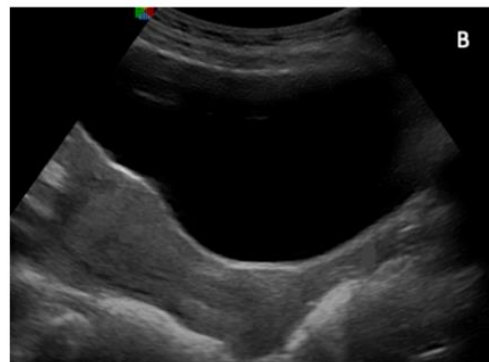
You then commence the examination. Consider the images and respond to the questions provided below.

Of the following images:

a. Which image represents the first image you would take for a patient presenting for an abdominal ultrasound and why? [3]

b. Describe the ultrasound appearances of the image you have selected as the first image for your scan. [4]

Total marks: 7



SP2 2023 Exam Abdominal Sonography – Questions & Answers

1.

- Image A is the first image I would take for a patient presenting for an abdominal ultrasound
- Image A demonstrates the pancreas in a transverse view. It is best to start with a view of the pancreas as the start of the scan will have the patient with the least gas. Over time during the examination, the patient may be asked to breathe in and out and this can result in gas buildup and which can make it particularly difficult to image the pancreas.
- Also, an abdominal US involves images of the upper abdominal organs such as the pancreas and liver and aorta and IVC as seen in image A. It does not usually include the bladder and pelvic organs which is what is being imaged in image B.

2. - A curved array, the low-frequency transducer has been used.

- This is a transverse view through the epigastrium, showing the pancreas in transverse which appears centrally in the image.
- Most superficially, there are two well-defined, lens-shaped hypoechoic structures. These are likely to represent the rectus abdominus muscles
- In the anterior aspect of the image, the liver is seen. It appears homogenous with smooth contours and normal vasculature. Overall, it appears to have normal-looking parenchyma.
- On the most posterior aspect of the image, the IVC is seen to the left of the image as an ovoid hypoechoic structure, and the aorta is seen slightly to the right of the IVC as a more rounded, hypoechoic structure. The left renal artery is seen to be branching from the IVC transversing towards to the left. Possibly the left renal artery is also seen as a hypoechoic structure just adjacent to the aorta.
- A smaller rounded hypoechoic structure seen anteriorly to the aorta is the SMA.
- Within the pancreatic tissue, the splenic vein is seen as an elongated, anechoic structure that joins up with the superior mesenteric vein to form the portal confluence. It is well-defined and of normal calibre
- Pancreatic tissue is seen anteriorly to the splenic vein and the portal confluence. The entire pancreas is well visualized and it appears homogenous and isoechoic to the liver. It appears to have smooth contours without evidence of any masses, stones or calcifications.

Question 26

Complete

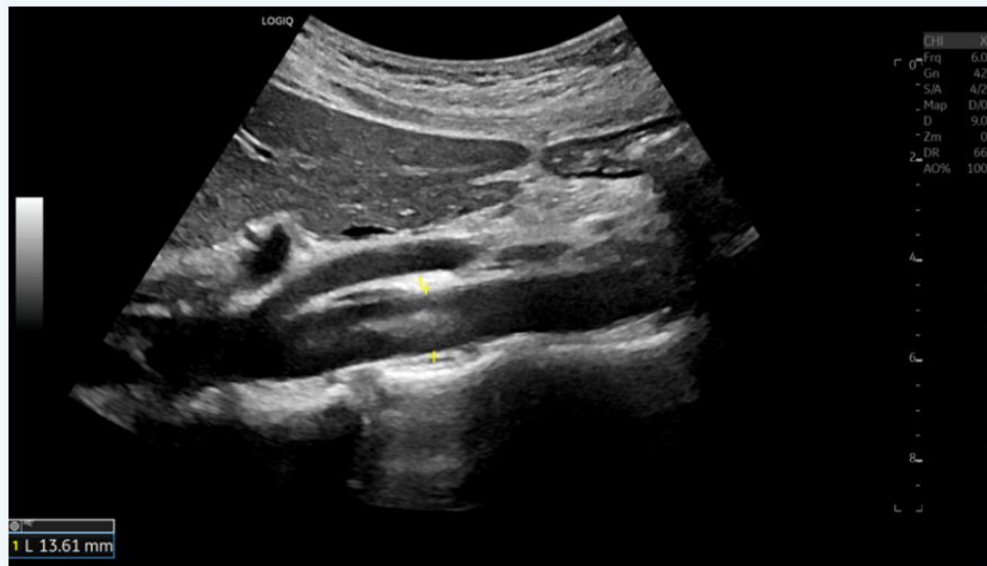
Mark 7.00 out of 7.00

Flag question

Edit question

After looking at this first region, you then move on to look at the next region that is part of your routine upper abdominal ultrasound protocol.

You take the image displayed below. Use this image to answer the following questions.



- Describe the sonographic appearances in this image. [4]
- Would you include any additional views during your scan to compliment this image, if so what? [2]
- What is your provisional diagnosis? [1]

Total marks: 7

SP2 2023 Exam Abdominal Sonography – Questions & Answers

- a. - Low frequency, curved array transducer has been used
- This is a longitudinal image through the midline of the upper abdomen - likely to be a longitudinal image given that the aorta is seen as a hypoechoic, elongated, tubular structure.
 - Anteriorly, the liver is seen. It appears normal with a homogenous echotexture, normal-appearing vasculature, and smooth contours.
 - Posteriorly, the vertebral bodies are seen as echogenic lines casting posterior shadows.
 - Anterior to the spine, there is an elongated, hypoechoic tubular structure that represents the aorta in a longitudinal view. It appears normal in shape and caliber and has a measured AP diameter of 13.61mm which is within normal limits.
 - Within the lumen of the aorta, there appear to be intraluminal internal hyperechoic echoes which could represent a mural thrombus but could also represent an artifact given the distortion/posterior shadowing effect that is seen posteriorly to these internal echoes.
 - Part of the celiac axis and the superior mesenteric artery is seen projecting from the anterior surface of the aorta also as hypoechoic tubular structures. These appear normal in shape, size, and caliber
- b. - Need to assess the aorta in a transverse view as well. The intraluminal echoes may be artefactual in nature or represent true pathology such as mural thrombus. In order to assess this, a second transverse view of this area is needed. If these echoes still are no longer seen in the transverse view, then it is likely these echoes are artefactual in nature.
- An image with Colour Doppler would also be beneficial. The colour doppler will show the true lumen of the vessel. If the internal echoes are thrombus, it would be expected that no Colour doppler signal is seen, thus confirming the suspicions. However, if Colour Doppler is seen throughout the entire vessel, it is likely the echoes are artifacts.
 - The aorta should also be scanned in its entirety. Additional images all the way from the top of the diaphragm to the bifurcation in longitudinal and transverse are needed.
- c. Normal aorta

Question 27

Complete

Mark 6.00 out of 6.00

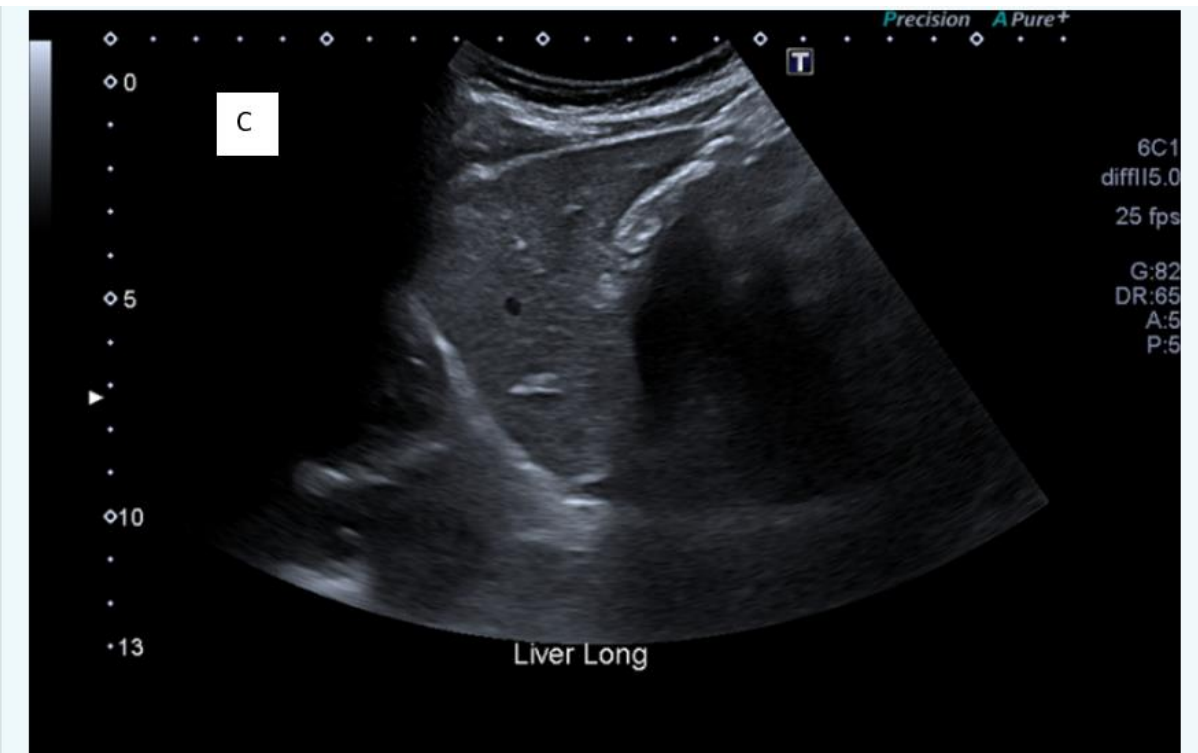
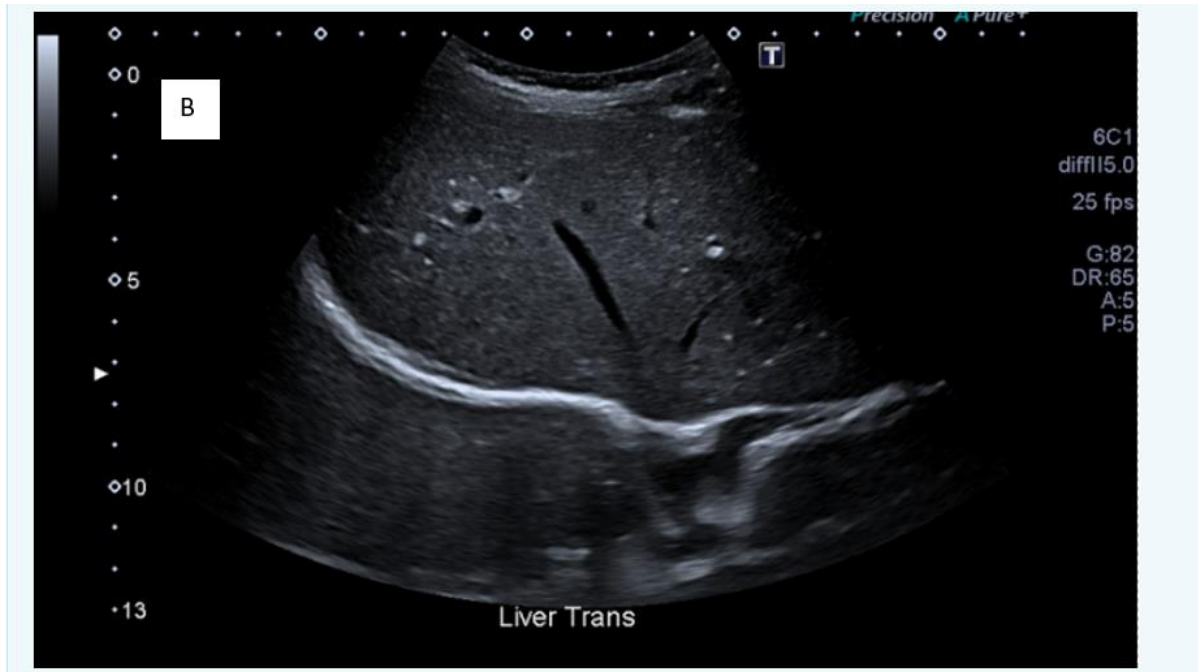
Flag question

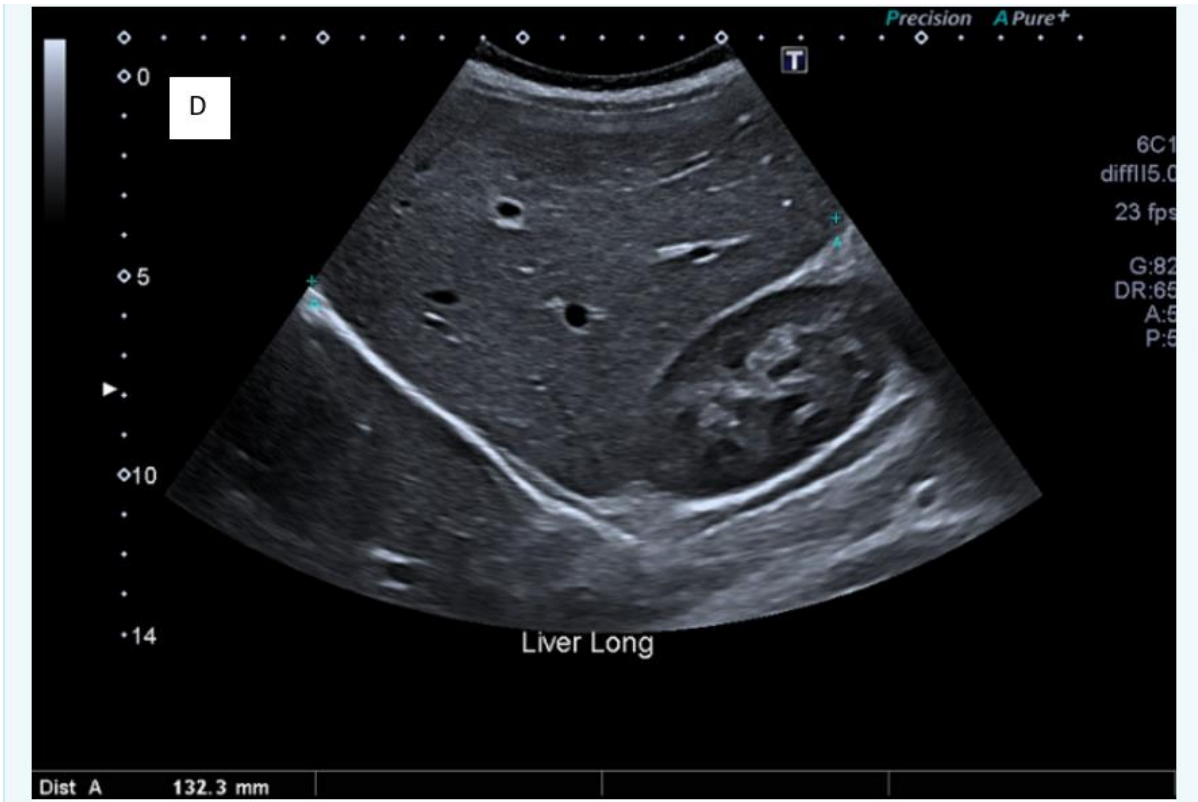
Edit question

You then move on and assess your patient's liver.

The following images represent your findings.







- Images A and B have been taken in the same imaging plane. Describe 2 factors that indicate this imaging plane has been used (other than the labelling on the image). [2]
- What liver segment/s can be seen in image C? [1]
- How would you describe the sonographic appearances of the liver in image D? [2]
- Given these appearances, do you think this is a normal or abnormal liver? [1]

Total marks: 6

- In a transverse image of the liver, the echogenic line which represents the diaphragm is seen to wrap around the entire liver as seen in images A and B. In a longitudinal image, the diaphragm does not wrap around the entire liver.
 - In a transverse image, as the hepatic veins branch longitudinally towards the IVC, these will be seen as elongated structures that transverse through the liver, joining up to the IVC which is seen as a rounded, hypoechoic structure. These hepatic veins produce a bunny ear sign on a transverse image which is seen in images A and B.
- Segments 2 and 3
- Curved array, low frequency transducer of the Liver in a longitudinal plane (longitudinal as provided by the annotation but also as the imaged kidney appears as an elongated structure).
 - The liver is seen as a homogenous structure of low level echoes and appears isoechoic with the imaged kidney cortex. Anechoic structures seen throughout the liver are likely to be hepatic vasculature and all appear normal. The liver has a smooth surface and regular contours. It measures 132.3mm which is within the normal limits. No focal lesions are seen.
 - The kidney appears inferior to the liver as an elongated, rounded structure. It has smooth outlines and good corticomedullary differentiation. The cortex has a normal thickness and definition and the central renal sinus appears normal and echogenic. There are no focal masses, stones or cysts seen and there is no evidence of any hydronephrosis.
- Normal

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Question 28

Complete

Mark 8.00 out of 8.00

Flag question

Edit question

Once you have looked at the liver, you then move on to assess your patient's Gallbladder.

Below is the image that is the first image obtained while scanning this area. Use this image to answer the following questions.



- Describe the ultrasound appearances in the image. [4]
- How might you extend your scan to further investigate your patient's Gallbladder? [3]
- Given the ultrasound appearances, what is your provisional diagnosis? [1]

Total marks: [8]

a. - Curved array, low-frequency transducer used.

- Image is a transverse image of the gallbladder which is seen centrally.

- In the most anterior aspect, the liver is visualized. It appears homogenous with smooth contours with normal appearing hepatic vasculature seen throughout.

- The gallbladder is seen as a well-defined, rounded, anechoic structure. It appears to have thickened walls but no measurements have been conducted in this image. Within the lumen of the gallbladder, there is an echogenic foci laying in the posterior aspect of the gallbladder with posterior shadowing. This is likely a gallstone within the gallbladder.

b. - The patient should be moved and imaged in a different angle - eg. sit the patient erect or move to a decubitus or oblique position. This will show whether this echogenic foci is a stone as stones will be mobile and this can be differentiated from things such as polyps or a tumour in the gallbladder. Additionally, an erect position is good to assess for stones stuck in the gallbladder neck

- Colour doppler can also be applied. If it is a stone, this will show the twinkle artefact.

- Applying gentle pressure and assessing whether the patient has pain over the gallbladder can indicate a positive murphy sign which can be a clinical indicator for cholecystitis.

- If a stone is suspected, further imaging of other areas such as the common bile duct or the pancreas or assess for further complications such as dilation of the biliary tree is needed.

c. Cholecystitis caused by the presence of gallstones/cholelithiasis

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Question 29

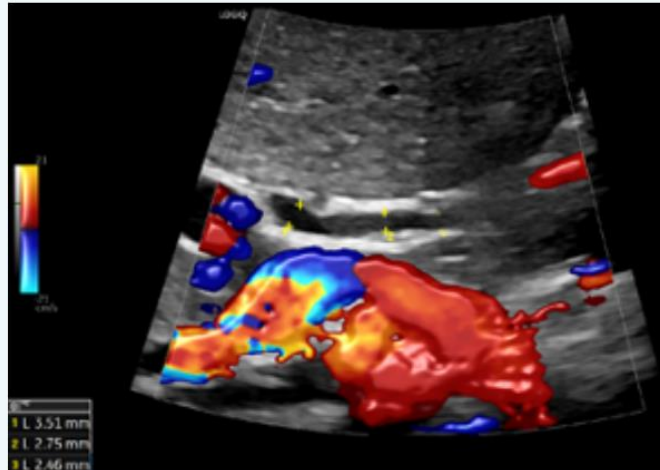
Complete

Mark 5.00 out of 5.00

Flag question

Edit question

You also look in the region of the porta hepatis during the scan. Consider the following image taken in this region. Use this image to answer the following questions.



- What is the sonographer measuring in this image? [1]
- Would you consider these measurements normal or abnormal? [1]
- Justify your response to b. [1]
- Why is colour Doppler being used? [2]

Total marks: 5

a. The Common Bile Duct

b. These measurements are normal

c. The upper limit of the common bile duct is usually 6mm but for an older, 85 year old, the upper limit will increase to up to 8mm. All the measurements taken are well below the upper limit of 8mm and therefore, these measurements of the common bile duct are normal.

d. The common bile duct runs along with the porta hepatis, along with the hepatic artery and the portal vein. All three structures are similar in imaging appearance as they appear as anechoic structures with echogenic walls. Therefore, to differentiate between these structures, Colour Doppler can be used. Colour Doppler demonstrates signal in the vessels of the Hepatic Artery and the Portal Vein but the Common Bile Duct will not demonstrate Colour Doppler Flow as it is not a vessel. It can therefore be correctly identified.

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Question 30

Correct

Mark 0.50 out of 0.50

Flag question

Edit question

You then check the right kidney.

You are happy that this appears normal and you move on to look at the patient's left kidney it also appears normal.

You take an image of the spleen, as shown below. Use this image to answer the following question.



You note that the spleen has a normal appearance and there is no splenomegaly present.

Select one:

☒ True ✓

☐ False

The correct answer is 'True'.

Question 31

Correct

Mark 0.50 out of 0.50

Flag question

Edit question

You have now completed your scan on your patient and are happy with the images you have taken.

On completing this scan you would:

- ☐ a. Get the patient out of the room as quickly as you can so your next patient can come in.
- ☐ b. Tell the patient that the gel is a type of moisturiser and to not wipe it off.
- ☐ c. Ask the parent if they have their credit card and Medicare card ready.
- ☒ d. Speak to your Tutor before letting the patient leave as you found something during the scan that you want ensure you have examined and documented correctly. ✓

Your answer is correct.

The correct answer is:

Speak to your Tutor before letting the patient leave as you found something during the scan that you want ensure you have examined and documented correctly.

SP2 2023 Exam Abdominal Sonography – Questions & Answers

Information

Flag question

Edit question

Case Scenario 2:

Your next patient is a **20 year old Female**.

She has been referred to you for a **renal ultrasound**.

The request form states that there is '**known history of kidney disease in the family**' and that the patient has been experiencing **hypertension** and recent blood tests show a **decrease in renal function**.

On getting her from the waiting room you note that she speaks very **limited English** but has a friend attending the appointment with her that can speak fluent English.

This case scenario includes questions 32-37. Answer these questions in relation to the information provided above.

Total Marks for Case Scenario 2: 29.5 marks

Question 32

Complete

Mark 4.00 out of 4.00

Flag question

Edit question

Explain how you may go about gaining informed consent from your patient in this scenario. Are there any important aspects that you would need to keep in mind in this situation? [4]

- Nonenglish speaking background of the patient - It is important to explain to the patient and get informed consent for the ultrasound. As the patient understands limited English, it is important that all information and details regarding the examination are relayed to her through her friend who is translating. The examination must be agreed to prior to commencing. Sometimes, if the friend is unable to ensure informed consent (they are unable to translate properly), then an external provider/professional translator may be needed to ensure informed consent
- Prior to commencing it is important that the patient understands the importance of being adequately prepped for this examination. With the translator, we need to check that the patient has a full bladder
- Patient confidentiality - Need to have informed consent that the patient's friend who is acting as a translator will be privy to some private and confidential details. We need to make sure the patient provides consent for confidentiality regarding the friend.

Question 33

Complete

Mark 7.00 out of 7.00

Flag question

Edit question

Once you are sure that the patient has consented to the ultrasound. You commence your scan. Here is the first image you obtain on your patient.

Using the image below, answer the following questions.



- Describe the sonographic appearances in this image. Including if you consider this image normal or abnormal. [3]
- Briefly explain what the measurement in this image demonstrates and why this has been performed. [2]
- Would you include any other images of this region, if so what might these be? [2]

Total Marks: 7

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- a. - A low frequency, curved array transducer has been used to acquire this image of the bladder in a transverse plane.
 - The bladder is seen as an anechoic structure and is adequately filled/distended for the examination.
 - It demonstrates normal and smooth contours.
 - There appears to be no bladder wall thickening and an AP measurement of 2.2mm has been acquired. This is within the normal limit of a bladder wall thickness (should be <3mm of a full bladder).
 - There are no internal echoes or evidence of any masses or stones within the bladder
- b. The measurement is an AP measurement of the bladder wall thickness. It has been performed because increased bladder wall thickness can be associated with inadequately filled bladder and also with various pathologies such as tumours or infections. In an adequately filled bladder, it should measure <3mm and in an unfilled bladder, it measures <5mm.
- c. An image using Colour Doppler at the base of the bladder over each VUJs/Ureteric Jets is needed. These images demonstrate the patency, competence, angle and frequency of the ureteric jets. Normal jets should show a burst of colour. Absence or abnormal jets can indicate an obstruction or VUJ pathology.

Question 34

Correct

Mark 0.50 out of 0.50

Flag question

Edit question

You are now happy that you have adequately checked this region.

As part of your routine renal protocol you are required to perform a post micturition volume measurement.

You perform this measurement once your patient has voided and you determine that they have a residual volume of 5mls in their bladder.

You believe that you do not need to ask the patient to reattempt voiding as the patient has emptied their bladder well on their first attempt.

Select one:

☒ True ✓

☐ False

The correct answer is 'True'.

Question 35

Complete

Mark 4.00 out of 4.00

Flag question

Edit question

You then move on to scan the aorta. It measures 1.5cm in AP diameter.

The below image is a representation of what you visualise while investigating this vessel.



a. Describe the ultrasound appearances. [2]

b. Would you consider the aorta for your patient normal or abnormal? Justify your answer. [2]

Total marks: 4

- a. - A Low frequency, curved array transducer has been used to acquire a longitudinal image of the aorta.
 - Posteriorly, vertebrae bodies are seen as echogenic lines with posterior shadowing.
 - Anterior to the spine, the aorta appears as a longitudinal, tubular hypoechoic structure. It appears to have a normal shape and caliber and has an AP measurement of 1.5cm which is within the normal limits. There is no evidence of any internal thrombus or dissection.
- b. Normal. The aorta appears normal in shape and caliber. It measures 1.5cm in an AP diameter which is within the normal limits of a woman that is 20 years old and not considered aneurysmal. There is also no evidence of internal thrombus or dissection.

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Question 36

Complete

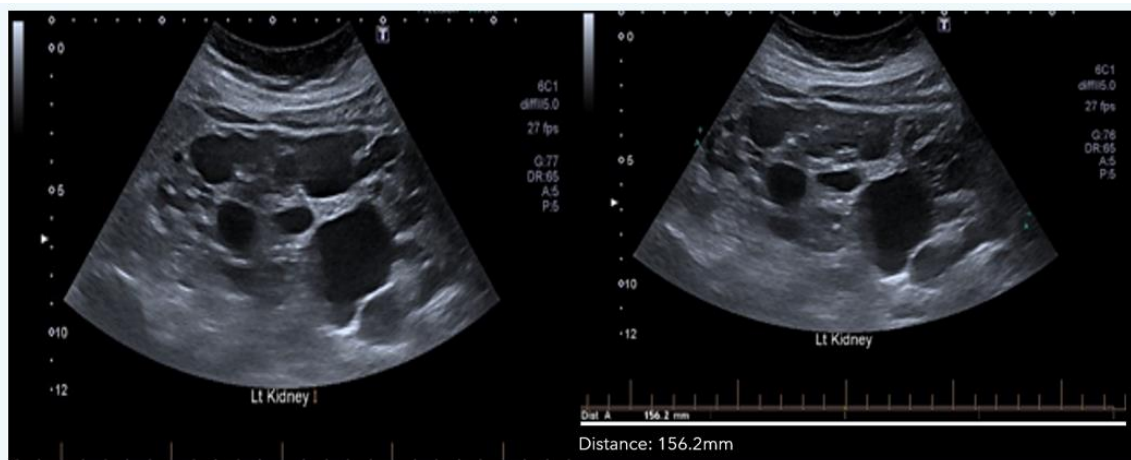
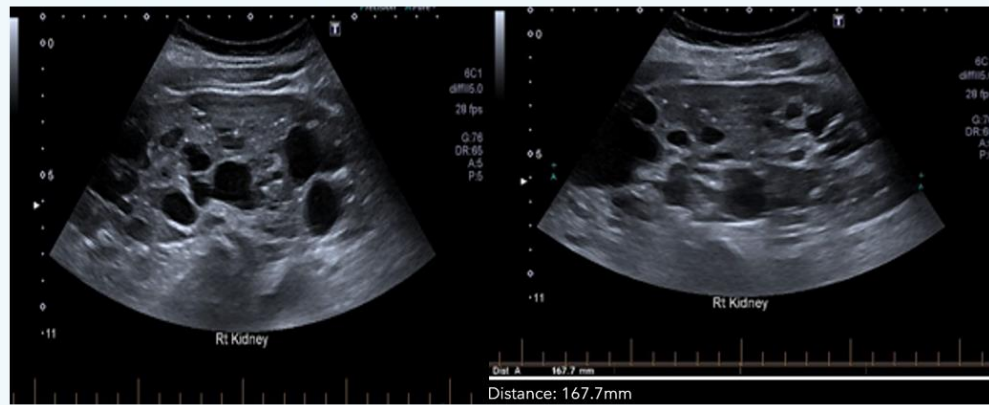
Mark 7.00 out of 7.00

Flag question

Edit question

You then continue the scan by examining the right and left kidneys as part of your routine renal scan protocol.

Below are representative images of what you see while scanning each kidney.



- Describe the ultrasound appearances seen on the images for the right kidney. [2]
- Describe the ultrasound appearances seen on the images for the left kidney. [2]
- Based on these findings, what is your provisional diagnosis? [1]
- Explain how you would extend this examination to provide further information to help confirm this provisional diagnosis. [2]

- A curved array, low-frequency transducer has been used to acquire an image of the right kidney in a longitudinal plane.
- Multiple non-communicating, anechoic structures are seen throughout the kidney. They are well-circumscribed and have thin walls and posterior enhancement and are likely to be simple cysts.
- The kidney maintains a smooth contour but there appears to be very minimal normal renal parenchyma, however, cortical tissue is still visible.
- The kidney is enlarged and measures 167.7mm in length.
- A curved array, the low-frequency transducer has been used to acquire an image of the left kidney in a longitudinal plane.
- Multiple non-communicating, anechoic structures are seen throughout the kidney. They are well-circumscribed and have thin walls and posterior enhancement and are likely to be simple cysts.
- The kidney has very minimal normal renal parenchyma
- The kidney is enlarged and measures 156.2mm in length.
- Autosomal Dominant Polycystic Kidney Disease (ADPKD)
- ADPKD is often associated with the presence of cysts in other organs. Therefore, cysts should be assessed in locations of the spleen, pancreas, liver and ovaries.
- Colour doppler can be used to ensure that the anechoic structures are indeed cysts as cysts will show avascularity on Colour Doppler.
- Should also do a coronal scan to ensure that these are cystic structures and not hydronephrosis.

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Question 37

Complete

Mark 6.00 out of 6.00

Flag question

Edit question

The patient has now left the department. It is time to write up your sonographer's worksheet in order to finalise the examination.

Using the information provided for this case scenario, along with your own answers and image interpretation, what are the key points that you would need to include on your worksheet in order for the Radiologist to complete this patient's report?

Use the layout below to complete your answer.

Please type your answer in the text box provided.

Total Marks: 6

Clinical Details:

Right Kidney:

Left Kidney:

Aorta:

Bladder:

Additional Comments:

Clinical Details: 20-year-old female, NESB. Known history of kidney disease in the family. Hypertension. Recent blood tests demonstrated decreased renal function.

Right Kidney: The right kidney is well visualized. It demonstrates smooth contours with some visualization of cortical tissue but overall, there is minimal normal renal parenchyma seen. It contains multiple non-communicating, anechoic structures. These are well-circumscribed, have thin walls and posterior enhancement and are likely to be simple cysts. The kidney is enlarged and measures 167.7mm in length.

Left Kidney: The left kidney is well visualized. There is minimal normal renal parenchyma seen. It contains multiple non-communicating, anechoic structures which are well-circumscribed with thin walls and posterior enhancement. These are likely to be simple cysts. The kidney is enlarged and measures 156.2mm in length.

Aorta: Within normal limits. The aorta is well visualized and demonstrates normal shape and caliber. It has an AP measurement of 1.5cm.

Bladder: The bladder is well visualized and is adequately filled. The contours are normal and there is no evidence of any masses, stones. AP wall thickness is 2.2mm, within normal limits. Ureteric Jets were not assessed in this particular examination. Post micturition volume of 5mL - there is adequate bladder emptying.

Additional Comments: Numerous cysts seen in both kidneys. Minimal renal parenchyma is seen. Ultrasound images along with the family history of kidney disease, hypertension, and decline in renal function consistent with ?Autosomal Dominant Polycystic Kidney Disease. Assessment for cysts in other organs may be required.