CAUSES OF ASCITES

- Causes of Ascites 17
  - Cirrhosis - 81%
  - Cancer - 10%
  - Heart Failure - 3%
  - Tuberculosis - 2%
  - Dialysis - 1%
  - Pancreatic Disease - 1%
  - Other - 2%
ULTRASOUND

- Use and features include:
  - Can confirm the presence of ascites as physical examination is only moderately accurate for diagnosis. 1
  - Can detect as little as a few millilitres of fluid located anterior to the liver or immediately below the diaphragm. 2,3
  - Can help determine the cause of ascites such as portal hypertension, cirrhosis, portal and hepatic vein thrombosis. 4,6
  - Can guide paracentesis and is particularly useful where there is only a small amount of fluid or the fluid is compartmentalised. 4,5
  - Has a sensitivity and specificity of at least 85% for the diagnosis of Budd-Chiari syndrome. 8
- Ultrasound features of liver cirrhosis include: 14
  - A coarsened, heterogeneous echo pattern.
  - Increased parenchymal echogenicity.
  - Nodularity of liver surface.
- Limitations of ultrasound include: 7
  - Poor beam penetration in obese patients and those with multiple air-filled bowel loops.
  - Low specificity for characterising liver lesions.
  - Operator dependent.

ULTRASOUND FEATURES OF PORTAL HYPERTENSION

- Ultrasound features of portal hypertension include: 14
- Collateral vessels - commonly gastroesophageal, paraumbilical, splenorenal and gastrorenal veins. 10,11
- Enlarged splanchnic veins. 12
- Portal and splenic veins greater than 10mm in diameter (sensitivity and specificity of 82%). 13
- A patent paraumbilical vein (specificity of 100% and sensitivity of 82%). 15
COMPUTED TOMOGRAPHY

- Uses and features include:
  - Often has a complementary role with ultrasound in the evaluation of patients with ascites.
  - Is a sensitive tool for the detection of ascites. 4
  - Provides a more complete evaluation of the abdomen and pelvis which is particularly useful in patients with an unknown source of ascites. 3
  - Unlike ultrasound is not impeded by a large amount of bowel gas.

- Disadvantages:
  - Involves exposure to radiation.
  - Risk of contrast allergy and nephropathy if intravenous contrast is used.

DIAGNOSTIC PARACENTESIS

- Is useful for: 5
  - Confirming the presence of ascites.
  - Determining the cause of ascites.
  - Determining whether the fluid is infected
  - Determining whether portal hypertension is present 9
    - a serum - ascitic albumin gradient >11g/l indicates ascites due to portal hypertension
    - a serum - ascitic albumin gradient >11g/l indicates ascites due to other causes

- Best done under ultrasound guidance if:
  - There is only a small amount of fluid.
  - The fluid is loculated.
  - The patient has a gross coagulopathy or multiple scars.
  - After a failed paracentesis done without ultrasound guidance.

LIVER BIOPSY

- Referral for liver biopsy should be considered after a thorough non-invasive clinical, serological and radiological evaluation has failed to establish a cause of liver cirrhosis. Due consideration must given to the risk/benefit profile prior to considering biopsy, as well as how biopsy results would change management 18

- In a large prospective study which performed 354 liver biopsies for sustained abnormal liver function test's, 18% of patient's had their management directly altered by the outcome of the biopsy 19

- There is a significant false negative rate (10-50%) with percutaneous liver biopsy in the diagnosis of cirrhosis. Newer procedures that incorporate mini-laparoscopic techniques with direct visualisation of the liver has reduced this rate (15%) 20
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18. Heidelbaugh J, Bruderly M. *Cirrhosis and Chronic Liver Failure. Part I Diagnosis and Evaluation* Amer Fam Phys 2006; 74:756-762 (Review Article)

19. Skelly M, James P, Ryder S. *Findings on liver biopsy to investigate abnormal liver function tests in the absence of diagnostic serology* J Hep 2001; 35:195-199 (Level II Evidence) [Click here to view reference]


Website
For more information go to [www.imagingpathways.health.wa.gov.au](http://www.imagingpathways.health.wa.gov.au)

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