

Ascites

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Ascites is the accumulation of fluid in the peritoneal space. It is a common problem in cirrhosis (due to portal hypertension) and when there is malignant spread into the peritoneum (which is common in ovarian and gastrointestinal cancers). It can cause significant swelling and discomfort and peritoneal drainage often brings relief.

Epidemiology and pathogenesis

Ascites is a common problem in patients with palliative illnesses. The majority of Most patients with end-stage liver disease from cirrhosis develop ascites. About 10% of cancer patients develop ascites, with the most common malignant causes including:

- Ovarian cancer
- Breast cancer
- Lung cancer
- Gastric cancer
- Pancreas cancer
- Cancer of unknown primary (accounts for around 20% of case of malignant ascites)

Clinical features

Symptoms

As ascites develops, the abdomen becomes increasingly swollen. This can cause tightness and discomfort and eventually the resultant mass effect of the fluid causes poor appetite, early satiety and nausea (through compression the gastrointestinal tract) and dyspnoea (through upwards pressure on the diaphragm and lungs).

Signs

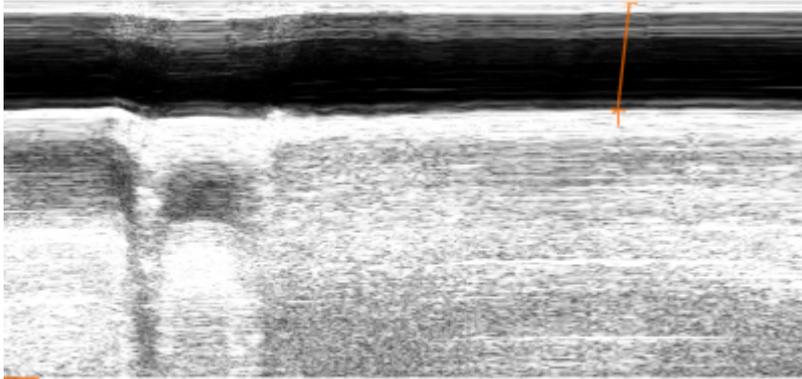
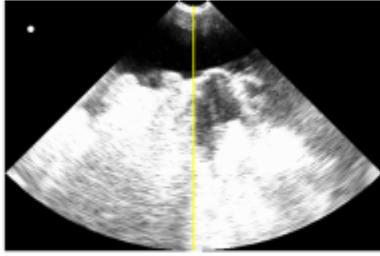
On abdominal examination:

- On inspection, abdominal distension is obvious with significant ascites
- On percussion, dullness at the flanks that moves when the patient rolls on his side tends to become apparent once at least a litre of fluid has accumulated (shifting dullness)

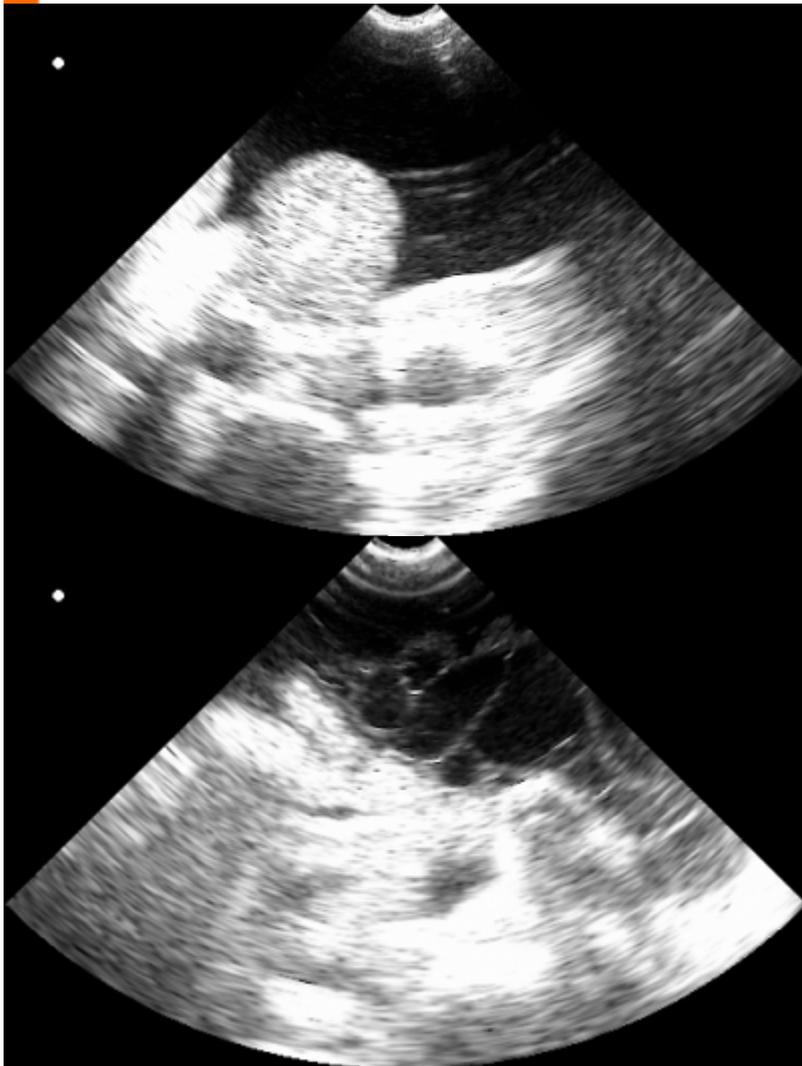
On general inspection there may be signs of the underlying cause of the ascites. In cirrhosis, for example, a hepatic flap, jaundice and spider naevi are often present. In malignancy on the other hand, the patient may appeared frail and cachectic.

Point of care ultrasound is very useful in confirming ascites. The cheapest and most basic of hand-

held ultrasounds can be used to immediately confirm or exclude the presence of a significant volume of ascites.



1: 5.17 cm (h)



Investigations

Ascites can be confirmed radiologically via a formal ultrasound or CT imaging, although this usually isn't necessary in the palliative care context in a patient who has had recurrent ascites previously diagnosed.



Where the cause of the ascites isn't known, a diagnostic tap is helpful to confirm the aetiology and fluid can be sent for:

- Albumin
- Cytology
- Cell count and differential
- Gram stain and culture

Ascites with a high amount of albumin is an exudate which is what would be expected in malignant infiltration. When the albumin level is low this is a transudate consistent with portal hypertension (e.g. from cirrhosis). However most patients already have a low serum albumin which means that what is considered a high or low albumin in the peritoneal fluid is relative to the absolute serum albumin level. Thus to determine if the fluid looks like an exudate or a transudate, the serum-ascites albumin gradient (SAAG) should be calculated as follows:

$$\text{Serum-ascites albumin gradient} = \text{Serum albumin} - \text{ascites albumin}$$

SAAG	Terminology	Possible causes
< 11	Low gradient ascites (exudate)	Malignant infiltration
		Pancreatic ascites
		Infectious ascites
≥ 11	High gradient ascites (transudate)	Cirrhosis
		Portal hypertension from metastatic or primary HCC compressing portal vein
		Portal vein thrombosis
		Budd-Chiari syndrome
		Right heart failure

Cytology is only positive in about 50-75% of cases of malignant ascites and so in a patient with known cancer and a low gradient ascites, malignant infiltration can usually be assumed to be the cause even if cytology is negative.

Treatment

Once the diagnosis and aetiology is established, the treatment of ascites depends on symptoms. A small volume of ascites may require no treatment however as ascites worsens it is reasonable to consider diuretics and/or a therapeutic tap.

For ascites due to liver failure, spironolactone is usually first line (and frusemide is second line) as problems with the renin-angiotensin-aldosterone system are involved in the pathogenesis. A typical starting dose is 100mg daily with 400mg the maximum daily dose. Frusemide can be added with a starting dose of 40mg daily, with a maximal dose of 160mg daily. In addition to complications of hyponatraemia and hyperkalaemia (in the case of spironolactone), diuretics however carry a significant risk of precipitating hepatorenal syndrome and studies have confirmed that regular large volume paracentesis (see Ascitic tap) is actually a much safer option for recurrent ascites in cirrhosis. Drainage is usually very straightforward. Where possible ultrasound guidance should be used and the ascites drained to dry with albumin cover given to reduce the risk of intravascular fluid shifts (which can cause hypotension and renal failure). Various recommendations exist, including 8g of albumin IV for every 1 litre of ascites drained (e.g. 100ml of 20% albumin IV for every 2.5 litres drained).

Malignant ascites is often loculated making a blind drainage much more difficult. Use of point-of-care ultrasound or formal radiology to mark a point for drainage is generally considered ideal practice. Drainage of malignant ascites is not associated with hepatorenal syndrome and albumin cover is not commonly employed. Diuretics tend to be ineffective for malignant ascites.

In patients who have recurrent ascites, insertion of a long-term peritoneal drain such as a PleurX catheter is worth considering. These drains allow removal of one or two litres of fluid on a daily basis and prevent massive ascites from developing. They are usually inserted by an interventional radiologist although the procedure is not technically too difficult and can be learnt by any physician.

Complications

Recurrent ascites

In most palliative patients, the underlying cause of ascites is not treatable and recurrence is the rule. It is important to explain this to patients.

Spontaneous bacterial peritonitis

In patients with cirrhosis, spontaneous bacterial peritonitis is a common complication of ascites and may present in a variety of ways including worsening abdominal pain, worsening hepatic encephalopathy or development of hepatorenal syndrome.

Malignant bowel obstruction

Patients with malignant ascites and widespread peritoneal metastases are at high risk of developing a malignant bowel obstruction. This is particular common in ovarian cancer but can occur in any patient with malignant ascites.

Prognosis

The development of ascites in either cirrhosis or malignant is a bad prognostic marker.

In patients with Child's C cirrhosis who have refractory ascites needing recurrent drainage, median survival has been reported to be about 6-months.

In patients with metastatic cancer, the development of malignant ascites is indicative of progressive disease.

[condition](#), [complication](#), [gastroenterology](#), [peritoneum](#), [pocus](#), [textbook](#)

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