

Ascites

KEY POINTS

- ➔ With ascites, 90% of cases come from non-malignant causes, including liver cirrhosis, CHF, and tuberculosis, and 10% are due to cancer
- ➔ Ascites is common in ovarian, breast, and GI malignancies (30% of ovarian cancer patients develop ascites)
- ➔ Malignant ascites may be caused by liver disease/metastases leading to portal hypertension, intra-abdominal metastases/peritoneal seeding, lymphatic obstruction (chylous ascites – an accumulation of lymph in the peritoneal cavity characterized by increased triglyceride concentrations), or a combination of these factors
- ➔ Non-malignant ascites may also be seen in cancer patients, i.e. due to hypoproteinemia
- ➔ Ascites often indicates a poor prognosis; generally the goal of management is to ensure comfort and reduce symptoms from the ascites
 - ➔ The exception is ovarian cancer which may still have a moderate prognosis (weeks to a few months) when ascites is present

- ➔ Paracentesis is safe in children
- ➔ Children may fear invasive procedures so it is particularly important to explain what will happen, gain the child's trust, and use procedural sedation (if available) or anxiolytics (e.g. benzodiazepines) when performing paracentesis in children



ASSESSMENT

- ➔ Clinical features include abdominal swelling, bloating, weight gain, reflux, nausea, and dyspnoea
- ➔ Examination may reveal increased abdominal girth, bulging flanks, and shifting dullness

- ➔ Investigations to consider include abdominal ultrasound, diagnostic paracentesis (cytology, albumin, bacterial culture), serum electrolytes, and albumin, but it is important to consider whether these tests will change clinical management

Consider if the patient is well enough to benefit



MANAGEMENT

- ➔ Consider treatment of the primary tumour if appropriate (particularly with ovarian cancer); however, usually the cancer is advanced, and the prognosis is poor
- ➔ Diuretics can be helpful in some patients with ascites, including those with significant liver metastases, cirrhosis, or CHF. Serum electrolytes and renal function should be monitored for risk of acute kidney injury and hepatorenal syndrome with diuretic use
- ➔ Diuretics are unlikely to be helpful in chylous ascites
- ➔ Paracentesis is best for immediate symptom relief, if the ascites does not respond to diuretics, and for chylous ascites

Paracentesis

- ➔ This is a simple procedure that can be carried out at the bedside with or without ultrasound guidance
- ➔ Ultrasound is recommended if there is diagnostic uncertainty, possible loculations, or uncertainty about catheter placement due to tumour mass
- ➔ Remove the quantity of fluid that gives optimal symptomatic relief, generally <4-6 litres
- ➔ A small number of patients (<5%) may deteriorate rapidly after paracentesis. Sepsis and catheter blockage are other possible complications
- ➔ Intravenous fluids and albumin infusions are not routinely required (unless hypotensive, dehydrated, severe renal impairment, or large volume paracentesis)
- ➔ If there is substantial ascites (tense abdomen), it is probably safe to proceed without ultrasound

Method of Paracentesis

- ➔ With the patient semi-recumbent and with an empty bladder, choose a puncture site below the umbilicus in the midline or the LLQ at the anterior axillary line below the level of percussible dullness
- ➔ Using a sterile technique, prep the skin with antiseptic and infiltrate local anaesthetic
- ➔ Retract the skin inferiorly; insert a 14-16 g needle or catheter that is attached to a drainage tube (IV extension tube)
- ➔ Drain by gravity to dryness or a total of 4-6 litres
- ➔ Withdraw the needle allowing the skin to return to the original position (creates a Z-track and lowers the post-procedure leakage)

Pharmacologic Management

- ➔ Note: effective in approximately one-third of patients
- ➔ **Spironolactone 100 mg PO daily, titrate slowly up to 400 mg PO daily, adjust the dose to remove enough fluid for comfort**
- ➔ **Furosemide 40-160 mg PO daily added to spironolactone to improve effect and reduce the risk of hyperkalemia. Adjust dose every 3-5 days, maintaining the 100 mg:40 mg ratio, up to 400 mg spironolactone and 160 mg furosemide together**
- ➔ **Octreotide 200-600 mg Subcutaneous divided BID or TID has been effective in several cases studies for refractory ascites that is not responsive to paracentesis**

Pharmacological Management in Children:

Spironolactone



- ➔ **Initial: 1-1.5 mg/kg/dose PO once daily to BID (Maximum: 50 mg/dose)**
- ➔ **Titrate as needed up to 4-6 mg/kg/day in divided doses q6-12h or 400 mg/day (whichever is less)**
- ➔ **Note: May cut or crush tablets for doses <25 mg**
- ➔ **Monitor for potassium and renal function**

Furosemide



- ➔ Oral: 0.5-2 mg/kg/dose PO q6-24h
- ➔ Maximum: 6 mg/kg/dose or 80 mg/dose (whichever is less)
- ➔ IV/Subcutaneous: 0.5-2 mg/kg/dose IV/IM q6-24h
- ➔ Maximum: 2 mg/kg/dose or 80 mg/dose (whichever is less)
- ➔ Older children and adolescents often respond to lower doses (10-20 mg/dose)
- ➔ Use caution in patients with hypokalemia and hypovolemia

Hydrochlorothiazide

- ➔ 1-2 mg/kg/dose PO BID
- ➔ Maximum: 100 mg/day
- ➔ Monitor for electrolyte abnormalities, including hyponatremia and hypokalemia
- ➔ Note: potency is lower compared to furosemide and can be considered an add-on therapy to loop diuretics to overcome resistance to diuresis

PITFALLS/CONCERNS

- ➔ In patients in the final terminal phase – i.e. hours to days, it is generally inappropriate to drain the ascites (treatment should be the least invasive possible)

Consider if the patient is well enough to benefit



- ➔ In patients in the final terminal phase, provide relief through pharmacologic treatment of symptoms (e.g. provide pain relief)

PALLIATIVE TIPS

- ➔ Drain for symptomatic relief, not just because the fluid is present

- ➔ If the drainage site is leaking after the procedure, an ostomy bag over the site is helpful in containing the fluid
- ➔ Some patients who rapidly re-accumulate fluid despite high-dose diuretics may benefit from an indwelling catheter. If the prognosis is many weeks, consider a tunnelled catheter to reduce infection risk
- ➔ Patients with ascites from cirrhosis may benefit from sodium restriction. The benefit of this must be weighed against unnecessary discomfort from dietary restriction

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