

BSG Guidelines – Ascites Management

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Systematic Review and Grades

- Diagnostic tests
- Diet and Diuretics
- Paracentesis
- Albumin
- TIPS
- SBP

Diagnostic paracentesis

- Should be performed in all cirrhotic patients with ascites on hospital admission.
- Should be performed in patients with GI bleeding, shock, fever or other signs of systemic inflammation, GI symptoms, hepatic encephalopathy, in patients with worsening liver and/or renal function.
- SAAG should be measured in all patients with ascites as a diagnostic adjunct.

Serum Albumin-Ascites Gradient (SAAG)	
SAAG \geq 11 g/L	SAAG <11 g/L
Portal Hypertension	Peritoneal Carcinomatosis
Cardiac Failure	Peritoneal Tuberculosis
Portal Vein Thrombosis	Pancreatitis
	Bowel perforation
	Nephrotic syndrome

Prevalence of Cirrhosis and Performance of test

- 5 years at NUH
- 165 new ascites
- Cirrhosis: 92 (56%)
 - ARLD: 60
 - NAFLD: 24
 - HEP C: 2
 - HEP B: 1
 - AIH: 1
 - PBC: 1
 - Cryptogenic: 3
- Cancer: 47 (28%)
 - 19 GI, 12 gynae, 2 HCC, 14 others
- Heart failure (Cor Pulmonale): 10 (6%)
- Nephrogenic: 6 (3.5%)
- Others: 6 (3.5%)
 - Portal vein thrombosis in chronic pancreatitis; mucinous cystadenoma, JAK2 positive SMV thrombosis in myelofibrosis, sclerosing mesenteritis, HIV and malnutrition
- Unestablished: 4 (3.5%)
 - cancer unknown primary, pelvic inflammatory disease, NAFLD related, unknown

Performance of Diagnostic Tests

- SBP: Prevalence 9% in-patients; 1.3 % OP (0.57% if asymptomatic OP)
 - Likelihood ratios for WCC > 500 cells/ μ l (5.9) is similar to PMN > 250 cells/ μ l (6.4) (Wong 2008).
 - Automated cell counters equivalent to manual (Angeloni 2003, Froom P 2013, Lippi G 2013, Paris A 2010).
 - Positive culture occurs in <50 % of cases of SBP, but the yield can be optimised by inoculating the anaerobic and aerobic culture medium at the bedside.
 - Blood cultures should be performed in all patients with suspected SBP before starting antibiotic therapy
 - Actively seek secondary peritonitis when multiple organisms are cultured from ascites.
- The yield for positive cytology in the context of malignancy ranges from 0% to 96.7% determined by the site of the tumour (Liu 2014, Cascinu S, 1997).
- Ascitic BNP >1000 pg/ml 90% PPV for cardiac ascites
- If peritoneal TB is considered plausible, ascites can be sent for AAFB smear and culture, although culture positivity occurs in <50% (Shakil AO 1996).
 - Adenosine deaminase (ADA) has AUC = 0.98 when <40 IU/ml is used to exclude TB (Shen Y 2013, Tang L 2014, Kang SJ 2012).

Diet and Fluids

- Salt intake should be 5-6.5 g/day (87mmol-113mmols sodium). This equates to a no added salt diet and avoidance of precooked meals.
- Low salt diets <5g of salt (<85mmol sodium) should be avoided as they increase risk of adverse events such as hyponatremia and can compromise nutritional status.
- There is no evidence to support fluid restriction for ascites in the absence of significant hyponatremia.
 - In hypervolaemic hyponatremia, once serum sodium falls below 125 mmol/L diuretics should be discontinued and fluid restriction (1-1.5L/day) instituted.
 - Hypertonic saline can be cautiously used with close monitoring, only in those with severely symptomatic acute hyponatraemia and or if a liver transplant is imminent.

Diuretics

- A step up approach is recommended. Anti aldosterone drugs such as spironolactone are usually the first drug of choice especially in first presentation of moderate ascites. Starting dose is 100 mg, increased to a maximum of 400 mg. A loop diuretic (frusemide, starting dose 40 mg, increased to 160 mg) can be being added if suboptimal response.
- In those with recurrent ascites, especially if severe, combination therapy (spironolactone + frusemide) is recommended in view of faster diuresis and lower risk of adverse events.
- Diuretics be temporarily discontinued in presence of one or more of the following: serum sodium < 125 mmol/L, serum potassium < 3 mmol/L or > 6mmol/L, rising serum creatinine, debilitating muscle cramps and worsening hepatic encephalopathy.

Therapeutic paracentesis: When & How

- Refractory ascites has a major impact on quality of life and large volume paracentesis has a low rate of adverse events.
- Since only a minority will be eligible for transplantation, patients with refractory ascites should be offered a palliative care referral.
- Lower quadrants are suitable points for paracentesis to avoid inferior epigastric artery and its branches, thinner abdominal wall.
- Ultrasound assisted procedures associated with lower adverse event rates.
- Correction of coagulopathy doesn't reduce adverse events.

Albumin

- Paracentesis of <5 litre of uncomplicated ascites should be followed by plasma expansion with a synthetic plasma expander or albumin
- Large volume paracentesis should be performed in a single session with volume expansion given once paracentesis is complete, preferably using 8 g albumin/ litre of ascites removed (this equates to 100ml 20% HAS for 2.5L ascites drained).
- Patients with SBP and signs of developing renal impairment should be given albumin at 1.5 g albumin/kg in the first six hours followed by 1 g/kg on day 3 according to estimated dry body weight.

Regular outpatient HAS

- **ANSWER***: Unblinded RCT (n=431):
 - HAS weekly vs standard medical therapy
 - 18-month survival higher in the SMT+ HAS vs SMT (77% vs. 66%; p=0.028)
 - 38% lower mortality hazard ratio (0.62 [95% CI 0.40–0.95]).
 - Reduced incidence rate ratio (IRR) for infection (SBP and non-SBP) and renal dysfunction
- **MACHT****: Double-blind placebo controlled RCT (n=196):
 - HAS 40 g 2 weekly + midodrine (15-30 mg/day) vs placebo
 - No significant difference, no survival benefit
 - Median length of treatment= 80 days, 9 got 1 years worth of treatment
 - Low mortality (timely transplant)
- Optimal dose of HAS and timing should be replicated

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TIPS

- TIPS should be considered in patients with refractory ascites.
- Caution is required if considering TIPS in patients with age >70 years, serum bilirubin >50 $\mu\text{mol/L}$, platelet count <75 x 10⁹/L, current hepatic encephalopathy, active infection or renal failure.
- PTFE-covered stent must be used.
- Centres providing a TIPS service should perform more than 20 procedures per year.

Management of SBP

- In patients with SBP empiric antibiotic therapy should be started.
- Environment (nosocomial vs community-acquired), local bacterial resistance profiles and severity of infection should guide empirical antibiotic treatment.
- The efficacy of antibiotic therapy should be checked with a second paracentesis at 48 hours from start of treatment. Failure of first-line antibiotics should be suspected if there are worsening clinical signs or no marked reduction in leukocyte count.

Prophylaxis

Primary:

- Consider oral ciprofloxacin or norfloxacin for people with cirrhosis and ascites with an ascitic protein of 15g/L or less, until the ascites has resolved.
 - NICE recommends already

Secondary:

- Patients recovering from one episode of SBP should receive prophylaxis with oral norfloxacin or ciprofloxacin.
- Patients who recover from SBP have a poor long-term survival and should be considered for referral for liver transplantation.