Ascites in Cirrhosis Guidelines

Authors: Timothy Halterman, MD and Robert Gish, MD

DEFINITION

- Pathologic accumulation of fluid in the abdomen
- Cirrhosis is the cause of ascites in 85% of those that develop ascites
- Most common of the complications of cirrhosis that leads to hospital admission
  - 50% of those with compensated cirrhosis will develop ascites over 10 year time period (1)
  - Following the onset of ascites, 15% die within 1 year and 44% die within 5 years (2)

DIAGNOSIS

- Presence or absence of ascites made on basis of physical exam and imaging
- Indications for paracentesis
  - Any new onset ascites
  - Any hospitalized patient with ascites, typically early (within 6 hours of admission)
  - Those with symptoms/signs or clinical deterioration including fever or hypothermia, abdominal pain, altered mental status/lethargy, leukocytosis, worsening renal function, acidosis, hypotension, sudden rise in MELD score
- Complications of paracentesis
  - Occur in less than 1 per 1000 patients
  - No need to provide blood products including FFP or platelets prior to performing paracentesis irregardless of INR and platelet count
    - In a study of 1100 patients undergoing paracentesis, there were no bleeding complications despite a) no prophylactic transfusions, b) platelet count as low as 19,000 (54% with platelet count <50,000), and c) INR up to 8.7(75% with INR >1.5 and 26% with INR >2) (3)
- Ascitic fluid laboratory data

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<th>ROUTINE</th>
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<td>AFB smear and culture</td>
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<td>Gram’s stain</td>
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Abbreviation: AFB, acid-fast bacteria. *Adapted from Runyon.17 Reprinted with permission from Saunders Elsevier.

- See Paracentesis and SBP Guidelines for additional information
- Algorithm
MANAGEMENT

- First line treatment: sodium restriction and oral diuretics
  - Sodium restriction of less than 2000 mg sodium per day (88 mmol/day)
    - Often requires dietary education, if possible by nutritionist
  - Oral diuretics
    - Start with combination of spironolactone and furosemide at ratio of 100 mg/40 mg respectively
    - Increase every 3-5 days based on natriuresis and weight loss
      - No maximum rate of weight loss but typically around 0.5 kg/day
    - Maximal dose: 400 mg spironolactone and 160 mg furosemide
  - Combination of sodium restriction and diuretics effective in controlling ascites in 90%
    - Urine studies can be useful in monitoring compliance with sodium restriction and response to diuretics
      - Spot urine Na/K >1 or 24 hr urine sodium excretion >78 mmol/day and not losing weight=Noncompliance with sodium restriction (4)
      - 24 hr urine sodium excretion <78 mmol/day and not losing weight=Noncompliance with diuretics OR needs trial of higher dose of diuretics if able to tolerate OR refractory to diuretics
  - Alternative diuretics
    - Amiloride: Max dose of 40 mg daily, replace spironolactone in those with gynecomastia
    - Eplerenone: Max dose 100 mg daily, replace spironolactone in those with gynecomastia
    - Torsemide
    - Bumetanide
    - Hydrochlorothiazide will often cause significant hyponatremia and is typically avoided
  - Fluid restriction is NOT needed until serum sodium is below 125
  - NSAIDs are contraindicated in those with ascites as they can lead to decreased urinary sodium excretion and azotemia
  - ACE inhibitors/ARB should be avoided or used with extreme caution
  - If has tense ascites at presentation, recommend large volume paracentesis followed by initiation of diuretics
  - Consider initiation for liver transplant evaluation

- Second line treatments: Typically for refractory ascites OR failure of diuretic therapy
  - Refractory ascites (5)
    - Fluid overload that is unresponsive to maximal doses of diuretics and sodium restriction
    - Recurs rapidly after large volume paracentesis
  - Failure of diuretic therapy
    - Minimal to no weight loss and inadequate urinary sodium excretion (<78 mmol/d) despite diuretic therapy
    - Clinically significant complications of diuretic therapy including:
      - Recurrent hepatic encephalopathy
      - Hyponatremia with sodium less than 120 mmol/L
      - Hyperkalemia with potassium greater than 6 mmol/L
      - Serum creatinine rise to greater than 2.0 mg/dL
o Discontinue beta-blockers which have been shown to shorten survival in those with refractory ascites (6)
o Consider addition of midodrine 7.5 mg TID especially in those with hypotension (7)
o Serial therapeutic paracentesis
  ▪ In a patient with no urine sodium excretion, a 10L paracentesis every 2 weeks has been shown to control ascites
  ▪ If patient is requiring more than 10L paracentesis every 2 weeks, then NOT compliant with low sodium diet
  ▪ Stop diuretics if urine sodium less than 30 mmol/day despite diuretics
  ▪ Albumin infusion of 6-8 g/L of fluid removed should be infused during or shortly after removal of fluid in those that have more than 5L removed
  ▪ Has been shown to reduce mortality (8)
o TIPS (transjugular portosystemic stent-shunt)
  ▪ Better control of ascites than large volume paracentesis but higher risk of hepatic encephalopathy and unclear if any survival benefit
  ▪ Recommend multiphase imaging of abdomen and echocardiogram prior to TIPS
  ▪ Absolute contraindications
    ▪ Congestive heart failure (EF <50% or significant diastolic dysfunction)
    ▪ Severe tricuspid regurgitation
    ▪ Severe pulmonary hypertension (mean pulmonary pressure >45 mm Hg)
    ▪ Multiple hepatic cysts
    ▪ Unrelieved biliary obstruction
    ▪ Uncontrolled systemic infection or sepsis
  ▪ Relative contraindications
    ▪ Hepatoma, especially central
    ▪ Obstruction of all hepatic veins
    ▪ Portal vein thrombosis
    ▪ Severe coagulopathy
    ▪ Thrombocytopenia (<20,000)
    ▪ Moderate pulmonary hypertension
  ▪ Must use caution in those with MELD >15, t bilirubin >4 or those with intrinsic renal disease
o Expedited liver transplant evaluation
  ▪ 21% of those with refractory ascites die within 6 months (9)

REFERENCES


