

**HCV TeleECHO Clinic**

# **Cirrhotic Ascites**

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# Indication for paracentesis

- New-onset ascites (diagnostic)
- Tense ascites (therapeutic): large volume paracentesis
- R/O Spontaneous Bacterial Peritonitis:  
Symptoms, signs, or lab abnormalities suggestive of infection (diagnostic)  
+/- abdominal pain or tenderness (may be no sx)
  - ☐ fever,
  - ☐ encephalopathy,
  - ☐ renal failure,
  - ☐ acidosis,
  - ☐ peripheral leukocytosis

**Are blood components  
necessary before  
paracentesis?**

***Because bleeding is sufficiently uncommon,  
the routine prophylactic use of FFP or  
platelets before paracentesis is not  
recommended.***

# Contraindication for paracentesis

- Coagulopathy is a potential contraindication if severe
- No data: cut off for coagulopathy despite 50,000 platelet “standard”
- Ultrasound guidance limits potential complications

**Caution** in pregnancy, organomegaly, bowel obstruction, intra-abdominal adhesions, or a distended urinary bladder

Z tract

US  
guide  
is  
option

Inf epigastric a.

Fig. 1. Diagram of the abdomen showing the three usual sites for abdominal paracentesis. The author prefers the left lower quadrant site. Reproduced from Thomsen TW, Shaffer RW, White B, Setnik GS. Paracentesis. N Engl J Med 2006;355:e21, with permission from the Massachusetts Medical Society. Copyright (2006) Massachusetts Medical Society. All rights reserved.

**Caution !!!!!!!**  
cutaneous infection,  
visibly engorged  
cutaneous vessels,  
surgical scars, or  
abdominal-wall  
hematomas.

*The initial laboratory investigation of ascitic fluid should include an ascitic fluid cell count and differential, ascitic fluid protein, and SAAG. (class 1, level B)*

*If ascitic fluid infection is suspected, ascitic fluid should be cultured at the bedside in blood culture bottles prior to initiation of antibiotics. (class 1, level C)*

**Table 3. Ascitic Fluid Laboratory Data\***

Routine	Optional	Unusual	Unhelpful
Cell count and differential Albumin Total protein	Culture in blood culture bottles Glucose Lactate dehydrogenase Amylase Gram's stain	AFB smear and culture Cytology Triglyceride Bilirubin	pH Lactate Cholesterol Fibronectin Glycosaminoglycans

Abbreviation: AFB, acid-fast bacteria. \*Adapted from Runyon.<sup>17</sup> Reprinted with permission from W.B. Saunders.

Portal HT  
related

## Classification of Ascites by SAAG

High gradient  
SAAG  $\geq$  1.1

### **Cirrhosis**

- Alcoholic hepatitis
- Cardiac ascites
- Massive liver metastasis
- Fulminant hepatic failure
- Budd-Chiari syndrome
- Portal or splenic vein thrombosis
- Myxedema
- Fatty liver of pregnancy

Low gradient  
SAAG  $<$  1.1

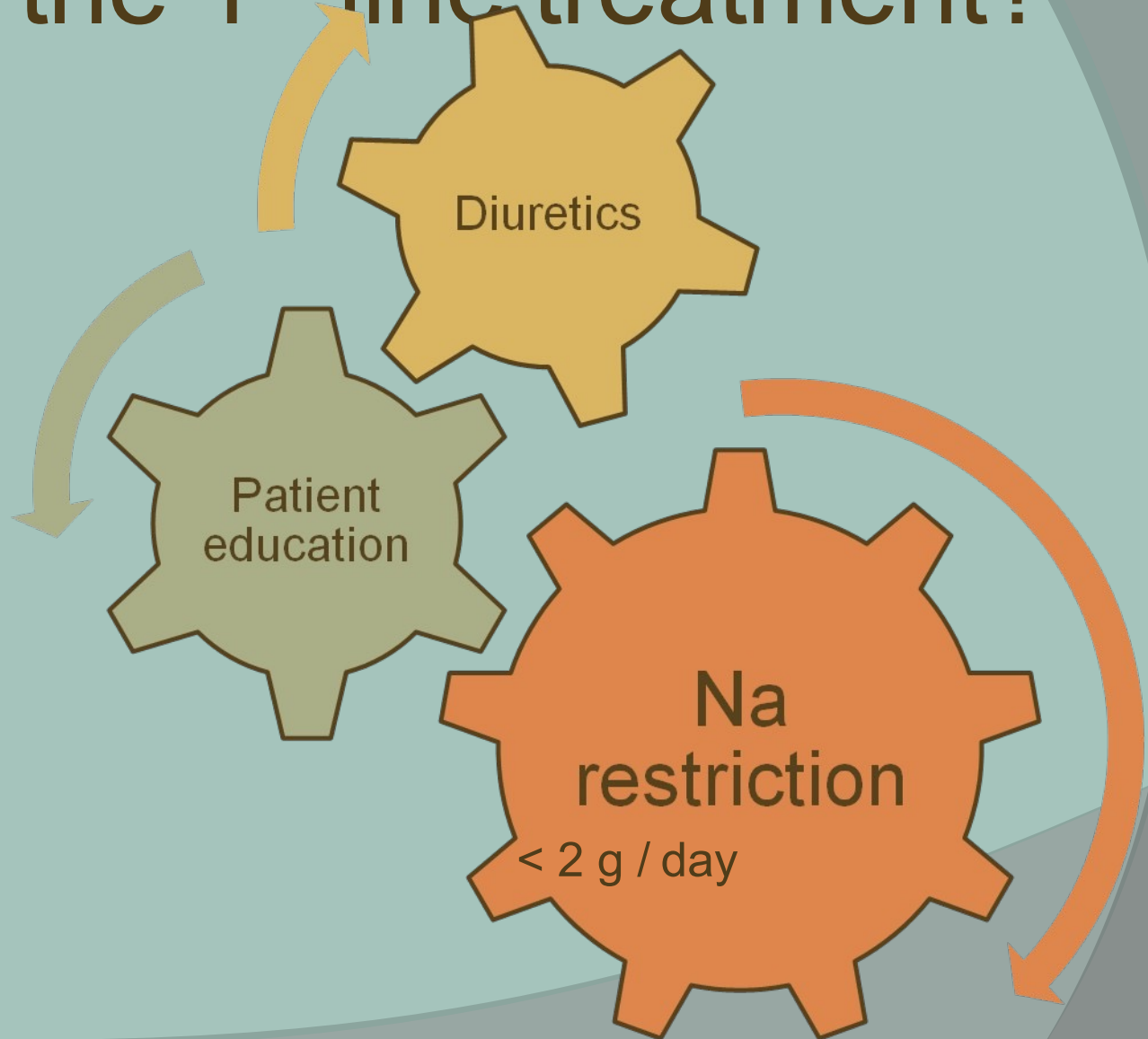
- Peritoneal carcinomatosis
- TB peritonitis
- Pancreatic ascites
- Bowel obst/infarct
- Biliary ascites
- Nephrotic syndrome
- Postoperative lymphatic leak

# Sensitivity- SAAG

- ❑ If SAAG is 1.1 g/dl or more, considered to have portal hypertension (accuracy 97%)
- ❑ Serum albumin and ascitic albumin obtained nearly simultaneously (same hour)
- ❑ Borderline SAAG (1-1.1 g/dl): repeat paracentesis
- ❑ Ascites fluid total protein ( SAAG > 1.1 )
  - AFTP < 2.5      ❑ cirrhosis
  - AFTP > 2.5      ❑ cardiac ascites



# What's the 1<sup>st</sup> line treatment?



# When to restrict fluids?

- Fluid restriction is not necessary unless serum Na < 120-125 mmol/L.
- Chronic hyponatremia frequently seen in pts with cirrhosis and ascites (MELD-Na)
- Sodium restriction is essential (<2000 mg Na / 24 hours)

# How to start diuretics?



**Ratio 100 mg : 40 mg**  
**Single morning dose for both**

50/20 -> 100/40 -> 150/60 etc.

# When to use single-agent (spironolactone)?

- ❑ Minimal ascites in out patient setting
- ❑ Slower diuresis and need less dose adjustment
- ❑ Less preferred due to potential for hyperkalemia

# How to adjust dosage of diuretics?

- Increase both simultaneously every 3-5 days (maintain 100mg : 40mg ratio)
- Maximum 400 mg/d spironolactone, 160 mg/d furosemide (uncommon)
- No limit to daily weight loss if massive edema but monitor closely
- Once edema resolved: maximum 0.5 kg/day but monitor creatinine

# When to hold diuretics?

- Uncontrolled, recurrent encephalopathy
- Serum Na < 120 mmol/L despite fluid restriction
- Serum Cr > 2.0 mg/dL
- If edema absent and ascites refractory
- Monitor electrolytes and creatinine regularly until stable dosing achieved

# How to manage tense ascites?

- Initial single large-volume paracentesis with albumin
- Then dietary Na restriction and diuretics; monitor weight and BP
- Continue paracenteses as needed: “standing order”
- Set expectations
- “End game:” Transplant? TIPS?  
Hospice? Reversability?

# Is albumin infusion after paracentesis necessary?

“Traditional” approach: If > 5 liters removed, give albumin 6-8 g/L of fluid. Problematic

Recommended approach: 25 gm albumin for every 2 liters removed, no matter how much is removed. Remove all ascites. *Anticipate resistance from staff !*



# Serial large volume paracentesis (LVP)

- ❑ LVP with intravenous albumin represents the standard therapy for refractory ascites.
- ❑ Therapeutic paracentesis does not modify the mechanisms that lead to ascites formation.
- ❑ Ascites will always recur in patients with refractory ascites unless there is an improvement in liver disease

# *Refractory Ascites:*

- Unresponsive to sodium-restricted diet and high-dose diuretic treatment (400 mg/day spironolactone and 160 mg/day furosemide)
- Recurs rapidly after therapeutic paracentesis

# EVALUATION OF REFRACTORY ASCITES

❓ *Exclude other causes that are not responsive to diuretic therapy:*

1. Non-compliance with medications and low sodium diet
2. Other causes: malignant ascites, nephrogenic ascites, portal vein thrombosis, infection
3. Iatrogenic (e.g. administration of salt tablets to treat hyponatremia!)

# Refractory Ascites???

## Orders to Include





Description	Revision Date
<input type="checkbox"/> Aspirin Tablet 81 MG Give 1 tablet by mouth one time a day for CVA Prophylaxis	06/02/2016
<input type="checkbox"/> Bisacodyl Suppository 10 MG Insert 1 suppository rectally as needed for BOWEL CARE GIVE WITH 8-10 HOURS IF NO POSITIVE RESULTS FROM STEP 1	06/01/2016
<input type="checkbox"/> Calcium 600 Tablet Give 600 mg by mouth two times a day for low Ca level	06/12/2016
<input type="checkbox"/> Clpro Tablet 500 MG Give 1 tablet by mouth one time a day for prophylaxis against spontaneous bacterial peritonitis	06/02/2016
<input type="checkbox"/> Denosumab Solution 60 MG VML Inject 1 ml subcutaneously one time a day every 6 month(s) starting on the 17th for 1 day(s) for Osteoporosis Last dose administered on 3/19/2016.	06/02/2016
<input type="checkbox"/> Famotidine Tablet 20 MG Give 1 tablet by mouth two times a day for GERD	06/02/2016
<input type="checkbox"/> Fleet Enema Enema 7-19 GM V 118 ML Insert 1 unit rectally as needed for BOWEL CARE **GIVE WITHIN 4 HOURS IF NO POSITIVE RESULT FROM BISACODYL SUPP. **NOTIFY PROVIDER IF NO RESULTS IN 2 HOURS	06/01/2016
<input type="checkbox"/> Lactulose Solution 10 GM V 15 ML Give 45 ml by mouth one time a day for ascites	06/17/2016
<input type="checkbox"/> Lasix Tablet 40 MG Give 1 tablet by mouth one time a day for EDEMA	06/02/2016
<input type="checkbox"/> Milk of Magnesium Give 30 ml by mouth as needed for NO BOWEL MOVEMENT FOR GREATER THAN 6 SHIFTS	06/01/2016
<input type="checkbox"/> Multiple Vitamins-Minerals Tablet Give 1 tablet by mouth one time a day for Supplement	06/02/2016
<input type="checkbox"/> Oxycodone HCl Tablet 5 MG Give 1 tablet by mouth every 6 hours for back pain	06/12/2016
<input type="checkbox"/> Sodium Chloride Tablet 1 GM Give 1 tablet by mouth three times a day for electrolyte supplement	06/02/2016
<input type="checkbox"/> Spironolactone Tablet 50 MG Give 1 tablet by mouth one time a day for hypertension	06/02/2016
<input type="checkbox"/> Vitamin D3 Tablet Give 5000 IU by mouth one time a day for SUPPLEMENT	06/02/2016

# *Refractory Ascites*

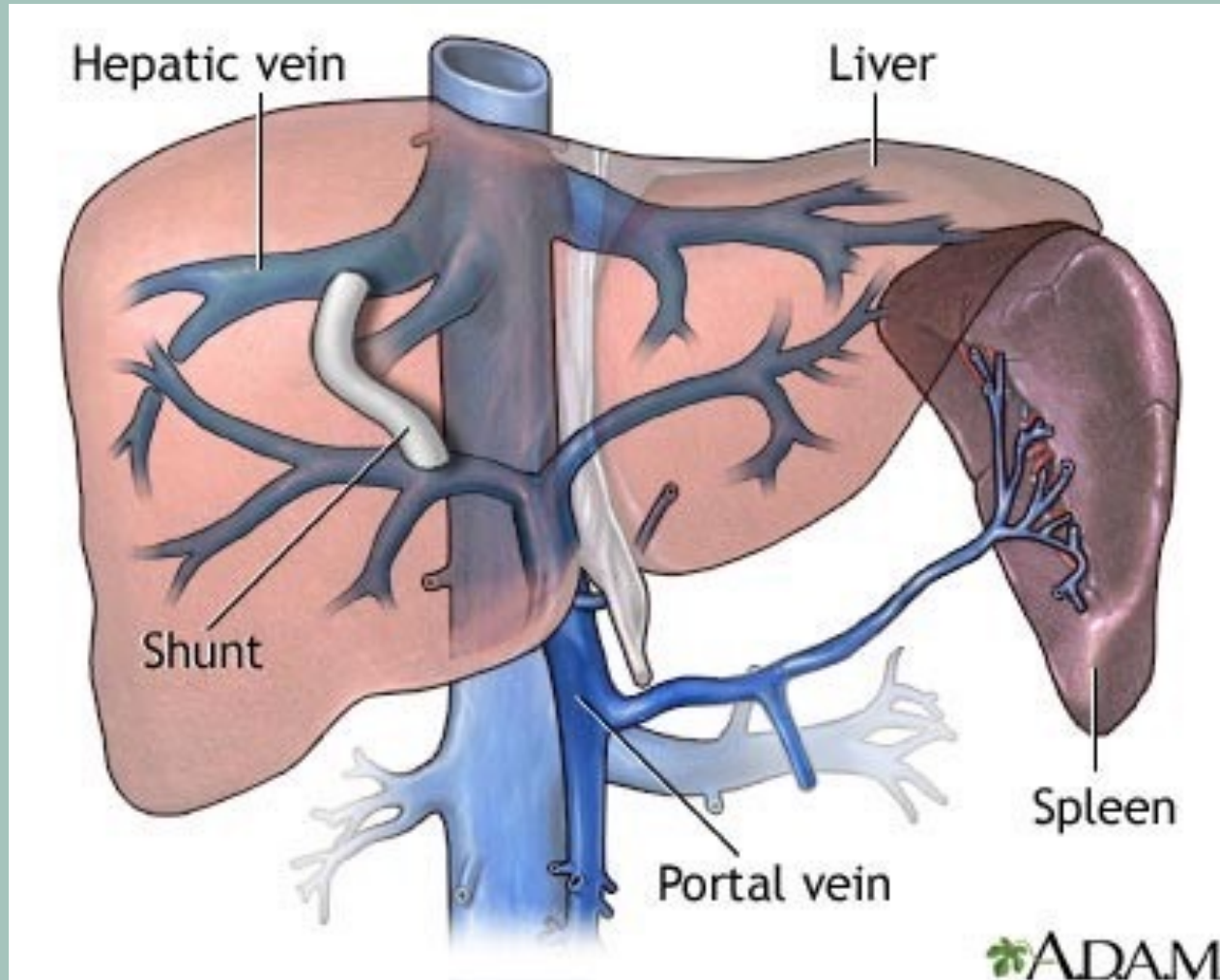


## Options for patients refractory to medical therapy

- (1) Serial therapeutic paracenteses
- (2) Transjugular intrahepatic portasystemic stent-shunt (TIPS)
- ~~(3) Peritoneovenous shunt~~
- ~~(4) Indwelling peritoneal catheter~~
- (5) Liver transplantation



# Transjugular intrahepatic portosystemic stent-shunt(TIPS)



# Summary: Ascites Management

- Stress importance of sodium restriction
- Utilize diuretics appropriately
- Monitor weight and labs regularly until stable
- Formulate a plan of care
- Avoid common mistakes:
  - Inappropriate diuretic regimens (monotherapy and/or excessive dosing of loop diuretics, improper ratio)
  - Improper ordering of paracenteses (albumin, volume)
  - Inadequate dietary counselling (“what is salty?”)

## Top 10 Foods Highest in Sodium

2400mg of Sodium = 100% of the Daily Value (%DV)

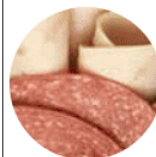
### 1 Table Salt



**97% DV** (2325mg)  
per tsp

0 calories

### 2 Cured Ham



**88% DV** (2100mg)  
per cup

249 calories

### 3 Ham and Egg Biscuit



**83% DV** (1989mg)  
per item

424 calories

### 4 Pickled Cucumber



**78% DV** (1872mg)  
per cup

17 calories

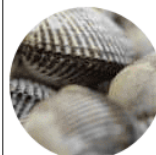
### 5 Sunflower Seeds (Dry Roasted)



**71% DV** (1706mg)  
per oz

155 calories

### 6 Clams



**43% DV** (1022mg)  
per 3oz serving

126 calories

### 7 Canned Beans (With Added Salt)



**37% DV** (880mg)  
per cup

296 calories

### 8 French Bread



**35% DV** (837mg)  
per slice

378 calories

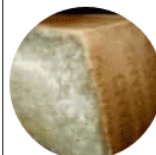
### 9 Teriyaki Sauce



**27% DV** (640mg)  
per tblsp

32 calories

### 10 Grated Parmesan



**21% DV** (512mg)  
per oz

119 calories



# Thank you!

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