

EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE



Care Warriors

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SPONTANEOUS BACTERIAL PERITONITIS

46 year old male w PMHx HTN, DMII, alcohol/narcotic abuse, and alcoholic cirrhosis, presents to ER with altered mental status. His sister states that he was complaining of abdominal pain earlier that day. Additional history could not be obtained.

Vitals - BP: 67/33 mmHg, P 68, RR 30, O2 96 3L.

Physical - stuporous and disoriented x 4, severely jaundiced, abdominal distention, abdominal tenderness, palmar erythema, 4+ pitting edema.

Labs - WBC 60K, Hgb 9.7, Plt 194, Na 137, K 6.7, Cl 100, CO2 <5, BUN 129, Cr 10, glucose 159, AST 352, ALT 130, total bili 14.4, lactic acid 18.3, ABG pH 6.78, pCO2 31, pO2 244, HCO3 5.

If spontaneous bacterial peritonitis (SBP) is suspected, which antibiotic should be started for empiric treatment?

- Vancomycin
- Zosyn
- Cefotaxime
- Doxycycline
- Azithromycin

Differential Diagnoses: peptic ulcer perforation, bowel perforation, gastroenteritis, appendicitis, DKA, mesenteric ischemia, pancreatitis, bowel obstruction, cholecystitis, nephrolithiasis, pyelonephritis, diverticulitis, ruptured AAA



Ascites



Jaundice



Palmar Erythema



Pitting Edema



Gynecomastia



Spider Angiomas

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

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The correct answer is **(c) cefotaxime**. When treating empirically for spontaneous bacterial peritonitis, it is recommended to use a third-generation cephalosporin due to its broad gram-negative and gram-positive coverage [Mazer]. Either cefotaxime or ceftriaxone adequately cover the most common pathogens in SBP, including E. coli (43%), Klebsiella (11%), Strep pneumo (9%), other Strep species (19%). If the patient has an allergy to cephalosporins, it is recommended to use the fluoroquinolone, ciprofloxacin [Mazer].

Spontaneous Bacterial Peritonitis (SBP)

Clinical Manifestations

SBP is defined as an ascitic fluid infection without evidence of another intra-abdominal source. Patients who develop SBP generally have advanced cirrhosis. The higher the Model for End-stage Liver Disease (MELD) score, the higher the risk for SBP (next page). Patients with large-volume, clinically-obvious ascites are the most common to develop SBP. It is important to diagnose SBP early in its course because there is a short window of opportunity to intervene to optimize positive outcomes. Suspect SBP in patients with ascites who develop symptoms such as fever (69%), abdominal pain (59%), AMS (54%), abdominal tenderness (49%), diarrhea (32%), paralytic ileus (30%), hypotension (21%), hypothermia (17%). Most common laboratory abnormalities include

Diagnosis

SBP should be suspected in any patient with cirrhosis who develop signs and symptoms of fever, abdominal pain, AMS, abdominal tenderness, or hypotension. Once SBP is suspected, paracentesis should be performed to analyze ascitic fluid. It is important to perform paracentesis before antibiotics are given. Ascitic fluid should be tested for the following: aerobic and anaerobic cultures, cell count and differential, gram stain, albumin, protein, glucose, LDH, amylase, and bilirubin. The diagnosis of SBP is defined as ascitic fluid PMNs (neutrophils) greater than 250 cells/mm³, positive cultures, and secondary causes of peritonitis excluded. While awaiting results of ascitic fluid analysis, patient should be started on empiric treatment.

Treatment

Suggested treatment for SBP is a third-generation cephalosporin like cefotaxime (2g IV q8 hrs) or ceftriaxone (1-2g IV q12-24 hrs) [Mazer]. Ciprofloxacin is an alternative for patients who cannot tolerate cephalosporins. Renal failure develops in 30-40% of patients with SBP and is a major cause of death [Follo]. Risk is decreased with infusion of IV albumin within 6 hrs of diagnosis (1.5g/kg) [Sort]. If renal failure develops, treatment with combination of octreotide and midodrine may be helpful [Kalambokis].

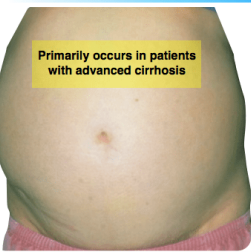
For a list of educational lectures, grand rounds, workshops, and didactics please visit BrowardER.com and **click** on the **"Conference"** link.

All are welcome to attend!

Warriors

Spontaneous Bacterial Peritonitis

Portal hypertension → Bowel edema → Bacterial migration from GI tract



Primarily occurs in patients with advanced cirrhosis

Clinical

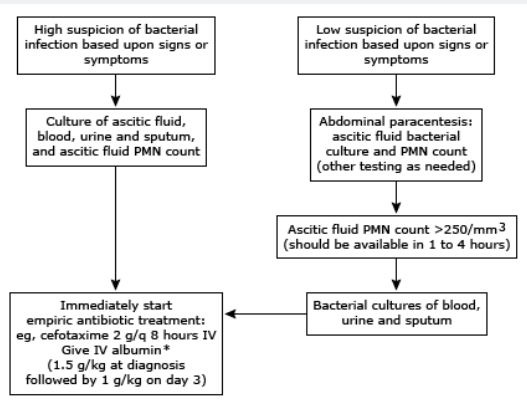
- Fever
- Chills
- Abdominal pain

Diagnosis

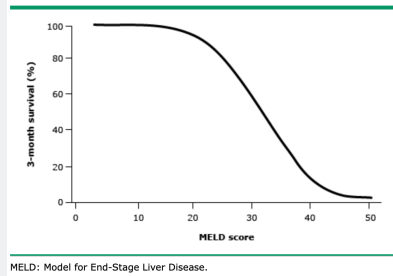
- PMN > 250 cells/mL
- Positive Gram stain/culture

Management

- Third gen cephalosporin (e.g. cefotaxime)



Estimated 3-month survival as a function of the MELD score in patients with cirrhosis



MELD Score (Model For End-Stage Liver Disease) (12 and older)

Stratifies severity of end-stage liver disease, for transplant planning.

INSTRUCTIONS
Use in patients ≥12 years old. Note: As of January 2016, calculation of the MELD has changed. It now includes serum sodium level. See [OPTN's announcement](#).

When to Use ▾ Pearls/Pitfalls ▾ Why Use ▾

Dialysis at least twice in the past week Or CVVHD for ≥24 hours in the past week No Yes

Creatinine Cr >4.0 mg/dL is automatically assigned a value of 4.0 mg/dL ↔

Bilirubin mg/dL ↔

INR

Sodium mEq/L ↔

40 points
MELD Score (2016)*

71.3%
Estimated 3-Month Mortality

Clinical and Lab Criteria	Points*		
	1	2	3
Encephalopathy	None	Mild to moderate (grade 1 or 2)	Severe (grade 3 or 4)
Ascites	None	Mild to moderate (diuretic responsive)	Severe (diuretic refractory)
Bilirubin (mg/dL)	< 2	2-3	>3
Albumin (g/dL)	> 3.5	2.8-3.5	<2.8
Prothrombin time			
Seconds prolonged	<4	4-6	>6
International normalized ratio	<1.7	1.7-2.3	>2.3

*Child-Turcotte-Pugh Class obtained by adding score for each parameter (total points)

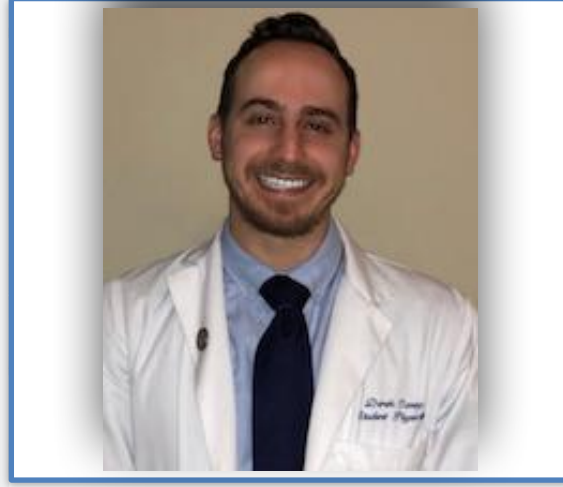
Class A = 5 to 6 points (least severe liver disease)

Class B = 7 to 9 points (moderately severe liver disease)

Class C = 10 to 15 points (most severe liver disease)

Key points

- Suspect SBP in patient with **ascites** w/ one or more of the following: **fever, abdominal pain/tenderness, AMS, diarrhea, hypotension, hypothermia**
- If SBP is suspected, while cultures are pending, start treatment with third-generation cephalosporin (preferably **cefotaxime 2g IV q8** or **ceftriaxone 1-2g IV q12-24** because they cover most common microbes and attain good ascitic fluid levels), or **ciprofloxacin** if patient is allergic to cephalosporins
- Most common SBP organisms **E. coli, Klebsiella, and Streptococcus**
- Decrease risk of renal failure with IV **albumin** infusion within 6 hrs (**1.5g/kg**). Once renal failure develops, treat with **octreotide** and **midodrine**



ABOUT THE AUTHOR

This month's case was written by Derek Casey. Derek is a 4th year medical student from NSU-COM. He did his emergency medicine rotation at BHMIC in Nov 2019. Derek plans on pursuing a career in Internal Medicine after graduation.

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