

PERSISTENT PERITONITIS IN A PERITONEAL DIALYSIS PATIENT

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CLINICAL PROBLEM

- 4 year old female with Blackfan Diamond Syndrome on PD
- Presenting with 3 day history of:
 - Low grade fever
 - Upper respiratory symptoms
- The morning of admission began having:
 - Abdominal pain
 - Non-bilious emesis
 - Cloudy PD fluid

PAST MEDICAL HISTORY

- Blackfan Diamond Syndrome was diagnosed at the age of 4 months when she presented in shock with hemoglobin of 1.8
- She has been anuric and PD dependent since that time due to cortical necrosis
- Her history also includes global developmental delay and seizure disorder resulting from her episode of shock
- Complications of her chronic kidney disease include hypertension, growth failure with G-tube dependency, and secondary hyperparathyroidism
- She has no prior history of peritonitis; her peritoneal membrane function has remained good

WHAT IS YOUR DIFFERENTIAL DIAGNOSIS FOR
ABDOMINAL PAIN, EMESIS, FEVER
 IN A PD PATIENT?

WHAT IS YOUR DIFFERENTIAL DIAGNOSIS FOR ABDOMINAL PAIN, EMESIS, FEVER IN A PD PATIENT?

- Peritonitis
- Peritonitis
- Peritonitis
- Bacteremia
- Viral syndrome
- Pyelonephritis
- Perforated Bowel
- Mesenteric Adenitis
- Appendicitis

INITIAL STUDIES
DAY OF ADMISSION

Peritoneal Fluid studies:

- Fluid appearance: Yellow
- 24, 129 WBC/uL
- Differential:
 - 82% PMNs
 - 5% lymphocytes
 - 9% monocytes
 - 3% eosinophils



MANAGEMENT

- IP Vancomycin and Cefepime
- No growth on cultures of the peritoneal fluid at 48 hours
- Continued course for culture negative peritonitis
- Monitoring PD fluid counts reflecting down-trending WBC & improving differential

Yet, by Day 3 of hospitalization, patient continued to have G-tube feeding intolerance and non-bilious emesis.

WHAT IS YOUR DIFFERENTIAL DIAGNOSIS WITH
NEGATIVE CULTURES AT 48HRS
IMPROVED PD COUNTS
G-TUBE FEEDING INTOLERANCE
PERSISTENT NON-BILIOUS EMESIS

WHAT IS YOUR DIFFERENTIAL DIAGNOSIS
G-TUBE FEEDING INTOLERANCE
PERSISTENT NON-BILIOUS EMESIS

- Post-infectious ileus
- Gastroparesis
- Obstruction
- Viral syndrome prolonged recovery
- Peptic ulcer/gastritis

**PATIENT CONTINUES TO HAVE PERSISTENT
G-TUBE FEEDING INTOLERANCE AND
EMESIS...**
DAY 3 OF ADMISSION

Peritoneal Fluid studies:

- No growth to date on cultures
- Fluid appearance: Clear/Colorless
- 32 WBC/uL
- Differential:
 - 15% PMNs
 - 17% lymphocytes
 - 68% monocytes

REPEAT STUDIES:

KUB

Impression:
Multiple gas-filled loops of bowel seen throughout the abdomen. Non-obstructive bowel gas pattern. Mild bowel wall edema. No evidence of pneumoperitoneum and pneumatosis.

MANAGEMENT

- Continued slow introduction of enteric feeds
- Continued IP antibiotics for culture negative peritonitis

**5TH DAY OF IP ANTIBIOTICS:
PATIENT CONTINUES TO HAVE PERSISTENT FEEDING
INTOLERANCE**

Peritoneal Fluid studies:

- No growth to date on cultures
- Fluid appearance: Clear
- 155 WBC/uL
- Differential:
 - 79% PMNs
 - 1% lymphocytes
 - 20% monocytes

WHAT WOULD BE NEXT STEP
WITH WORSENING PD COUNTS AND
CONTINUED EMESIS AFTER 5 DAYS OF IP
ANTIBIOTICS?

WHAT WOULD BE YOUR NEXT STEP?

- Further Imaging? *Normal Abdominal US.*
- Expanding coverage?
 - Fungal peritonitis? *IV Fluconazole was added.*
 - IV antibiotics? *IV Meropenem was added.*
- PD catheter removal?
- Additional laboratory studies?

EXPANDING THE DIFFERENTIAL

- Alternative abdominal pathologies:
 - **Lipase level of 1,610 U/L**
- CT scan w/contrast showing enlarged edematous pancreas with fluid extending into the pancreatic and anterior para renal space.
- Impression:
 - Findings consistent with pancreatitis, with associated peripancreatic, anterior pararenal and posterior para-inflammatory fluid collection.
 - Three calculi noted in the extrahepatic bile duct

EXPANDING THE DIFFERENTIAL



MANAGEMENT

- Enteral rest and advancing feeds as tolerated with clinical improvement of lipase serum levels
- ERCP performed showing filling defects in the cystic duct and gallbladder, consistent with cholelithiasis.
- Sphincterotomy performed
- Laparoscopic cholecystectomy performed

INCIDENCE OF PANCREATITIS IN DIALYSIS PATIENTS

- In the pediatric dialysis population, the incidence of acute pancreatitis is not well defined.
- In the adult literature:
 - The incidence of acute pancreatitis in PD patients is greater than in HD patients
 - The incidence per 100 person years is reported to be in the range from 0.63 to 1.41 in long term hemodialysis and from 0.46 to 4.3 in long term peritoneal dialysis.
 - Acute pancreatitis has a high mortality risk in the adult dialysis population (11-30% mortality rate).

ETIOLOGY OF ACUTE PANCREATITIS IN DIALYSIS PATIENTS

- Patients with ESKD have a higher level of serum amylase and lipase at baseline.
- However, lipase levels >300ug/L is indicative of pancreatitis.
- Why?
 - Most often acute pancreatitis is of idiopathic etiology
 - Possible theories have included:
 - Higher incidence of pancreatic anatomic abnormalities
 - Toxic substances in PD dialysate, tubing or bags
 - Alterations in Ca & PTH
 - Bacterial and viral infections

TAKE HOME POINTS

- Children on peritoneal dialysis have a higher occurrence of intra-abdominal diseases.
- Pancreatitis can be a cause for peritoneal leukocytosis, so have a increased level of suspicion in the setting of culture-negative peritonitis.

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