COLUMBIA UNIVERSITY MEDICAL CENTER

DIVISION OF GENERAL MEDICINE

Senior Medicine Rotation: Evidence-Based Medicine Project

Sub-Intern Name: Eric Bank **Block: April 2012** **Date: April 26, 2012**

Case SIGNOUT:

FP is a 41yo man with a history of hemorrhagic proctocolitis in 2006 and epilepsy since 2011 who presented with one week of fever, epigastric pain, cough on deep inspiration, and vomiting. He was sent to CUMC from his PMD's office after an abd ultrasound revealed an 8cm hepatic abscess. ED workup notable for tachycardia, absence of fever, leukocytosis of 22.7, and abnormal hepatic panel of AST 45, ALT 56, AlkPhos 252, TBili 1.9, DirBili 1.1, Prot 6.0, and Alb 3.4. He was started on empiric cefepime and metronidazole, and interventional radiology placed a percutaneous catheter, with immediate drainage of 185mL of viscous, dark tan, purulent liquid. The patient's symptoms and leukocytosis resolved within two days of initiation of treatment. Cultures of the abscess fluid and blood were negative, but the patient's Entamoeba histolytica IgG was strongly positive. His exposure risk factors included travel to multiple endemic regions in childhood and as a young adult, as well as more recent consumption of raw ground beef.

Clinical Question: Is percutaneous drainage indicated for amoebic liver abscesses?

Background

1. Mechanism
    a. Entamoeba histolytica is an amoebic infection spread via fecal-oral transmission
    b. Most intestinal E. histolytica is asymptomatic, but it can cause bloody diarrhea
    c. Can spread via portal system to liver, obstruct intrahepatic portal venules, and via proteolysis cause liquefactive necrosis of liver, forming an amoebic liver abscess
2. Epidemiology
    a. Worldwide, 50 million people are infected with amoebiasis annually, mostly in Mexico, Central and South America, India, southeast Asia, and Africa
    b. About 3-8% of patients with symptomatic amoebiasis develop a liver abscess
    c. Estimated 4000 hospitalizations a year in USA for amoebic liver abscess
    d. Demographics in USA: 81.2% male, 47.8% Hispanic, only 8.3% in Northeast; 72% have no or only one comorbidity
    e. In USA, 48% of patients have percutaneous intervention and 7% have surgery
3. Clinical Presentation
    a. Percent with symptoms: fever 80%, abdominal pain 72%, RUQ pain 63%, vomiting 53%, diarrhea 33%, bloody diarrhea 16%, pleuritic chest pain 19%, cough 16%, weight loss 11%, dyspnea 6%, headache 4%
    b. Mean lab values: WBC 16.3, Eos 1%, AST 33, ALT 34, AlkPhos 140, TBili 0.8
4. Diagnosis
    a. Exposure to endemic region and pre-test probability estimation
    b. Imaging: ultrasound, CT, MRI
    c. Lab testing: E. histolytica fecal or serum ELISA, serum indirect hemagglutinin assay, or serum IgG level

d. Makes amoebic more probable than pyogenic: absence of concurrent malignancy (OR=9.4), solitary abscess (OR=5.3), Hispanic race (OR=5.3), absence of prior biliary disease (OR=4.3), age <65yrs (OR=3.3), and male sex (OR=2.1)
e. No value in differentiating amoebic vs pyogenic: WBC, LFTs, or radiologic appearance of the abscess

5. Treatment
    a. Metronidazole 750-800mg PO tid for 10-21 days
    b. After metronidazole, give luminal agent such as paromomycin 25-35mg/kg/day PO divided tid to eliminate intra-intestinal amoebas and reduce risk of recurrence or asymptomatic shedding
    c. Based on multiple case series, consider percutaneous drainage in patients whose abscesses are drug-resistant, left-sided, multiple, at imminent risk of rupture, have bacterial co-infection, or are of unclear etiology (pyogenic vs amoebic)
6. Prognosis
    a. With metronidazole alone mortality <1%, but if abscess ruptures mortality 2-18%
    b. Heals from periphery, median >50% size reduction after 1 week of therapy, usually complete radiologic resolution in 3-9 months

Search Strategy
Database: Pubmed. Search query: (((entamoeba histolytica) OR amoebic) AND liver abscess) AND percutaneous. 59 results.

Article Chosen:
Van Allan, et al., Uncomplicated amebic liver abscess: prospective evaluation of percutaneous therapeutic aspiration, Radiology 1992; 183:827-830

Group	Criteria or definition	n
Population screened	Patients admitted to USC with clinical presentation and imaging consistent with amebic liver abscess	?
Inclusion criteria	One of the following: a) abscess >5cm, b) abscess <5cm with mod-severe pain, c) abscess <5cm and fever of 103°F	57
Exclusion criteria	Any of the following: a) no informed consent, b) abscess rupture at time of diagnosis, c) contraindication to metronidazole or percutaneous intervention, d) identification of patient more than 24 hours after initiation of therapy	57 – 16 = 41
Treatment group	Metronidazole 750mg PO tid for 10-14 days PLUS CT- or US-guided catheter aspiration of abscess with immediate removal of catheter after cessation of drainage	20
No treatment group	Metronidazole 750mg PO tid for 10-14 days	21

Study authors did not distinguish between primary and secondary endpoints.
Endpoints: days to becoming afebrile after first 48 hours, days of hospitalization, days to reduction of pain by one level (severe->moderate->mild->none), and days to reduction of pain by more than one level

- Are the Results of the Trial Valid?
    - Randomized? Yes, via sealed envelope procedure
    - All patients accounted for at end? Yes, though not followed after discharge
    - Intention to treat? Not explicitly stated, but no crossover reported
    - Blinding? No

  - Groups similar at start of trial? Limited reporting, but abscesses in aspiration group were 7.5cm mean size and those in nonaspiration group were 8.5cm (p=0.3)
  - Equal treatment of groups? Unclear, but probably not: only aspiration group received meperidine for MAC and there is no statement of whether patients were on same unit or received similar nursing care given procedure in one arm only
  - Did randomization work? Unclear, as data are not presented
- Are the results of the trial important?
  - Size of treatment effect? No clinically relevant benefit (fail to reject null hypoth)
  - Precision of the estimate of the effect? Imprecise due to small sample size

Endpoint	Result	Significance	ARR	NNT
Days to becoming afebrile	Fail to reject null hypoth	n/a	n/a	n/a
Days of hospitalization	Fail to reject null hypoth	n/a	n/a	n/a
Days to reduction of sx by 1 level	Marginally positive, p=0.050	Marginal to none	n/a	n/a
Days to reduction of sx by >1 level	Fail to reject null hypoth	n/a	n/a	n/a
Morbidity	**Result**	**Significance**	**ARI**	**NNH**
Complications or deaths	None in either arm	n/a	n/a	n/a

- Can I apply these results to my patient?
  - Comparison of my patient to trial patients. Different clinician-estimated pre-test probability given remoteness of travel to endemic area led to empiric treatment for pyogenic liver abscess rather than amoebic liver abscess, including placement of catheter for longer period of time
  - All clinically important outcomes considered. Risk of percutaneous intervention not quantified or estimated in this paper, even though there were no procedural complications in this small sample
  - Likely benefits outweigh potential harms and cost? No, based on limited data

Sources

Chavez-Tapia, et al., Image-guided percutaneous procedure plus metronidazole versus metronidazole alone for uncomplicated amoebic liver abscess (Review), The Cochrane Library, 2009, Issue 1

Congly, et al., Amoebic liver abscess in USA: a population-based study of incidence, temporal trends, and mortality, Liver International, May 2011, 1191-1198

Hanna, et al., Percutaneous catheter drainage in drug-resistant amoebic liver abscess, Tropical Medicine and International Health, August 2000, 578-581

Hoffner, et al., Common presentations of amebic liver abscess, Annals of Emergency Medicine, September 1999, 351-355

Lodhi, et al., Features distinguishing amoebic from pyogenic liver abscess: a review of 575 adult cases, Tropical Medicine and International Health, June 2004, 718-723

Soentjens et al., A case of multiple amoebic liver abscess: clinical improvement after percutaneous aspiration, Acta Clinica Belgica, January-February 2005, 28-32

Van Allan, et al., Uncomplicated amebic liver abscess: prospective evaluation of percutaneous therapeutic aspiration, Radiology, February 1992, 827-830