MANAGEMENT OF PYOGENIC LIVER ABSCESS

BOYOUNG SONG, M.D.
SUNY DOWNSTATE SURGERY
11/7/13
CASE

THE PATIENT IS A 79 YEAR OLD MALE WITH 3 DAY HISTORY OF LOWER ABDOMINAL PAIN, NAUSEA WITHOUT VOMITING, CHILLS AND WATERY BOWEL MOVEMENTS.

FATIGUE AND SIGNIFICANT WEIGHT LOSS OF ~40LBS OVER 4 MONTHS.
CASE

PMHX: ALZHEIMER’S DEMENTIA, HTN, DM, CKD

PSHX: NONE

HOME MEDICATIONS: ENALAPRIL, NIFEDIPINE, JANUVIA, SIMVASTATIN, MEMANTINE

SOCHX: LIVES AT PANAMA AND US, OCCASIONAL ETOH, NO DRUGS

NKDA
CASE

PHYSICAL EXAM

102.0 F       91/52       79       18       99% ON RA

AWAKE AND AROUSABLE, NAD

S1S2 RRR

CTA B/L

SOFT ABDOMEN, NONDISTENDED, TENDER TO PALPATION IN UPPER QUADRANTS

NEGATIVE FOR GUARDING OR REBOUND

GUIAIC NEGATIVE
CASE

LABORATORY WORK

CBC 5.17 > 10.5/33.4 < 235 BANDEMIA 9%

BMP 133 / 4.2 / 91 / 18 / 99 / 3.9 < 221

LFT 7 / 3.3 / 298 / 212 / 149 / 1

LACTATE 1.6
CASE

- CT – LARGE HETEROGENEOUS MASS OCCUPYING MOST OF LEFT LOBE, MAY REPRESENT ABSCESS.
CASE

- **CT** – LARGE HETEROGENEOUS MASS OCCUPYING MOST OF LEFT LOBE, MAY REPRESENT ABSCESS.
CASE

ABDOMINAL SONOGRAM

COMPLEX COLLECTION IN LEFT LOBE MEASURING 10CM X 11CM X 12CM
A 5.5MM GALLSTONE AND SLUDGE IN GALLBLADDER
NO GB WALL THICKNESS
NO CBD DILATATION
CASE

HOSPITAL DAY #0: ADMISSION TO SICU
  IV HYDRATION
  IV ANTIBIOTICS (FLAGYL AND CEFTRIAXONE) STARTED

HOSPITAL DAY #1: IR DRAINAGE OF ABSCESS

MICROBIOLOGY: BLOOD CULTURE AND ABSCESS CULTURE – GROUP F STREPTOCOCCUS
CASE
CASE

HOSPITAL DAY #2 – 4: WBC TRENDING UP WITH SIGNIFICANT BANDEMIA (25-66%)

T. BILI TRENDING UP 3.4

DRAINAGE OUTPUT – BILIOUS

HOSPITAL DAY #5: MRCP
CASE

FREE FLUID IN ABDOMINAL CAVITY

INTENSE PERITONEAL ENHANCEMENT SUGGESTIVE OF BILE PERITONITIS
CASE

HOSPITAL DAY #6: IR DRAINAGE OF RIGHT GUTTER COLLECTION
~500ML OF PURULENCE DRAINED

HOSPITAL DAY #7: ON TUBE FEEDS, WBC LATERAL BUT BANDEMIA IMPROVED

HOSPITAL DAY #8: MORE DISTENDEED AND TACHYCARDIC, OR FOR WASHOUT
CASE

OPERATIVE FINDINGS

MULTIPLE ABSCESSES IN THE PERIHEPATIC, PERICOLIC, PELVIC, AND INTERLOOP AREAS

~800ML OF PURULENT FLUID SUCTIONED
THREE 10FR JACKSON – PRATT DRAINS LEFT
NO EVIDENCE OF DIVERTICULITIS AND APPENDICITIS

OPERATION

LAPAROSCOPIC WASHOUT AND PLACEMENT OF DRAINS
CASE

POST OP COURSE
EXTUBATED ON POST OP DAY #1
HEMODYNAMICALLY STABLE

AND STORY CONTINUES…
PYOGENIC LIVER ABSCESS

• EPIDEMIOLOGY
• ANATOMY
• ETIOLOGY

• PRESENTATION
• DIAGNOSIS
• TREATMENT
EPIDEMIOLOGY

• INCIDENCE 2.3 PER 100,000

• HISTORICALLY SEEN IN YOUNGER PATIENTS WITH APPENDICITIS

• CURRENTLY SEEN MORE IN ELDERLY, DEBILITATED POPULATION WITH UNDERLYING MALIGNANCY IN GI/BILIARY TRACT

• MORTALITY RATE CAN BE UP TO 10-20% IN PATIENTS WITH MULTIPLE COMORBIDITIES
ANATOMY
**ANATOMY**

**BLOOD SUPPLY TO LIVER**

- **75% BLOOD FLOW FROM PORTAL VEIN**
- **25% BLOOD FLOW FROM HEPATIC ARTERY**
ETIOLOGY

- HEPATOBILIARY
  - CHOLECYSTITIS
- ASCENDING CHOLANGITIS
- MALIGNANCY
- STRICTURES
ETIOLOGY

- HEPATOBILIARY
  - CHOLECYSTITIS
  - ASCENDING CHOLANGITIS
  - MALIGNANCY
  - STRICTURES

- GI VIA PORTAL
  - APPENDICITIS
  - DIVERTICULITIS
  - INTESTINAL PERFORATION
  - ANORECTAL SUPPURATION
  - MALIGNANCY
  - INFLAMMATORY BOWEL DISEASE
ETIOLOGY

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• ARTERIAL VIA HA
  • ENDOCARDITIS
  • VASCULAR SEPSIS
  • ENT, DENTAL INFECTION
  • IVDA
ETIOLOGY

- TRAUMATIC
  - BLUNT/PENETRATING ABDOMINAL TRAUMA
- LIVER INSTRUMENTATION (TACE, RFA, ETHANOL INJECTION)
ETIOLOGY

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  - BLUNT/PENETRATING ABDOMINAL TRAUMA
  - LIVER INSTRUMENTATION (TACE, RFA, ETHANOL INJECTION)

- ADJACENT ABDOMINAL PATHOLOGY
  - GASTRODUODENAL PERFORATION
  - ACUTE CHOLECYSTITIS
  - COLONIC PERFORATION
ETIOLOGY

- **TRAUMATIC**
  - BLUNT/PENETRATING ABDOMINAL TRAUMA
  - LIVER INSTRUMENTATION (TACE, RFA, ETHANOL INJECTION)

- **ADJACENT ABDOMINAL PATHOLOGY**
  - GASTRODUODENAL PERFORATION
  - ACUTE CHOLECYSTITIS
  - COLONIC PERFORATION

- **CRYPTOGENIC**
  - 40-67% OF THE CASES
ETIOLOGY

MICROBIOLOGY

OFTEN REFLECT THE SOURCE OF INFECTION

GI/BILIARY TRACT → POLYMICROBIAL (GRAM NEGATIVES AND ANAEROBES)

HEMATOGENOUS SPREAD → MONOMICROBIAL (STAPH OR STREPT)

MOST COMMON – E.COLI, STREPTOCOCCUS, KLEBSIELLA, ENTEROCOCCUS

OTHERS– PSEUDOMONAS, CLOSTRIDIUM, BACTEROIDES, STAPH
PRESENTATION

FEVER 70-90%
RIGHT UPPER QUADRANT
PAIN
CHILLS
ANOREXIA
WEIGHT LOSS
MALAISE
JAUNDICE
PRESENTATION

FEVER
RIGHT UPPER QUADRANT PAIN
CHILLS
ANOREXIA
WEIGHT LOSS
MALAISE
JAUNDICE

NO DIFFERENCE IN PRESENTING SYMPTOMS BETWEEN PATIENTS WITH SINGLE AND MULTIPLE LIVER ABSCESS
DIAGNOSIS

LABORATORY FINDINGS

LEUKOCYTOSIS 70%
ELEVATED LFTS 50%

SONOGRAM
CT
MRI/MRCP
TREATMENT

GOALS OF THERAPY

1. COMPLETE DRAINAGE OF PUS AND INFECTED DEBRIS
2. INITIATION OF APPROPRIATE ANTIBIOTICS
3. IDENTIFICATION AND RESOLUTION OF UNDERLYING CAUSE
TREATMENT

FACTORS LINKED TO MORTALITY

HIGH ASA SCORE
UNDERLYING MALIGNANCY
PRESENCE OF PLEURAL EFFUSION

EFFUSION
SEPTIC SHOCK
INCREASED CREATININE
LOW ALBUMIN
TREATMENT

ANTIBIOTICS

EMPIRIC, BROAD SPECTRUM INTRAVENOUS ANTIBIOTICS AFTER BLOOD CULTURE

ADEQUATE GRAM NEGATIVE AND ANAEROBIC COVERAGE

ADJUST ABX ONCE CULTURES ARE RESULTED

SHOULD BE GIVEN FOR 4-6 WEEKS
TREATMENT

PERCUTANEOUS DRAINAGE IS STANDARD OF CARE

BENEFITS
AVOID GENERAL ANESTHESIA
LESS INVASIVE
TREATMENT

PERCUTANEOUS DRAINAGE IS STANDARD OF CARE

BENEFITS
AVOID GENERAL ANESTHESIA
LESS INVASIVE

LIMITATIONS
SMALLER ABSCESS
MULTIPLE OR MULTI LOCULATED ABSCESS
FAILURE RATE 15-30%
MAY NOT BE ADEQUATE FOR THICK PUS
OVERDISTENSION OF ABSCESS CAVITY
TREATMENT

WHEN DO WE OPERATE?

FAILURE OF PERCUTANEOUS DRAINAGE
INTRAPERITONEAL RUPTURE OF ABSCESS CAUSING PERITONITIS
UNDERLYING PATHOLOGY NEEDS SURGICAL INTERVENTION
TREATMENT
TREATMENT
TREATMENT

HEPATIC RESECTION

ONGOING UNCONTROLLED SEPSIS

MULTILOCULATED ABSCESS

PARENCHYMAL DESTRUCTION

INFECTED OR NECROTIC TUMOR

LONG STANDING BILIARY OBSTRUCTION
TREATMENT

Clinical Suspicion
Start broad spectrum IV antibiotics
CT scan abdomen and pelvis

No underlying abdominal or pelvic source

Abdominal or pelvic source identified

Single or multiple large abscesses

Multiple small abscesses

Surgery to manage the source and drain liver abscesses

Percutaneous drainage

Long course of intravenous antibiotics
TAKE HOME MESSAGES

1. PYOGENIC LIVER ABSCESS CAN BE FATAL IF DIAGNOSIS AND TREATMENT IS DELAYED

2. COMBINATION OF PERCUTANEOUS DRAINAGE AND IV ANTIBIOTICS IS THE FIRST LINE OF TREATMENT

3. SURGICAL DRAINAGE IS RESERVED FOR FAILED PERCUTANEOUS DRAINAGE

4. HEPATIC RESECTION MAY BE NECESSARY FOR SOME PATIENTS WHO CONTINUE TO HAVE ONGOING SEPSIS
THANK YOU
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