

Liver Abscesses

Liver abscesses are caused by bacterial, parasitic, or fungal organisms.

Epidemiology

In developed countries, pyogenic abscesses are the more common (90%) but worldwide, amoebae are the commonest cause.

Aetiology

Pyogenic liver abscess

- Single or multiple. Right lobe twice as common as the left, 5% bilateral.
- Most 2° to infection originating in abdomen (cholangitis secondary to stones or stricture or malignancy is commonest, diverticulitis, appendicitis, Crohn's disease, perforated PU).
- May be iatrogenic 2° to liver biopsy or a blocked biliary stent.
- Bacterial endocarditis and dental infection are other causes.
- No cause found in 15%
- Risk factors: Immunocompromised, diabetes (15% adults), cirrhosis.
- Liver abscess is a complication of umbilical vein catheterisation in infants.
- In children and adolescents there is usually immune compromise or trauma.
- Tends to be polymicrobial.
 - Bowel src: *E. coli*, *Klebsiella pneumoniae*, *Bacteroides spp.*, *Enterococci* and anaerobic *Streptococci* most common.
 - Endocarditis/Dental: *Staphylococci* and haemolytic *Streptococci*
 - Immunocompromised: fungal (*Candida spp.* most common) or opportunistic

Amoebic liver abscess

- 10% of the world's population is chronically infected with *Entamoeba histolytica*.
- Infection most common in overcrowded tropical & subtropical areas with poor sanitation.
- Transmission is via the faecal-oral route. Amoebae → intestinal mucosa → portal system.
- *E. histolytica* also causes amoebic colitis and dysentery.
- Liver abscess can present without a preceding history of colitis or years after travel.
- Affects the right lobe in 80%.

Presentation

- Multiple abscesses tend to present more acutely and single ones more indolently
- Right upper quadrant pain, tenderness, hepatomegaly, possible palpable mass
- Referred pain to the right shoulder
- Swinging fever & night sweats
- Nausea and vomiting
- Anorexia and weight loss
- Cough and dyspnoea due to diaphragmatic irritation
- Jaundice (in 25%, commoner with disease of the biliary tree and multiple abscesses)
- Pyogenic liver abscesses can present as PUO without RUQ pain, however pain is prominent with amoebic liver abscess
- Check history for travel to an *Entamoeba histolytica* endemic area

Differential diagnosis

- Causes of pyrexia of unknown origin (PUO)
- Metastatic malignancy affecting the liver
- Hepatocellular carcinoma
- Biliary disease including cholecystitis
- Bacterial pneumonia
- Gastritis

Investigations

- Bloods: FBC (↑WCC, Mild ↓Hb), ↑ESR, Abnormal LFTs (↑ALP, ↓alb, ↑AST&ALT, ↑bili)
- Blood culture is positive in 50%. Serology for *Entamoeba histolytica*
- Stools can contain entamoeba cysts or trophozoites
- CXR: Raised right hemidiaphragm. May be atelectasis or pleural effusion.
- USS/CT: confirm abscess, guide percutaneous aspiration and drainage, other pathology.
- ERCP can show the site and cause of biliary obstruction and allow stenting and drainage.

Treatment

Antibiotics

- Pyogenic liver abscess: Empirically - **ampicillin** & **gentamicin** (or **ceftriaxone** if elderly or if renal function) + **metronidazole**. Treatment may be needed for up to 12wks.
- Amoebic liver abscess: 95% respond to **metronidazole** alone. Then **diloxanide furoate** for 10 days to eliminate intestinal amoebae.
- Antifungal agents such as **amphotericin B** are used if fungal abscess is suspected.

Drainage

- Pyogenic liver abscess and very large amoebic abscesses will also need drainage.
- Percutaneous aspiration or catheter drainage can be CT or USS guided.
- Open surgery: ruptured abscess, signs of peritonitis, or abdo pathology e.g. appendicitis.

Supportive measures

- Fluids
- Nutrition
- Pain relief

Complications

- Overwhelming sepsis
- Rupture of the abscess into adjacent pleural, peritoneal and pericardial spaces.
- Secondary infection of amoebic liver abscesses

Prognosis

- Pyogenic liver abscess: early diagnosis and treatment with antibiotics improves outcome but mortality rates are still 5-30%. Factors that affect prognosis include presence of shock or disseminated intravascular coagulation (DIC), immunodeficiency, diabetes, associated malignancy, ineffective surgical drainage.
- Amoebic liver abscess: since the introduction of rapid diagnosis and effective medical treatment, mortality rates have fallen to 1-3%.

Hydatid Disease

Infection with the larval stage of the cestode (or tapeworm) *Echinococcus*.

There are 4 known species of which 3 are of medical importance to humans:

- *Echinococcus granulosus* (most common), causing cystic echinococcosis (CE);
- *Echinococcus multilocularis* (rare but virulent), causing alveolar echinococcosis (AE); and
- *Echinococcus vogeli* (very rare), causing polycystic echinococcosis.

Transmission: eggs found in faeces of dogs and accidentally swallowed, usually by children.

Path: Larvae develop over years to form fluid-filled cysts in various organs, particularly the liver. Cysts can grow to large size and contain fluid and vast numbers of infectious scolices.

Epidemiology: Common with sheep farming, e.g. Greece, Turkey, Middle East, Australasia, RSA.

Risk Factors: Feeding dogs with raw offal. Poor hygiene and close contact with dogs.

Presentation: Liver (most common) and lung infection account for 90% of cases.

Cystic echinococcosis

- Symptoms can be produced by mass effect or complications of the cyst.
- Usually pressure symptoms are of slow onset (except brain or eyes) and when cysts >5cm.
- Liver/Biliary tree: obstructive jaundice, biliary colic, and urticaria.
- Hydatid membranes in vomitus (hydatid emesis) or stool (hydatid enterica) is rare.
- Lungs: chronic cough, dyspnoea, pleuritic chest pain or haemoptysis. Expectoration of cyst membranes and fluid may be observed with intrabronchial rupture.
- Secondary complications:
 - Cyst superinfection: mild fever to full-blown sepsis
 - Cyst leakage/rupture: ↑pain, flushing, urticaria or even anaphylactic reaction. Rupture into the biliary tree can lead to obstruction by daughter cysts, resulting in cholangitis. Rupture into bronchi can cause expectoration of cyst fluid.

Alveolar echinococcosis

- The liver is the 1^o site of infection, and symptoms may mimic cirrhosis or carcinoma.
- The clinical picture is one of progressive liver dysfunction leading to liver failure.
- Distant metastasis to lung, brain, long bones, and vertebrae can occur in up to 13%.

Investigations: USS for abdominal cysts with FNA and CXR/ CT for those in the lung. Western blot assay for antigens is highly specific.

Management:

- Medical - generally benzimidazoles used:
 - For CE: 3+ cycles of 4 weeks of **albendazole** separated by 2wks gaps. **Mebendazole** is an alternative. **Praziquantel** is being evaluated. Cure in ~30%.
 - For AE: same drugs but usually for 2-10years. Adjunct to surgery. Increases 10yr survival.
- Surgical - cover with a benzimidazole
 - For CE:
 - Conventional Sx: Radical (total pericystectomy or partial organ resection), conservative surgery (open cystectomy), simple tube drainage for infected and communicating cysts.
 - PAIR (Puncture, Aspiration, Injection, Re-aspiration) if conventional Sx not possible. Not for lung & brain cysts.
 - For AE: Radical (may be curative) or minimally invasive (palliative). Transplantation.

Prevention: Not feeding dogs on raw sheep meat. Regular deworming of dogs. Sheep vaccination.

Fitz-Hugh Curtis syndrome

Description

Perihepatitis 2° to chlamydia or gonococcal infection with liver capsule to abdominal wall or diaphragm stringy adhesions. Most commonly associated with PID.

Pathology

Spread of disease from the pelvis to the liver may be due to circulation of fluid along the paracolic gutter, it may be due to lymphatic drainage or the spread may be haematogenous.

Epidemiology

5-15% of women with PID more common in adolescent females (up to 25%)

May occur without PID and in men

Presentation

Symptoms: - Acute phase - sudden onset of severe, sharp RUQ pain ± referred to R shoulder. There may be non-specific N & V, fever, rigors, headaches, malaise. In the chronic phase (when most adhesions form) the pain dulls or resolves.

Signs - Typical features of PID (lower abdominal tenderness, cervical excitation pain & tender adnexa). Friction rub over right costal margin ("walking in new snow")

Differential Diagnosis

- Ectopic pregnancy
- Pyelonephritis
- Cholecystitis
- Viral hepatitis
- Pulmonary embolism
- Renal colic
- Appendicitis

Investigations

- Gonorrhoea and chlamydia swabs or urinary PCR
- Microscopy and culture of urine
- FBC (WCC), ESR, LFTs should be normal
- Abdominal USS/CT to exclude renal or biliary stones. May show adhesions.
- CXR may be helpful to exclude pneumonia, pulmonary embolism and air under diaphragm.
- Laparoscopy.

Management

- Treat the PID, e.g.:
 - Ceftriaxone 250 mg IM stat,
 - Then doxycycline 100 mg & metronidazole 400 mg PO BD x 14 days.
- When treating PID remember to treat sexual partner/s too.
- Analgesia.
- Laparoscopic adhesion division.

Complications

- Mainly of PID:
 - Tubo-ovarian abscess.
 - Impaired fertility
 - Ectopic pregnancy.