

Approach to Liver Cysts & Abscess

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Liver cysts

Liver cysts are fluid-filled sacs that appear on liver.

Nearly all liver cysts are benign (noncancerous) and don't grow large enough to cause symptoms.

Manage liver cysts by monitoring the cysts. They may also treat the cysts with surgery or medication.

Benign liver cysts, sometimes called simple cysts, are the most common form of liver cyst.

Healthcare providers estimate that 15% to 18% of people in the United States and 5% to 10% of people worldwide have liver cysts.

Overall, liver cysts may affect people between ages 30 to 70, but only 10 % to 15% of people develop obvious symptoms.

Some medical studies show benign liver cysts going away without treatment.

It's important to remember that most liver cysts are benign and don't grow large enough to cause symptoms.

Simple liver cysts

- Cystic formations containing clear fluid that don't communicate with the intrahepatic biliary tree
- <1% in autopsy series, very few become large and fewer cause symptoms.
- Size from few mm to large one occupying the upper abd ;17 liters of fluid
- More common in rt lobe /female(f/m=1.5/1 in asymptomatic &9/1 in symptomatic)
- Large ones is common in female >50 years.
- Symptoms: abd pain; nausea; abd discomfort; may cause atrophy of adjuacent hepatic tissue and compensatory hypertrophy in other parts.
- Complications: spontaneous hemorrhage; bacterial infection; torsion of pedunculated cysts; rupture; biliary obstruction.

Imaging Studies

- Diagnosis: distinction between a simple cyst , a mucinous cystic neoplasm(with and without invasive carcinoma), an echinococcal cyst, liver abscess and other rare primary (hemangioma/hamartoma/ necrotic tumor) and metastatic tumors can be difficult.
- **US**: can differentiate a simple cyst from other cystic lesions. No septa/no papillary projection
- Used in follow up. MOST OF THEM ARE STABLE IN SIZE.
- Simple cysts: anechoic uni-lacunar fluid-filled space with imperceptible walls and posterior acoustic enhancement. Hemorrhagic cyst distinction from mucinous cystic neoplasm
- **CT**: Well demarcated water-attenuation lesion , no enhancement of iv contrast, no septa(except for large>4 cm one with hemorrhage)
- **MRI**: Well defined water attenuation lesion, no enhancement by gadolinium. Low signal in T1 , high intensity in T2.
- NO NEED TO ASPIRATION /HISTOLOGY EXAM, BUT IF DONE: STERILE (serous cystic fluid) AND CYTOLOGICALLY NEGATIVE.



Other cystic lesions of the liver

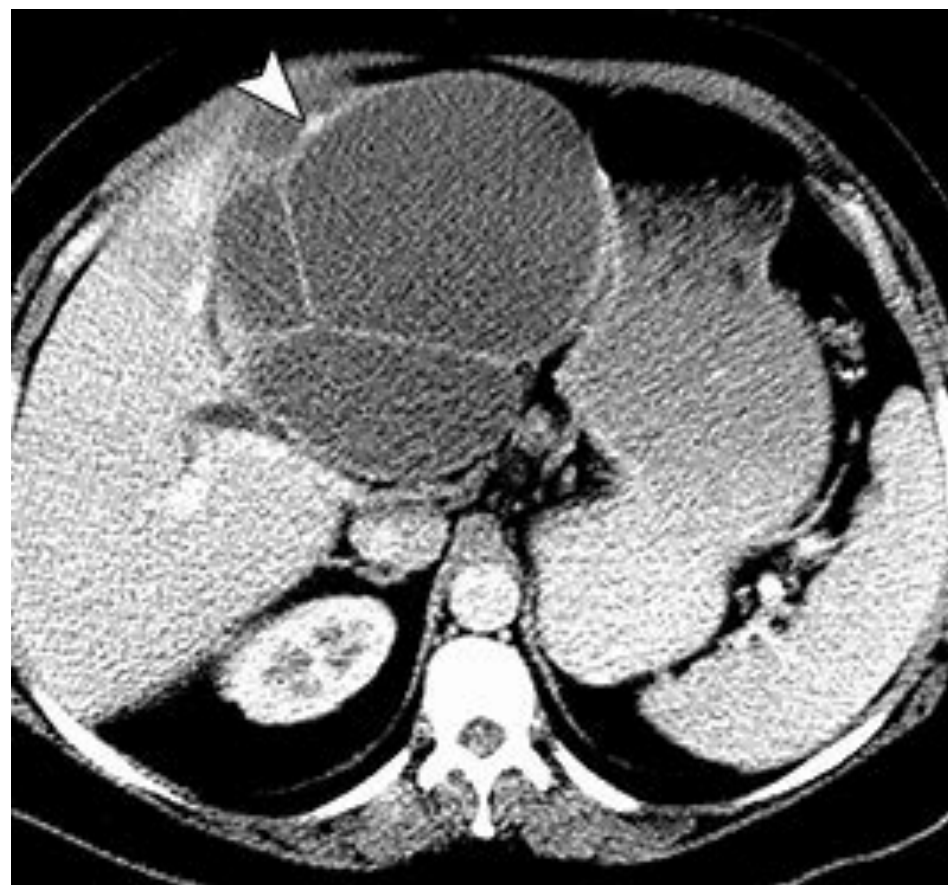
- - Ciliated hepatic foregut cyst
- -Primary SCC
- -Liver metastasis: **ovarian carcinoma, pancreas, colon, kidney and NET**
- -Polycystic Liver Disease: often with PCKD
- -Biliary cysts
- -Extrahepatic cysts presenting as hepatic cystic lesions: adrenal, renal, mesenteric cysts

Management

- Asymptomatic patient: no intervention; no f/u imaging for surveillance
- Symptomatic patients: may require intervention by considering two criteria –size>4cm, - after exclude other cause : GERD, cholelithiasis, gastric dysmotility, PUD, and causes of abd pain.
- Method of intervention is individualized and informed by the liver cyst location and size, patient comorbidities, history of abdominal surgery, local expertise, and patient preferences : **Needle aspiration with injection of a sclerosing agent, Laparoscopic cyst de-roofing(recurrence rate 0-14% and morbidity 0-15%), internal cyst drainage with cystojejunostomy, Open surgical cyst de-roofing, Liver resection. NO COMPARATIVE STUDIES.**

Cystic Neoplasm(Cystadenoma)

- Rare cystic tumors in liver parenchyma and less frequently in the extra hepatic bile duct. Malignant transformation up to 15%
- MCN occur in adult, more frequent in female, grew to a large size and need surgical intervention.
- Symptom: asymptomatic (incidentaloma), up abd mass, abd discomfort/pain, anorexia. Insidious onset.
- Diagnosis: Definite diagnosis by **histologic exam**= multilocular/smooth external surface and internal lining/contain blood or chocolate-colored material; **-US**: hypoechoic; thickened irregular walls; internal debris; wall nodularity- **CT**: low attenuation mass, septation, uni- or multi- locular
- **Treatment**: resection preferred, resection + enucleation, Recurrence by aspiration and partial resection, invasive carcinoma= hepatic resection



Mucinous Cystic Neoplasm with Invasive Carcinoma (Cystadenocarcinoma)

- In older adults, better prognosis in comparison with cholangiocarcinoma
- Diagnosis: imaging; multilocular- Histopathology: Malignant cell in inner epithelial lining, FNA: RISK OF BLEEDING AND SEEDING , Accuracy of high CEA in fluid aspiration is not clear. Suspicious imaging =surgical resection.
- Treatment: formal liver resection; enucleation is associated with recurrence, nonsurgical therapy (radiation/chemotherapy? Unknown)

Echinococcal Cyst

- larval form *Echinococcus granulosus* (cystic echinococcosis) and *E. multilocularis* (alveolar echinococcosis) from infected dog, produce fluid-filled structure limited by a parasite-derived membrane that contained germinal epithelium. 60-85% in rt lobe;
- Symptom: asymptomatic : specially small and/or calcified ones (latent period up to 50y); mass effect-cholestasis/PV-HV obstruction budd-chiari sx; intraperitoneal leakage/peritonitis/anaphylaxis/trans-diaphragmatically into bronchial tree= pulmonary hydatidosis or bronchial fistula, infection, biliary obstruction/colic in 25%, obstructive jaundice, cholangitis, pancreatitis; secondary infection =liver abcess
- Follow up: grow 1-5 cm /year with variable growth rate and time courses, primary or secondary inoculation in any part of body. 2/3 liver,25% lung, and rarely in brain, muscle, kidneys, bone, heart,pancreas. Single organ in 85-90 of *E. GRANOLUSOS*

Diagnosis

- Lab test: leukopenia/thrombocytopenia/eosinophilia (15%)= leakage / non-specific liver function abnormality, Ab detection(ELIZA) is more sensitive than Ag(CRUDE AG; hydatid fluid/protoscolex extracts) detection; 2 more Ag used= Ag 5 (inner layer of germinal layer/ brood capsule/ protoscolex) and Ag B(immunogenic polymeric lipoprotein)=== **a negative test could not rule out disease and false positive test in helminth infection; PCR***
- **US**= first option/ CT/ MRI = for detail such as location, number, presence or absence of daughter cyst, ruptured or calcified cyst
- US: sens 90-95%, anechoic, smooth, round, **cyst membranes** –mixed echoes (ddx abscess/neoplasm), daughter **cyst=internal septation**, shifting **hydatid sand**
- **US classification:** active(daughter cyst),, transitional, inactive(collapsing, flattened elliptical cyst, water lily sign= **detachment of germinal layer from cyst wall, coarse echo in cyst, wall calcification**)
- **Diagnosis:** calcification; septation; thickening of cyst wall in imaging tests ; and positive serology
- **Screening** : for endemic area; imaging + serology

Interventional procedures

- **Cyst Aspiration /biopsy** under CT guid; when serology not positive, diagnostic : presence of hooklets, protoscolex, hydatid memberane. low rate of complication: secondary spread, anaphylaxis
- **Active cyst**= high pressure/clear vs **inactive**= low pressure/ cloudy fluid
- **ERCP**: biliary involvement/ cholestatic jundice?/ intraductal filling defect include laminated memberane(filamentous)/ fragment membranes(irregular leaf-like)/ amorphous debris(brown,thick)

Treatment

- **Antiparasitic therapy** (Albendazol 15 mg/kg/400 mg bd with fatty food / Mebendazol or Praziquantelan alternative) combined with either surgical resection or percutaneous aspiration and scolical instillation
- **Drug treatment alone for:** single compartment and <5cm. Uncertain optimal treatment duration ; 1-3 mo even up to 6 mo
- **Warranted Drug Treatment:** multiple liver cysts<5cm, deep in liver, peritoneal cysts
- **Drug treatment adjuvant to surgery:** start perioperative(1 day before to 1 mo later): low recurrence/soften the cyst and facilitating removal
- **Surgery:** complicated cysts(ruptured/fistula/compress vital organ/2nd infection/hemorrhage), >10 cm, many daughter cyst. Surgery may cure , but morbidity in <1%(abscess, secondary infection, biliary fistula, sclerosing cholangitis, anaphylaxis), mortality, relapse rate 2-25%

Liver pyogenic abscess

- Etiology: in context of biliary disease, portal pyemia, arterial hematogenous seeding, direct spread.
- Microbiology: polymicrobial with enteric gram negative bacilli and anaerobic.
- Clinical manifestations: fever, abdominal pain, nausea, vomiting, anorexia, weight loss, and malaise.
- Diagnosis:- **Imaging(US and CT)**, -Blood cultures, -Aspiration for smear and culture
- Atypical pathogen if we can not identified the microorganism.
- **DDX:** Amebic liver abscess(*Entamoeba histolytica* , that distinguished by serology or aspirate specimen testing like antigen or molecular testing)

Treatment of liver abscess

- Empiric broad spectrum parenteral antibiotics including metronidazole for 4-6 weeks depending on clinical response
- **Percutaneous drainage with catheter under CT/US guidance.** In SINGLE UNILOCULAR<5CM ASPIRATION, FOR>5CM CATHETER PLACEMENT
- **Endoscopic /ERCP drainage**
- **Surgical drainage:** open or laparoscopic. Indications: underlying disease that requires surgery; inadequate response to drainage; abscess with viscous contents
- **MULTIPLE OR MULTILOCULATED ABSCESS :** surgical or radiologic intervention
- Follow up: limited role for imaging f/u except for persistent clinical symptoms or non-proceeding drainage
- **COLORECTAL SCREENING:** is suggested in pyogenic liver abscess without underlying hepatobiliary source.

Amebic liver abscess

- Extra-intestinal manifestation of *E. Histolytica*, common in adults, males
- Established by ascending the portal venous system. Insidious onset, 1-2 weeks.
- Developed countries: seen in migrants and traveler
- Symptoms, fever, abd pain, diarrhea in 1/3, exam= hepatomegaly/point liver tenderness
- Diagnosis: Imaging+ serologic or antigen test in blood and stool, parasite in liver abscess fluid
- Treatment: a tissue agent(metronidazole 500-750 mg tdsx 7-10 days/tinidazol 2 gr once daily x5 days) alternative ornidazole/nitazoxanide+ luminal agent(paromomycin 25-30 mg/kg per day td x7 dayss; eliminate intramural cyst) / alternatives: diiodohydroxyquin/diloxanide + abscess drainage if imminent risk of rupture especially in lt lobe or if exclusion of alternative diagnosis.



*Thanks for your attention.
Any question will be appreciated??*