

CASE REPORT

- 黃×錦 51y/o, female
- C/C: progressive abdominal pain for 3 days
- PI:

This patient is a HBV carrier w/o regular follow up.

Started with chest pain 3 days ago , and then became diffuse severe abdominal pain with abdominal distension.



CASE REPORT

- Personal History:
shrimp allergy
- Past history:
(1) Medical: Mitral valve prolapse with
medical control
(2) Surgery: varicose vein (both legs, 1999)



CASE REPORT

- PE:

(1) General condition : weakness(+)

(2) Eye : icteric(+) conjunctiva pale(+)

(3) Chest: chest pain(+)

(4) Abdomen:

distension(+) ,hypoactive(+)

diffuse tenderness(+)

diffuse rebound pain(+)

muscle guarding(+)



CASE REPORT

- Lab data (95/06/20)

WBC 18970/uL ↑ ↑

RBC 3.70 x10.e6/uL ↓ Hb 7.2 g/dL ↓ ↓

HCT 23.8% ↓

MCV 64.3 fL ↓

MCH [26-34 pg] 19.5 pg ↓

MCHC [33-37 g/dL] 30.3 g/dL ↓

RDW [11.5-14.5 %] 19.5% ↑

CASE REPORT

NEUT [40-74 %] 81.8% ↑ ↑ LYM [19-48 %] 9.9% ↓

PT [10.7-13.0 sec.] 14.70 sec ↑

aPTT [20-36 sec] 44.40sec ↑

BUN (blood) [7-18 mg/dl] 20 ↑

Creatinine(blood)[0.5-1.3 mg/dl] 1.4 ↑

GOT [0-40 IU/L] 72 ↑

GPT [0-40 IU/L] 72 ↑

CRP 33.20mg/dl ↑ ↑

Bilirubin D [0.0-0.4 mg/dl] 1.3 ↑

Bilirubin T [0.2-1.2 mg/dl] 2.0 ↑



Image-X RAY



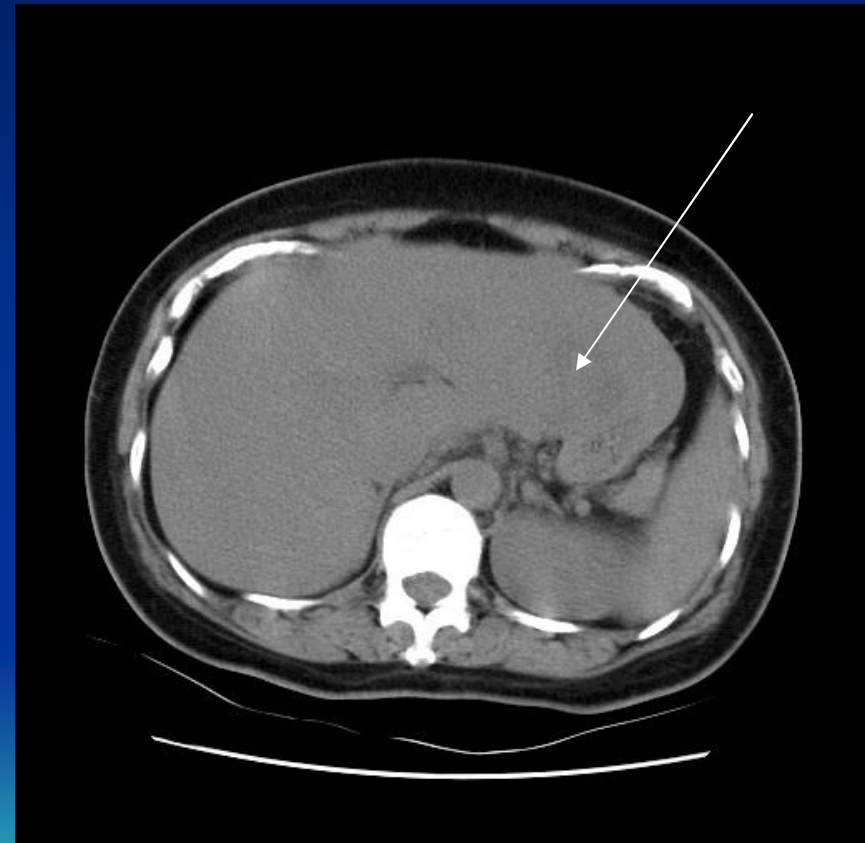
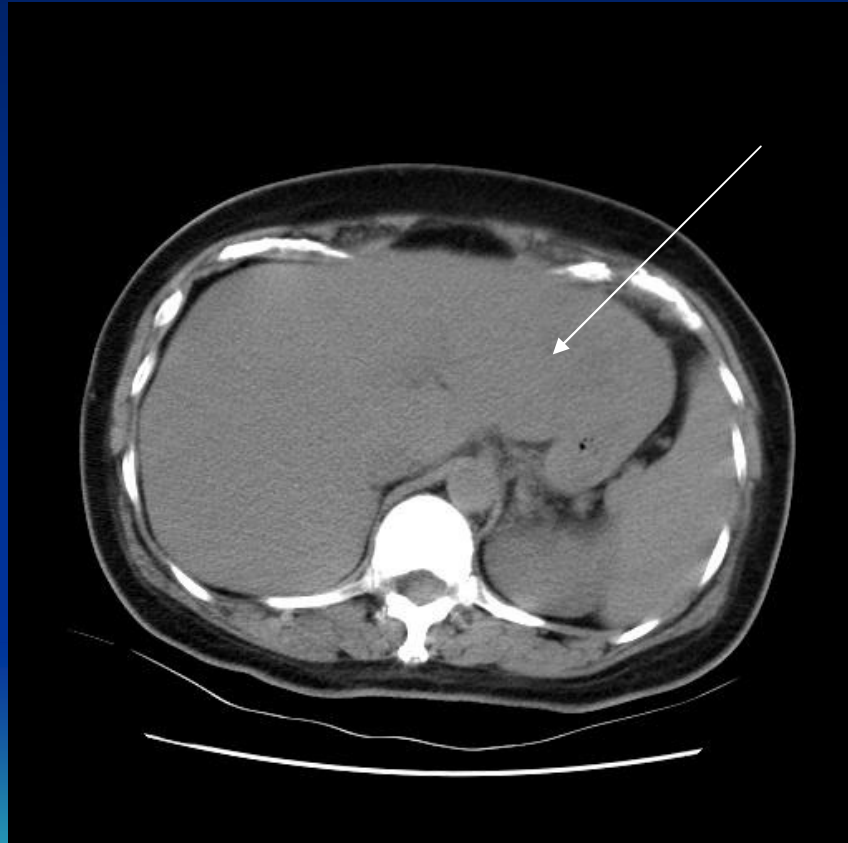
**Mild left pleural
effusion(blunting)**

Image(CT/contrast-)



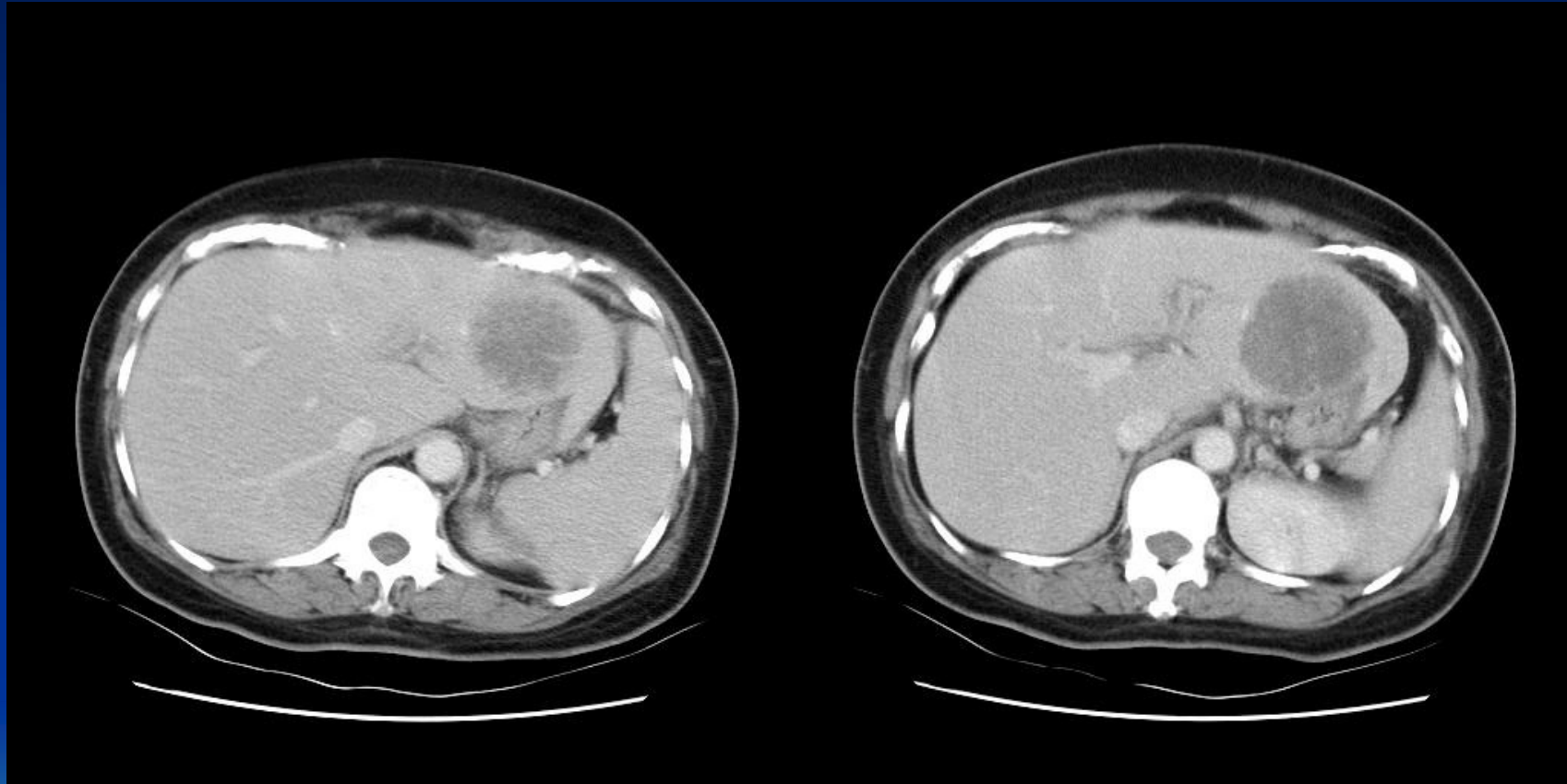
**Mild left and right
fluid collection
(pleural effusion)**

Image(CT/contrast-)



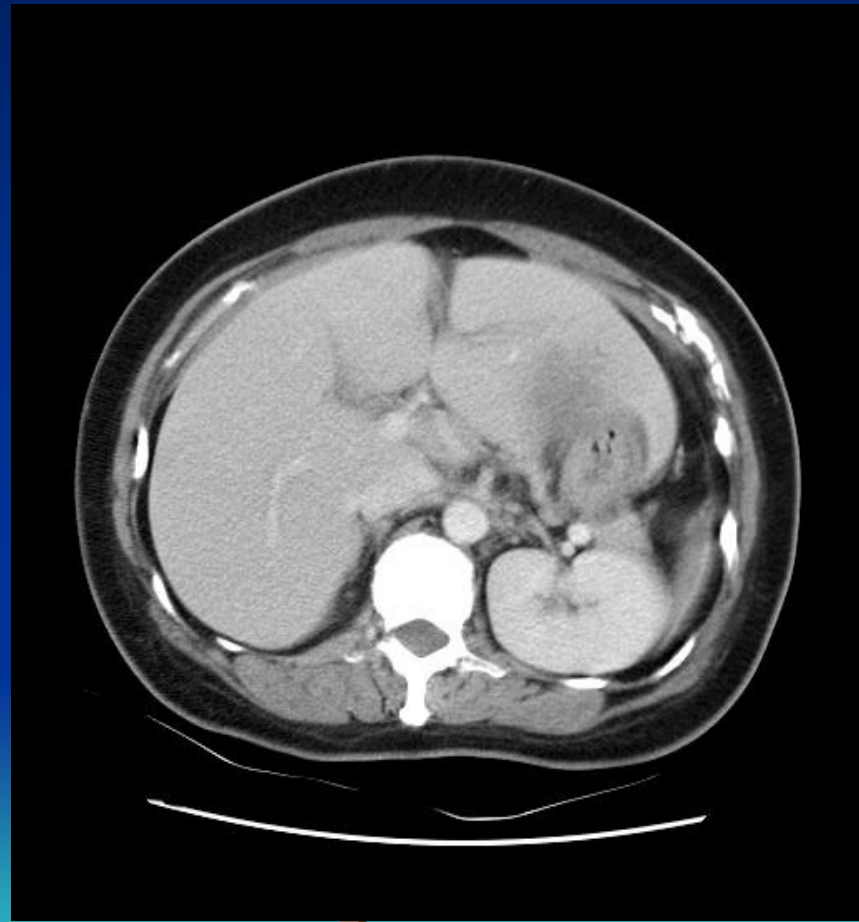
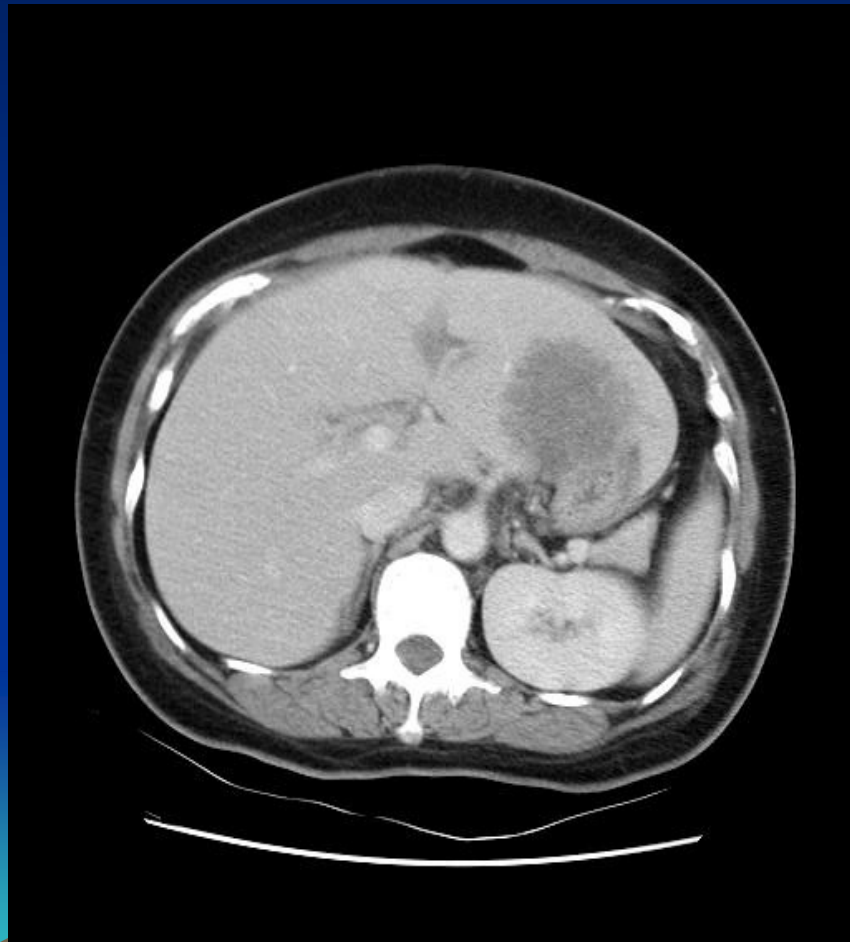
ill- defined margin , iso- to mild hypodense circular mass

Image(CT/contrast+)

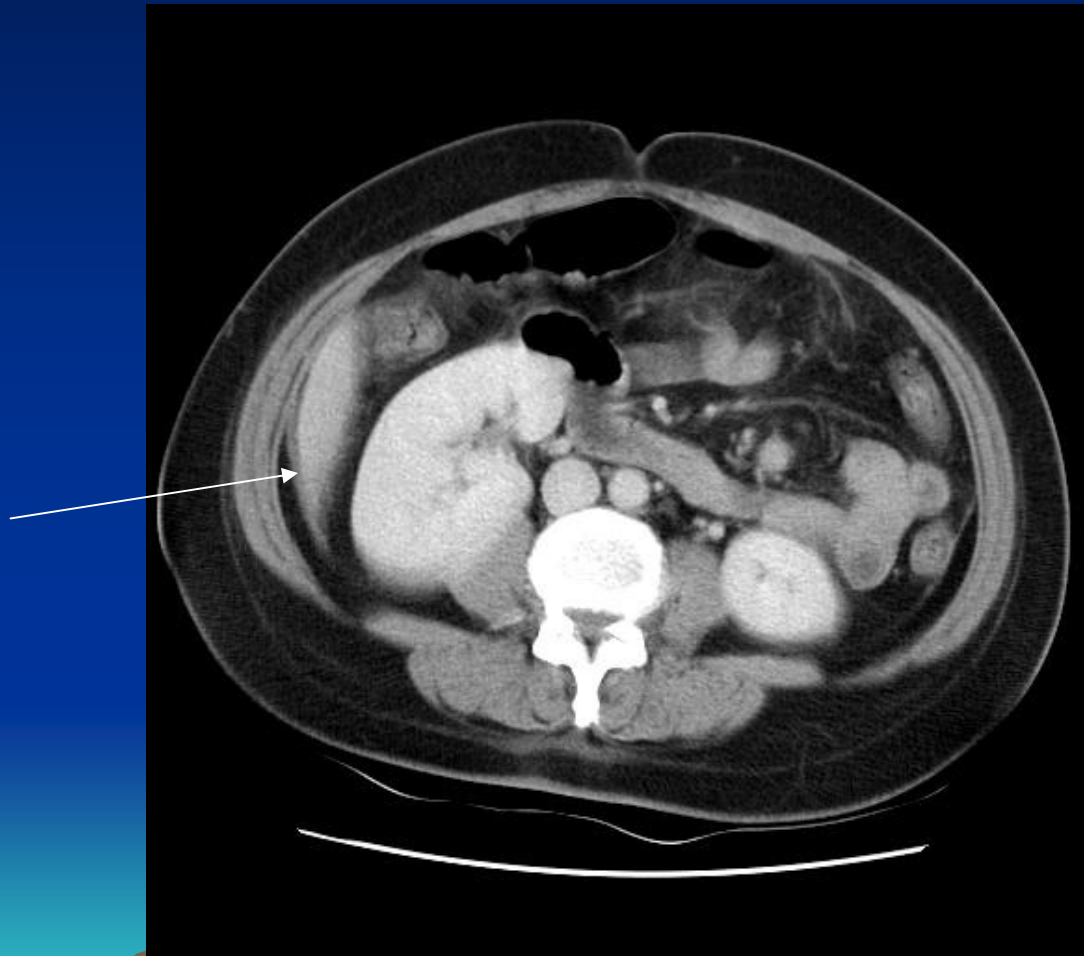


lateral of Lt lobe liver(Seg II/III) : irregular margin and ill- defined circular mass with heterogenous hypodense enhancement

Image(CT/contrast+)



Image(CT/contrast+)



**Minimal fluid
collection**

Image(CT/contrast+)



**remarkable
localized fluid
collection at
cul-de-sac**

Image-Differential Diagnosis

Focal decreased-attenuation masses in liver

Cyst (non-parasitic, echinococcal cyst, polycystic disease)

Abscess (pyogenic abscess, amebic abscess, fungal abscess)

Neoplasm (cavernous hemangioma, adenoma, FNH, HCC, metastasis)

Trauma (subcapsule hematoma, intrahepatic hematoma)



Image-Differential Diagnosis

- *Hyperenhancing focal liver lesions*

cavernous hemangioma, adenoma ,

FNH , HCC,

hypervascular metastasis (uncommon)



Image-Differential Diagnosis

**Focal decreased-attenuation +
hypoenhanced lesions**

Cyst (non-parasitic, echinococcal cyst,
polycystic disease)

Abscess (pyogenic/ amebic abscess ,fungal
abscess)

Neoplasm (metastasis)

Trauma (subcapsule hematoma,
intrahepatic hematoma)



Image-Differential Diagnosis

(1) non-parasitic cyst

- **Image finding:**
sharply delineated
round or oval, near
water attenuation
(-10~+10HU)lesion
with a very thin wall,
no internal septation ,
no contrast
enhancement

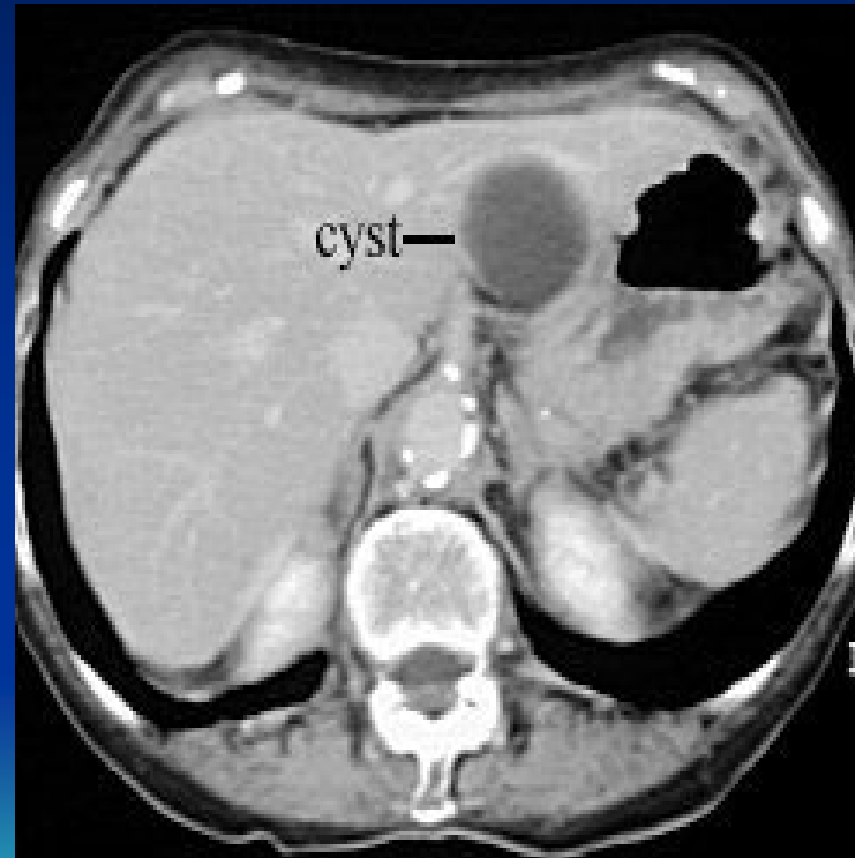
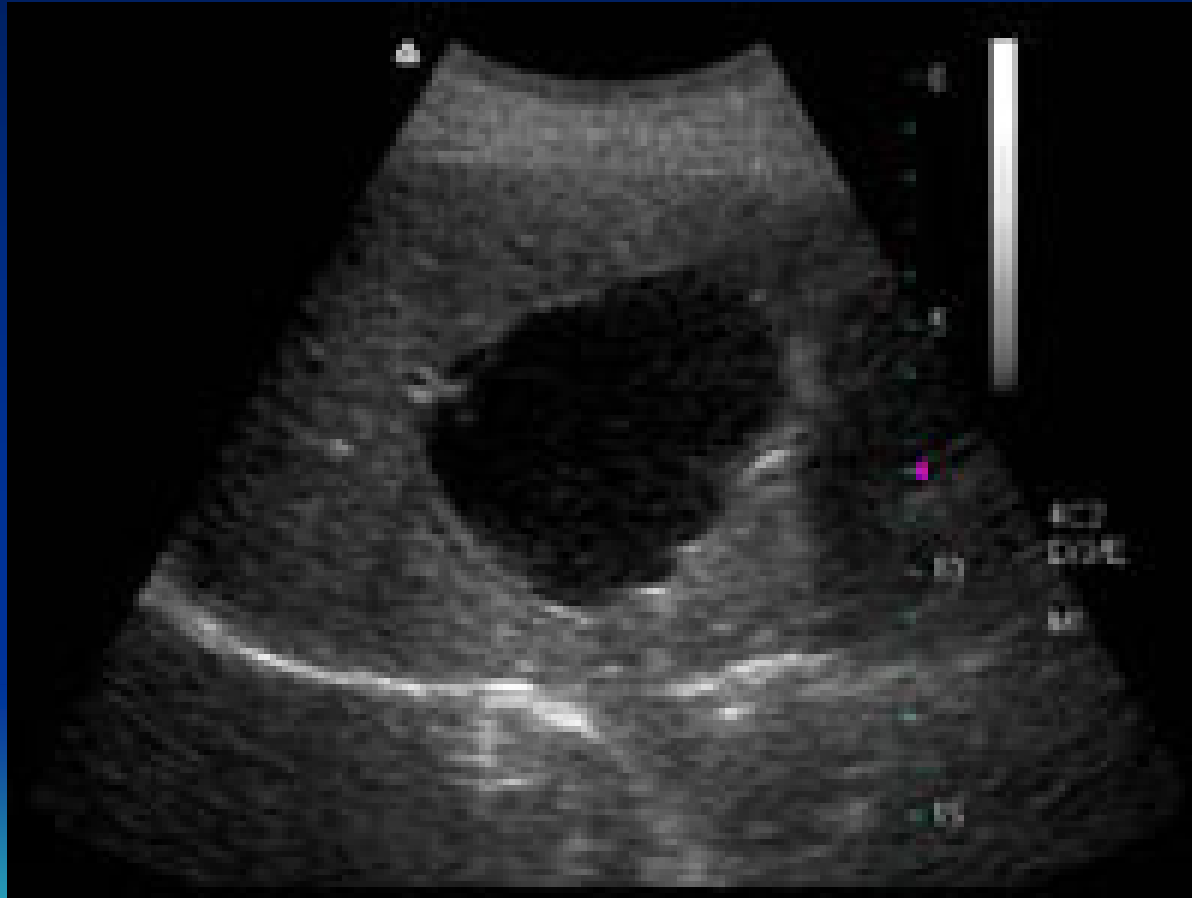


Image-Differential Diagnosis

(1) non-parasitic cyst



**Anechoic
lesion with
through
transmission,
no septation**

Image-Differential Diagnosis (2) echinococcal cyst

- *Image finding*: sharply delineated round or , near water attenuation lesion with a thin wall. *May appear multilocular with internal septions representing the walls of daughter cysts*. No contrast enhancement.

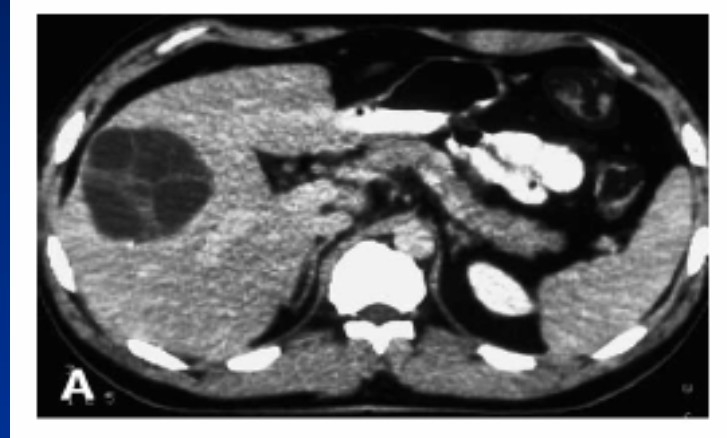


Image-Differential Diagnosis

(3) pyogenic/amebic abscess

Image finding:

(1) Without contrast :Sharply defined area hypodense to normal liver (0-45HU)

attenuation usually greater than that of a benign cyst but lower than that of a solid neoplasm.

cluster sign:cluster of small abscesses coalescence into a single, large abscess cavity

(2) With contrast: no enhancement , but a rim of tissue around the cavity may become denser than normal liver.(ring enhancement)

(3) Demonstration of gas in a low density hepatic mass is highly suggestive of an abscess

Image-Differential Diagnosis

(3) pyogenic /amebic abscess



A thick-walled cavity with low attenuation center is located in the right lobe of the liver.



contrast-enhanced periphery
CT scan cannot differentiate
amebic liver abscess from
pyogenic liver abscess.

Image-Differential Diagnosis

(4) metastasis

Image finding:

- Single or multiple (more common) low density(or isodensity) masses.

hyperdense : due to diffuse calcification, recent hemorrhage, fatty infiltration of surround hepatic tissue

(a) Hypovascular lesion (more common)

low attenuation with peripheral rim enhancement

(b) Hypervascular lesion

hyperdense in late arterial phase/ may have internal necrosis w/o uniform hyperdense

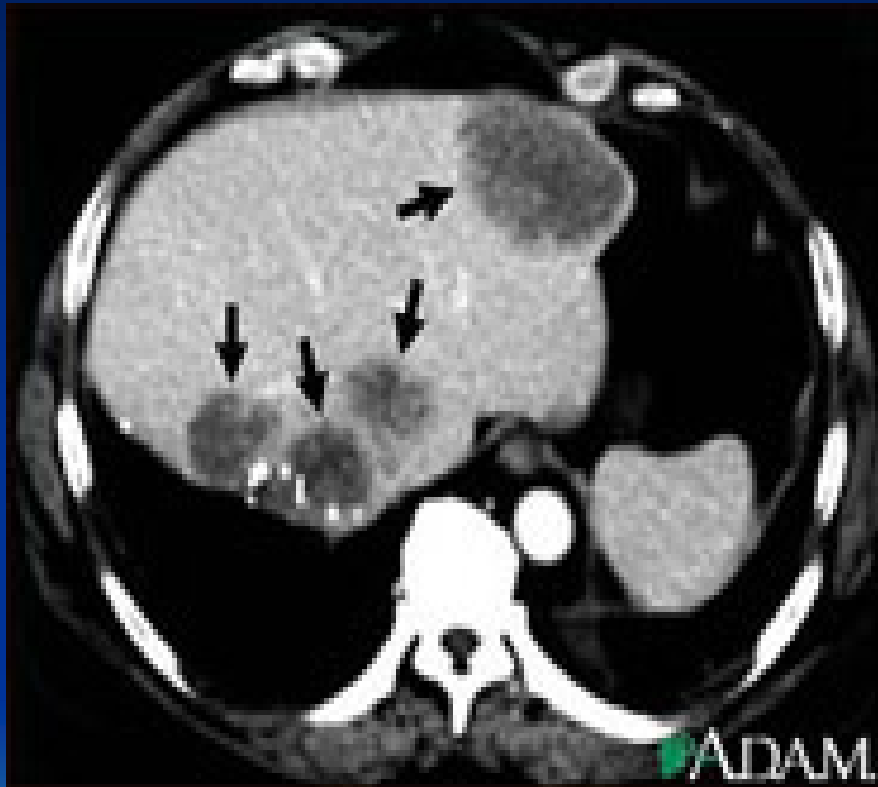


Image-Differential Diagnosis

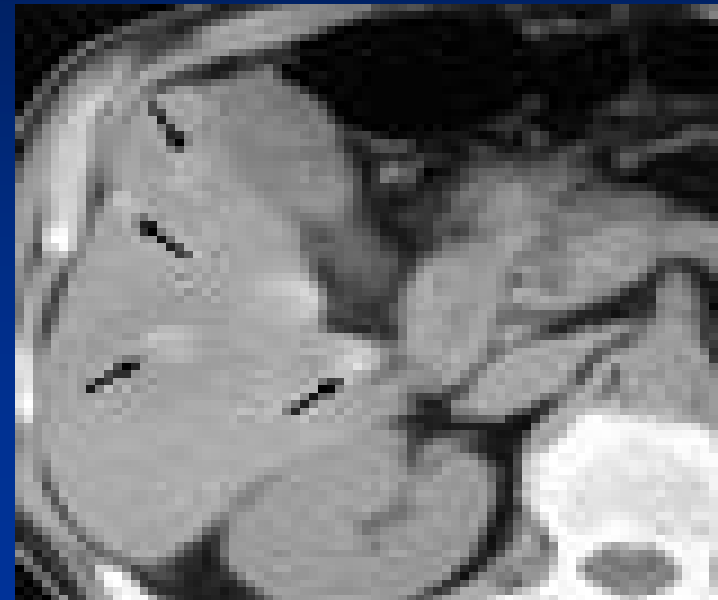
(4) metastasis

- (a) Hypovascular: metastasis from Lung ,GI ,pancreatic,most breast, lymphoma
- (b) Hypervascular lesion : metastasis from RCC, thyroid carcinoma, melanoma , sarcoma
- Shaggy and irregular wall
- Calcification deposits (GI metastasis)

Image-Differential Diagnosis (4) metastasis



Multiple hypodense lesions.
multiple metastasis from the large
bowel .



Precontrast:calcification
in metastatic lesion

Image-Differential Diagnosis

(5) intrahepatic hematoma

- *Image finding:*
- **Fresh haematoma : High attenuation during the first few days**
- **Diminish gradually over several weeks to become low-density lesions**
- **Chronic hematoma :**
 - (1)hypoattenuating on the precontrast scan .**
 - (2)display rim enhancement following intravenous contrast medium administration.**



Image-Differential Diagnosis (5) intrahepatic hematoma



a. Acute phase: contrast (-)
a round area (arrow) of slightly increased attenuation lateral to the liver hilus.



b. Acute phase :contrast(+)
The same area (arrow) is nonenhancing and appears clearly hypoattenuating relative to the liver parenchyma



Subcapsular
hepatic
hematoma

Image

- **Impression:**

r/o pyogenic /amebic abscess

r/o intrahepatic hematoma



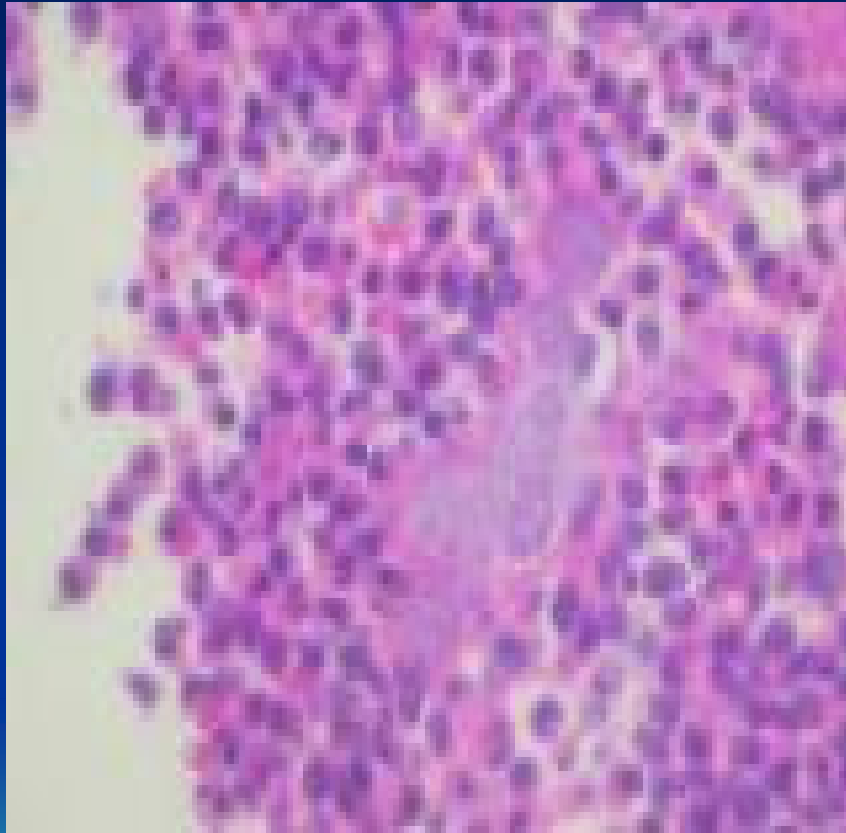
Pathology



Rupture of the capsule

On cut section, there is an demarcated, tan-gray, soft and necrotic mass, measuring 6.2 x 4.8 x 5.4 cm in size.

Pathology



(1) picture of liver abscess containing necrotic liver tissue and numerous neutrophils accompanied by lymphocytes and eosinophils
(2) Clumps of bacilli surrounded by neutrophils are found.

Diagnosis: liver abscess

Discussion

- 1. How to distinguish amebic from pyogenic liver abscess
- 2. HCC rupture? Hemorrhagic adenoma?



Discussion

- distinguishing amebic from pyogenic liver abscess should not depend on image or clinical criteria
- Amebic serology (Amebic immunofluorescent antibody test) has a sensitivity of about 95% and is highly specific for *E. histolytica* infection
- In areas of low endemicity, suspected amebic liver abscess should be aspirated to exclude pyogenic liver abscess

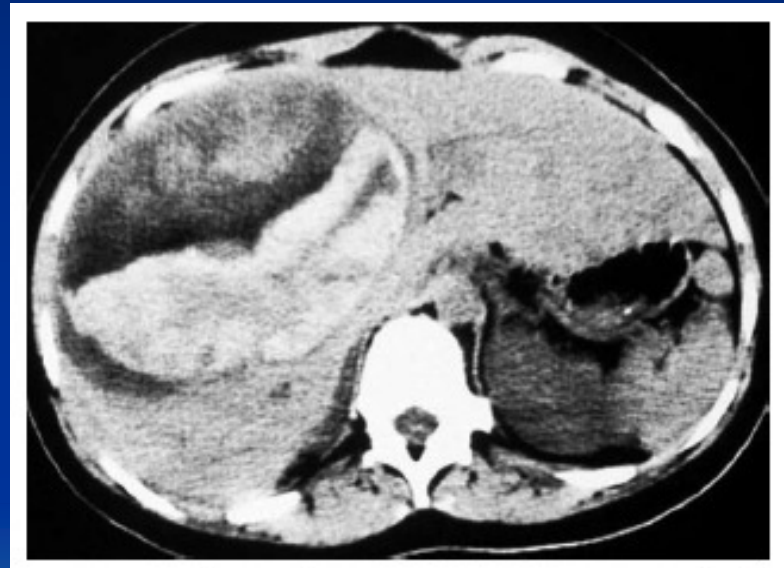


Discussion

| | Pyogenic | Amebic |
|---------------------|--|--|
| Number | Single or multiple | Solitary abscess right lobe |
| Pathogens | Polymicrobial, Enterobacteriaceae enterococci | <i>Entamoeba histolytica</i> |
| Patients | Elderly ,50-60y/o, underlying gastrointestinal or biliary tract disease | 30–40y/o, Much more common in males than females |
| Diagnosis | US or CT ± aspiration | US or CT and serology |
| Presentation | Subacute | Acute |

Discussion

less likely :hemorrhagic adenoma (fig: layering hematocrit effect from rupture of a large adenoma. low-density areas of necrosis within the hemorrhagic mass as well as a faint pseudocapsule)



Liver abscess

Epidermiology:

The 3 major forms of liver abscess

- (1) Pyogenic abscess, which is most often polymicrobial (80%,USA)
- (2) Amebic abscess due to *Entamoeba histolytica* (10%)
- (3) Fungal abscess, most often due to *Candida* species (less than 10%)



Liver abscess

Etiology of 1086 cases of liver abscess

Biliary tract 60%

Portal venous/ systemic 23%

Cryptogenic

Hematogeneous/seeding

Direct extension

Traumatic

Others



Liver abscess

Mortality/Morbidity

With timely administration of antibiotics and drainage procedures, mortality currently occurs in 5-30% of cases.

The most common causes of death include sepsis, multiorgan failure, and hepatic failure.



Liver abscess

History:

The most frequent symptoms of hepatic abscess :

- Fever (either continuous or spiking)
- Chills
- Right upper quadrant pain
- Anorexia
- Malaise



Liver abscess

PE:

- most commonly seen include fever and tender hepatomegaly (palpable mass need not be present)
- Mild epigastric tenderness → suggestive of left lobe involvement
- pleural or hepatic friction rub may present
- Jaundice may be present in as many as 25% of cases and usually is associated with biliary tract disease or the presence of multiple abscesses.



Liver abscess- Lab data

- CBC with differential
 - *Anemia* of chronic disease
 - *Neutrophilic leukocytosis*
- Liver function studies
 - *Hypoalbuminemia and elevation of alkaline phosphatase (most common abnormalities)*
 - Elevations of transaminase and bilirubin levels (variable)
- Blood cultures are positive in 50% of cases
- **Culture of abscess** – establish microbiologic diagnosis
- Enzyme immunoassay should be performed to detect *E histolytica*



Liver abscess

Imaging Studies :

(1)Chest x-ray :

Findings lower lobe atelectasis atelectasis, hemidiaphragm elevation, and pleural effusion are present in approximately 50% of cases(diagnostic clues)



Liver abscess

(2)Ultrasound (sensitivity 80-90%)

(a)Hypoechoic or hyperechoic with irregularly shaped borders

(b)wall: irregular hypoechoic /mild echogenic
abscess:

pyogenic--anechoic(50%)hyperechoic(25%)
hypoechoic(25%)

Amebic— hypoechoic with fine internal echos(50%)

Chronic stage: well-defined cavity with various degrees of internal echogenicity and a well-defined thickened irregular wall

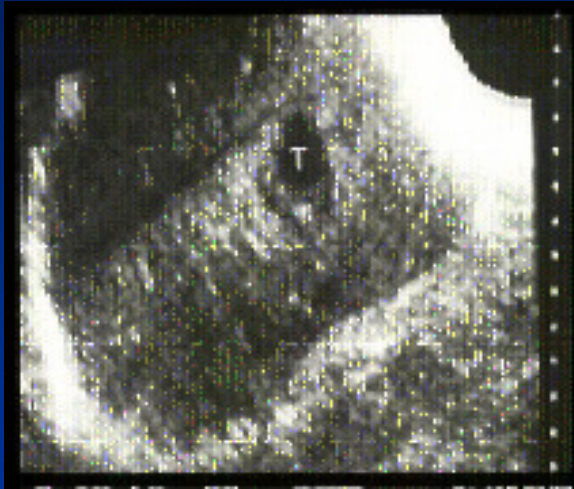


Liver abscess



Sagittal scan showing a round abscess (A) with irregular margins and abundant internal echoes

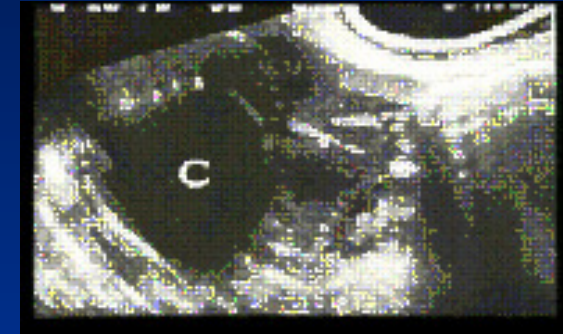
Liver abscess Ultrasound(D/D)



necrotic hepatic neoplasm which simulate an abscess include sonolucency, and an irregular, echo-poor wall ; multiple lesions or different echo patterns favor a malignant process.



hematoma may also have an irregular wall and internal echoes; linear internal septa and a change in the ultrasonic appearance with time



cysts are highly sonolucent; their margins are regular, smooth, thin, bright, and echogenic

Liver abscess

(3)CT scan (sensitivity 95-100%)

- Without contrast :Sharply defined area hypodense to normal liver (0-45HU) attenuation usually greater than that of a benign cyst but lower than that of a solid neoplasm.
cluster sign :cluster of small abscesses coalescence into a single, large abscess cavity
- With contrast: no enhancement , but a rim of tissue around the cavity may become denser than normal liver.(ring enhancement)
- Gas can be seen in as many as 20% of lesions (esp. Klebsiella)

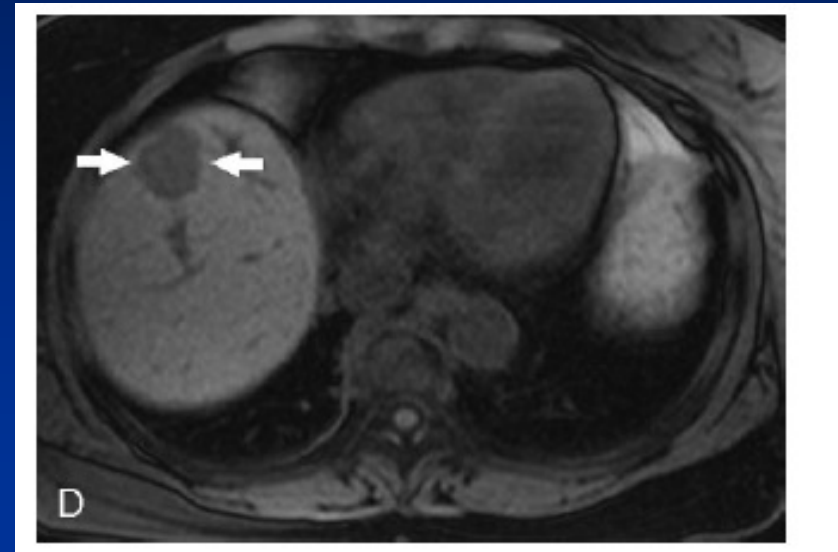


Liver abscess

(4)MRI

low signal intensity on T1-weighted images and high signal intensity on T2-weighted scans

"double target sign" on T2WI = hyperintense center (fluid) + hypointense sharply marginated inner ring (abscess wall) + hyperintense poorly marginated ring (perilesional edema) rim enhancement (86%)



With contrast: low signal intensity on T1-weighted images with capsule enhancement

Liver abscess

(5) Nuclear medicine findings

- Ga-67 scan: pyogenic and amebic—cold center and hot rim
- In-111 tagged WBC (highly specific for pyogenic)

pyogenic : hot (due to WBC accumulation)

amebic: cold center + hot rim



Liver abscess-Treatment

- Treatment

Pyogenic :IV antibiotics ± drainage

Amebic: Metronidazole (Aspiration only if the diagnosis remains uncertain. reddish-brown pasty aspirate (“anchovy paste” or “chocolate sauce”) is typical

- Indications for surgical drainage include:
 - a risk of peritoneal leakage of necrotic fluid after aspiration; and
 - rupture of a liver abscess



Liver abscess-Prognosis

Prognosis

- If untreated, the prognosis is uniformly fatal
- Amebic : poor prognosis is associated with ascites or coma, patient over 50 years, severe jaundice, signs of peritonitis
- Pyogenic: usually treated 4- to 6-week total course

