Primary Data

- Gender: female
- DOB/Age: 1964/11/17, 39-y/o
- Admitted to OBS/GYN department.
- Admission day: 2003/2/11
- Discharge day: 2003/2/25
- Total admission day: 14 days

Diagnosis

- Admission diagnosis: Pelvic mass, r/o malignancy.
- Discharge diagnosis: Malignant GIST with multiple metastasis to liver, vagina and broad ligament of uterus.

History (1)

- OBS/GYN history.
  G0P0SA0AA0
  LMP: 2003/1/31
  Menarche: 12-y/o
  Interval: 28 days
  Duration: 7 days
  Amount: profuse

History (2)

- Retroperitoneal tumor s/p excision in 台安 hospital on August, 1996. The pathologic description was soft tissue sarcoma, the possibility of leiomyosarcoma can’t be rule out.
- Reexplatory laparatomy was performed on September, 1996. After that, she received adjuvant R/T and regularly follow up in 台安 hospital until 2002.

Present illness (1)

- On the early 2003, she started to had abdominal fullness.
- On 2003/2/10, she came to our ER with complain of RLQ tenderness off and on since 2003/2/8.
- According to the ER record, she had visited VGH on 2003/2/9, and stool impaction was told.

Present illness (2)

- After initial management, OBS/GYN specialist was consulted.
- Ultrasonography image and PE showed there was a 7*7*6 cm, non-movable and firm mass located in RLQ area. Mild tenderness was also noted.

Image study at ER

7*7*6 cm, firm mass located in RLQ area

Present Illness (3)

- Under the impression of pelvic mass, r/o malignancy, she was admitted to our hospital for further evaluation and management.
- Throughout the whole course of present, there was no dysuria, no diarrhea and no fever.

Physical Examination

- Abdomen: tenderness, a mass about 10 cm located on RLQ.
- PV:

  Uterus: normal in size, smooth in contour.

  Cervix: no spotting.

  Bilateral adnexa: free, no mass.

  Vagina: one mass

  No lifting pain

Lab Data

- Generally normal except MCV, MCH decreased, RDW increased, anisocytosis, microcytic and hypochromic was also noted.

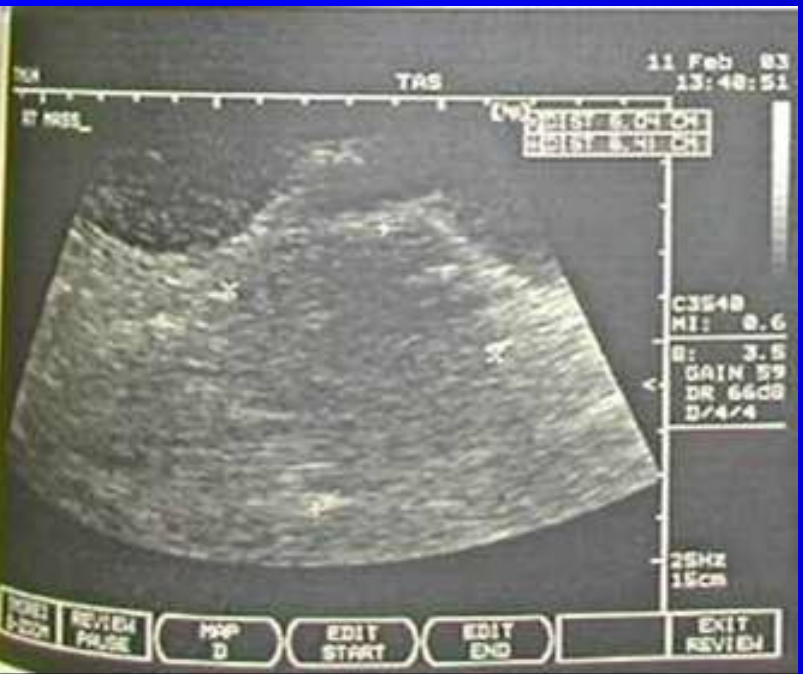
Image Study-CXR

- CXR on 2003/2/11
- No active lung lesions

Image Study-Ultrasonography

- Date: 2003/2/11
- Results: right adnexal mass noted.

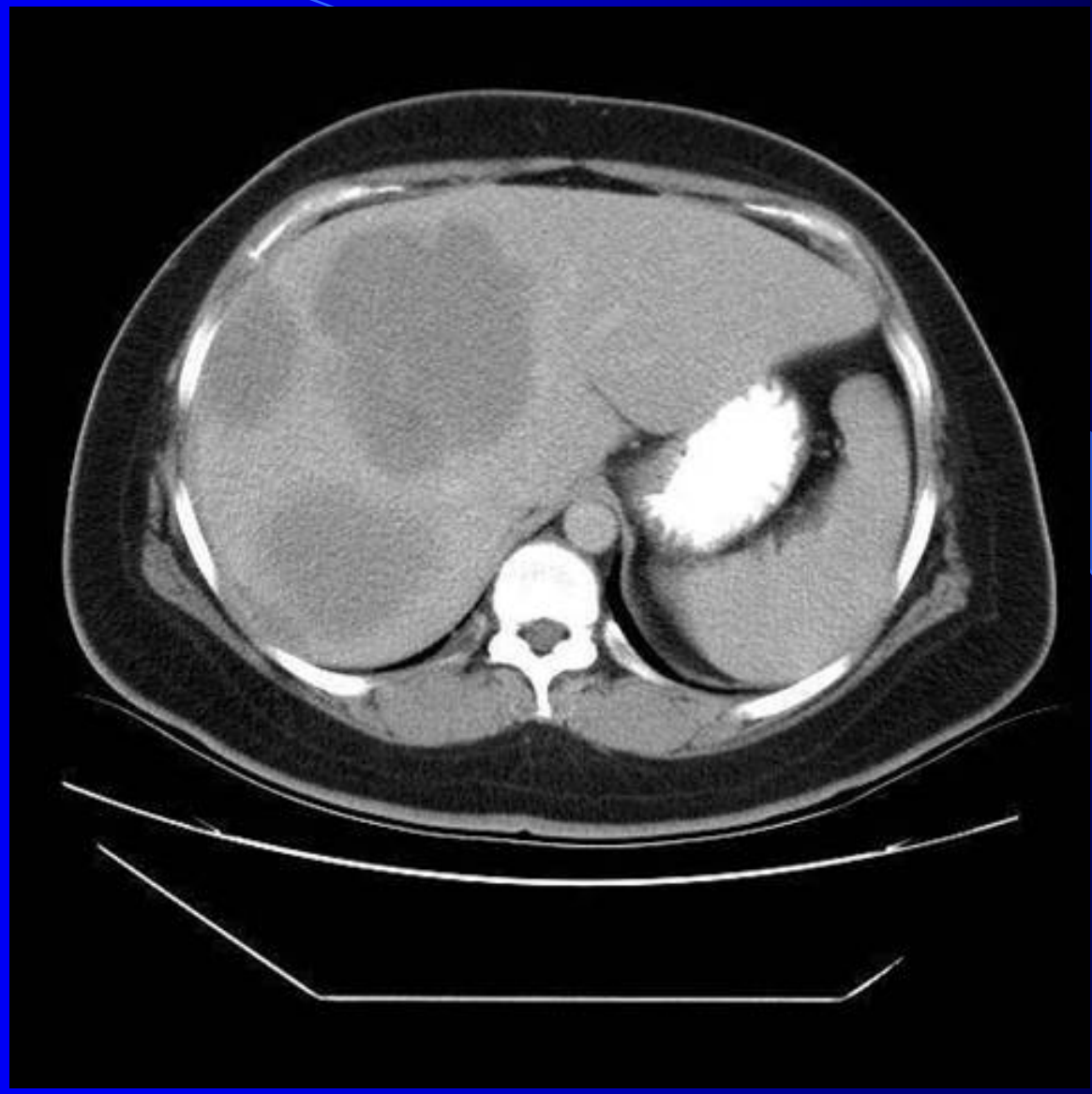
58x73 mm mass located at right adnexa.



60x64 mm mass located at right adnexa.

Image Study-CT (1)

- CT on 2003/2/12, Pre-and post-contrast abdomen and pelvis CT study is performed.
- Multiple large, decreased-attenuation (CT value of 33 to 57 HU), lobulated masses (maximum diameter of 12 cm) with thin marginal enhancement occupying the entire R't lobe and part of left lobe of liver. Multiple hepatic metastases are more favored. But the possibility of multiple hepatic abscesses can not be completely R/O



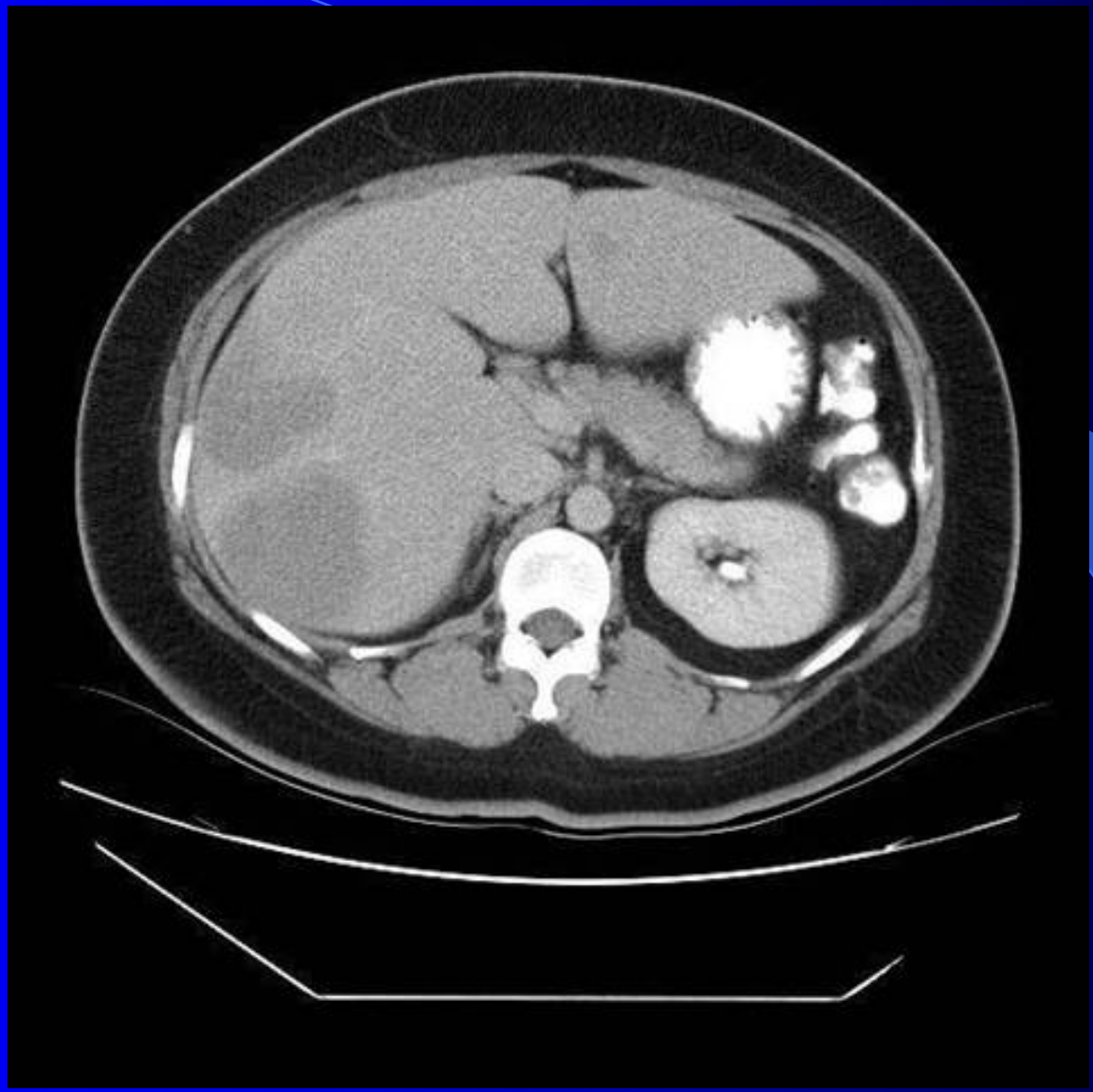


Image Study-CT (2)

- A non-enhanced, thin-walled encapsulated mass (measuring approximately 6.8 cm x 7.2 cm in dimension) of CT value of 30 HU is situated at the anterior aspect of RLQ of abdomen, associated with overlying subcutaneous fatty infiltration. Either a metastatic mesenteric mass or an infectious or hemorrhagic cyst should be included in the differential diagnoses.

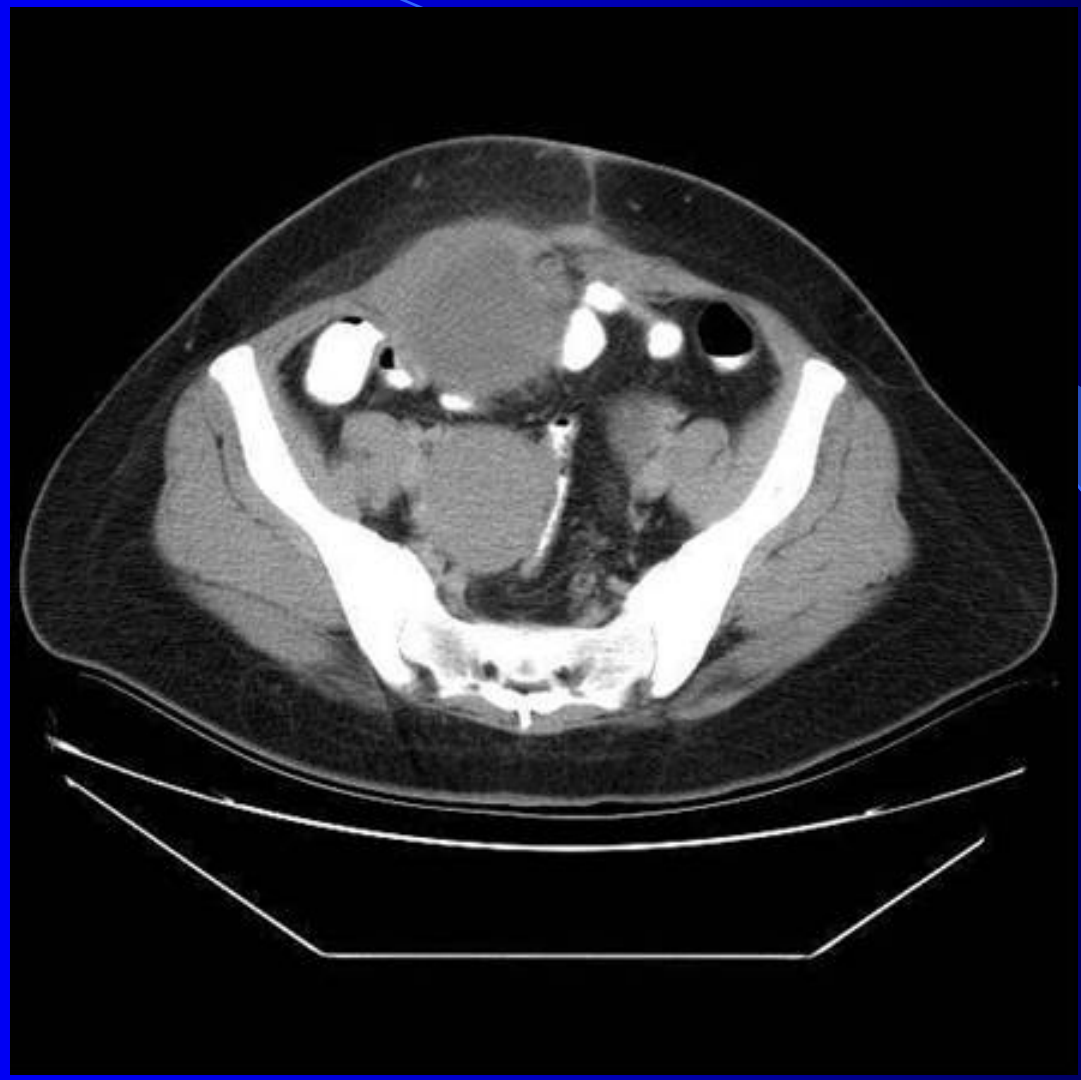


Image Study-CT (3)

- There is a moderately enhanced soft-tissue density mass (measuring approximately 5.0 cm x 5.8 cm in dimension) situated at the R't pelvic cavity. A malignant primary R't ovarian carcinoma or the metastatic lesion (Krukenberg's tumor) should be considered.
- Another soft-tissue density mass (measuring approximately 3.8 cm x 5.3 cm in dimension) of CT value of 50 HU is situated at the R't aspect of cul-de-sac. A malignant metastatic lesion is more favored.

Image Study-CT (4)

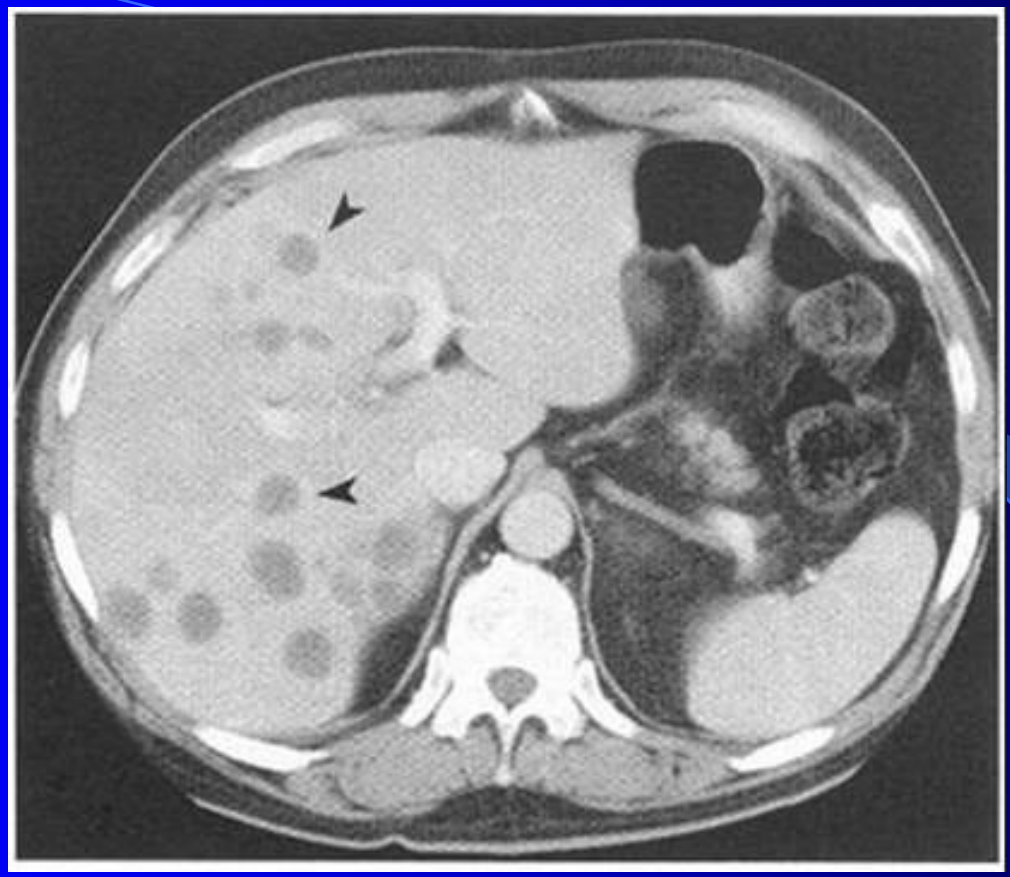
- There are cystic lesions in the bil. ovary are noted. Ovarian follicles are likely, but other possibilities can not be R/O. Correlated with sonographic findings are necessary.

The Normal Liver

- The liver parenchyma is normally homogeneous. Its attenuation is typically 54–60 Hounsfield units (HU), usually 8–10 HU greater than the spleen.
- The vascular structures can be identified by their location on the unenhanced images and confirmed by enhancement with intravenous contrast.
- The intrahepatic biliary tree is not normally visualized although the main right and left hepatic ducts are increasingly demonstrated on modern systems and the common hepatic duct and common bile duct are normally seen.

The Liver Abscess

- On **CT**, abscesses are typically ill-defined and of low attenuation.
- Following IV contrast medium they may demonstrate enhancement predominantly around the edge of the lesion, although this is often not apparent once antibiotic treatment has started.
- When the center of the abscess liquefies it may be of water attenuation and fail to enhance. These appearances are not specific and similar findings may be seen with metastatic deposits, particularly those with central necrosis or cystic components.



Liver abscess. Portal phase CT examination demonstrates multiple low attenuation lesions with ring enhancement (arrowheads). The appearances are often nonspecific on CT and often overlap with those of metastatic deposits.

The Metastasis lesions of Liver (1)

- Metastatic involvement of the liver is a common event in the natural history of many primary malignancies involving many organ systems.
- Most secondary liver tumours are haematogenous in origin.
- Gastrointestinal tract tumours metastasize to the liver via the portal vein, and tumours elsewhere via the hepatic artery.

The Metastasis lesions of Liver (2)

- There is evidence for blood flow separation in the portal vein as right colon primary tumours appear more likely to metastasize to the right lobe, whereas the lobar distribution appears equal for left colon tumours and for metastatic spread via the hepatic artery.
- Most imaging methods will not reliably detect lesions of less than 5 mm in diameter. In order to make progress with submillimeter lesion detection an alternative approach is likely to be needed that can in some way amplify the presence of a lesion—perhaps based on antibody techniques.

The Metastasis lesions of Liver (3)

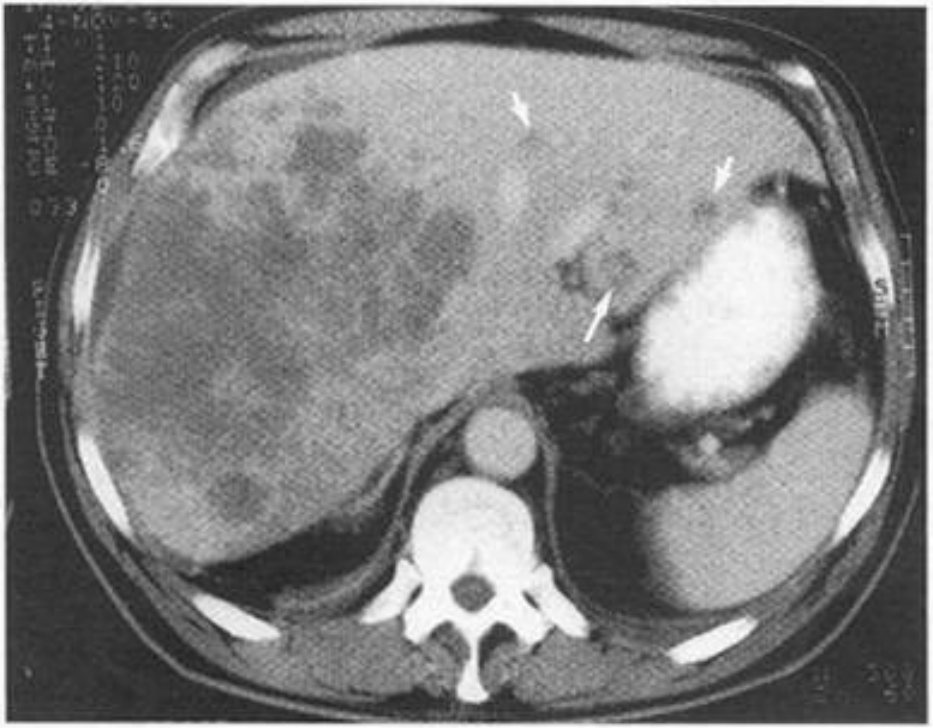
- Metastases have a wide range of appearances on imaging but usually share the features of growth on serial imaging, multiplicity and variation of size.
- Although hepatic metastases generally derive their blood supply from the hepatic artery, they are less vascular than the adjacent liver parenchyma, a feature which influences their appearance with vascular enhancement techniques.

The Metastasis lesions of Liver (4)

- The most sensitive current techniques are CTAP, helical biphasic CT and iron oxide-enhanced T2-weighted MRI.
- On **CT** the majority of metastases are of low attenuation on unenhanced images and remain so on portal phase images.
- Hypervascular tumours are often visible as low attenuation lesions on unenhanced images and enhance transiently in the arterial phase, some becoming invisible in the portal phase.

The Metastasis lesions of Liver (5)

- On CTAP all metastases appear as low attenuation lesions; however, as discussed earlier, the specificity of CTAP is low and comparison with other techniques is essential.
- CT is the most sensitive method for detecting the subtle calcification that may occur within mucin-secreting metastases of gastrointestinal tract origin. Central necrosis and rim enhancement can also be clearly demonstrated on CT examination.



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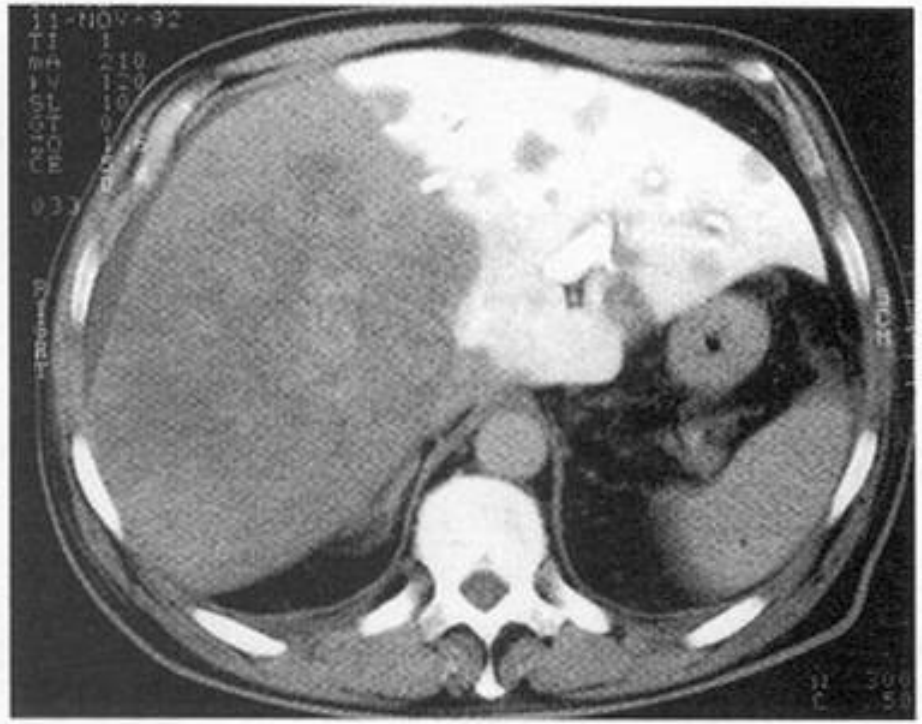

B

CTAP in a patient with liver metastases being considered for hepatic resection. (A) Intravenous contrast-enhanced CT demonstrates numerous metastases in the right lobe and three lesions in the left lobe (arrows). (B) CTAP at the same level demonstrates a straight line owing to occlusion of the right portal vein, and at least ten deposits in the left lobe.

Cystoscopy

- Date: 2003/2/13.
- OP findings: Intact of bilateral ureter orifice, no deformities, no tumor invasion noted in bladder wall.

Proctoscopy

- Date: 2003/2/13.
- OP findings: examine up to only 10cm from anal verge due to tumor external compression, colonic invasion can’t be rule out.

Major Operation (1)

- OP date: 2003/2/13.
- OP diagnosis: retroperitoneal sarcoma, recurrence with liver metastasis.
- OP method: Tumor debulking + ATH + BSO + staging
- EBL: about 1300 cc.
- Time: 2003/2/13 1145-1720

OP Findings (1)

- A large tumor sized 10*10 cm located between fascia and peritoneum. 軟泥狀 with dark red content noted.
- Abdominal washing for cytology.
- The right side dark black adnexal tumor sized 5*5 cm was removed, r/o malignancy.
- ATH + BSO were proceeded .

OP Findings (2)

- A tumor with 3*3 cm protruding to the aspect of vagina, debulked.
- Bilateral FP draining were used.

Cytology Report

- Specimens: peritoneal fluid.
- Result of the smear: Absence of abnormal findings.
- Comment: red cells only.

Pathology Report (1)

- Retroperitoneum, debulking, malignant GIST, ? metastatic.
- Soft tissue, pelvic cavity, right, debulking, malignant GIST, metastatic.
- Broad ligament, left, excision, malignant GIST, metastatic
- Vagina, excision, malignant GIST, metastatic.
- Ovary, left, oophorectomy, corpus luteum cyst.

Pathology Report (2)

- Ovary, right, oophorectomy, parovarian cyst.
- Fallopian tube, bilateral, salpingectomy, fibrous adhesion.
- Uterus, corpus, simple total hysterectomy, adenomyosis, focal.
- Uterus, cervix, simple total hysterectomy, none made.

GIST (1)

- GIST (gastrointestinal stromal tumor) refer to all mesenchymal tumors in the gastrointestinal tract.
- The majority of these tumors arise from cells that are not clearly of smooth muscle or neurogenic origin.
- GIST are most commonly found in the GI tract but primary mesenteric, omental, and retroperitoneal GISTs have been also reported. Please correlate the clinical findings to determine the primary site of this malignant GIST.
- Of all GISTs in the GI tract, 70% occur in the stomach.

GIST (2)

- They tend to be slow growing, indolent tumors that are usually asymptomatic until they become quite large.
- Virtually all GISTs have gain-of-function c-kit mutations (a proto-oncogene growth factor receptor).
- Patients with GISTs have a median age of 50 to 60 years at the time of diagnosis.

GIST (3)

- Symptoms at presentation include gastrointestinal bleeding, dyspepsia, and, with large tumors, obstructive symptoms.
- It is difficult to judge the malignant potential of GISTs histologically, and so only those tumors with invasion into adjacent organs, spread into regional lymph nodes, or with distant metastases (liver, lung, peritoneum) are called malignant.

GIST (4)

- Initial diagnosis is best made at the time of endoscopy. EUS is helpful in determining depth of invasion as well as regional lymph node involvement.
- Surgery is the treatment of choice, but because of the rarity of these tumors, there are insufficient clinical trials to make a definitive conclusion. Some advocate use of adjunctive radiation and chemotherapy.

GIST (5)

- Because of the difficulty in assessing which GISTs are benign, the most useful clinical predictor of outcome is the mitotic index of the tumor.
- Those with a mitotic rate of greater than 2 per 10 high-power fields have a much higher risk for recurrence or metastases.

GIST (6)

- The size of the tumor is also a clinical predictor of outcome, with those larger than 5 cm at higher risk of metastases.
- Asymptomatic elderly patients, or patients with serious comorbid illness, with small tumors that EUS shows have no evidence of invasion into adjacent or distant organs and have low mitotic indices may be followed by surveillance endoscopy without surgery.

GIST (7)

- Recently, the tyrosine kinase inhibitor imafinib mesylate (STI571, Gleevec) has been used successfully in a metastatic GIST tumor.

CT Study In GIST (1)

- CT should be performed with both oral and intravenous contrast materials.
- CT is ideal in defining the endoluminal and exophytic extent of tumor.
- Smaller GISTs appear as smooth, sharply defined intramural masses with homogenous attenuation.

CT Study In GIST (2)

- Contrast enhancement may be rimlike or uniform.
- Occasionally, dense focal calcifications are present.
- Larger GISTs with necrosis appear as heterogeneous masses with enhancing borders of variable thickness and irregular central areas of fluid, air, or oral contrast attenuation that reflect necrosis.

CT Study In GIST (3)

- Overlying mucosal ulcerations and extension into nearby structures may be present.
- CT is also sensitive for the detection of metastatic liver, peritoneal, lung, and bone lesions.
- The diagnosis of GIST can be suggested in the presence of a large, complex, intestinal mass with liver lesions but without significant lymphadenopathy.

CT Study In GIST (4)

- Liver lesions can be hypervascular or appear as cystic multilocular lesions with fluid-fluid levels.
- CT scanning has good sensitivity for the detection of GISTs, and it can show abnormalities in 87% of cases.