**Radiology/ Dr. Kawa – Lecture 6 – Hepatobiliary system II**

**Spleen**
US iso-echoic to liver

CT & MRI good evaluation of spleen

Most common masses:
1- cyst (hydatid cyst)
2- Abscess
3- Tumor-lymphoma more than metastases

**Splenomegaly**-no change in texture/density
- Lymphoma
- Portal hypertension
- Chronic infection
- Hemolytic anemia's
- & leukemia

**Splenic trauma**
- Most commonly injured organ in blunt trauma
- Contusion-laceration-hematoma
- US useful
- CT standard-Not only for splenic injury but (bleeding & Other organ injury esp. liver & LT kidney)

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**Pancreas**

Main:
- CT not affected by air
- US limited-absorbed by air

Occasional
- MRI-MRP
- Angiography
- ERCP*

Normal duct 2 mm

**Oblique orientation**
- Shape & size variable-measures not much useful
- Feathery outline-CT
- Medium/high echogenicity-US
- Atrophy common with age
**Pancreatic masses**

1. Carcinoma
2. LN
3. abscess & pseudocyst
4. Focal pancreatitis
   - Adenocarcinoma-commonest tumor-2/3 in the head
   - Head tumor diagnosed early Dx-pancreatic & biliary duct dilatation
   - Tail-late diagnosis-large mass

**Focal mass**
- deforming the outline of pancreas
- Frequently Irregular obliteration of peripancreatic fat

**CT findings**
1. low density tumor
2. LN
3. Duct dilatation
4. liver involvement

**Endocrine tumors**
Difficult to detect-small; don’t deform outline of pancreas
s.t. selective angiography-hypervascular

**US/CT**
- small round mass(s)

**ACUTE pancreatitis**
- Variable appearance according to necrosis; hemorrhage & suppuration
- Pancreas Enlarged often diffusely
- Low density/echogenicity areas-edema & necrosis

**Imaging to:**
1. STAGE
2. exclude complications-abscess & pseudocyst
3. exclude underlying carcinoma

**Pseudocysts**
- thin/thick walled cystic structures
- Within or adjacent to the pancreas
- Contain fluid
- Many resolve in 4-6 weeks
- US/CT used for Follow up
Chronic pancreatitis

1- Non uniform duct dilatation
2- duct stenoses & dilatation
3- Calcification-stones
4- Focal/diffuse enlargement/atrophy
5- Pseudocysts
6- Atrophy-non specific-can be due to aging

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Peritoneal cavity & retroperitoneum

Ascites

- Small amounts detected by US/CT/MRI
- But no reliable differentiation of nature
- CT-low density compared with the organs
- Free – dependant sites pouch of Douglass; Morrison's pouch
- Loculated-simulate abscess
* US easy detection unless air impedes visualization
* always small amount detected

Peritoneal tumors

- mostly metastases-most important-ovarian
- US&CT may show only ascites
- sometimes peritoneal nodules
- sometimes form omental cake

Intra-peritoneal abscesses

- may follow perforation
- site – depends on site of perforation
- multiple abscesses not uncommon
- ascites frequent

U/S:

- Loculated fluid collection-irregular wall
- Internal echoes-septation/debris
- Air may be seen

DDX: * Uninfected fluid collection      * Bowel loop-peristalsis

CT

- Homogenous density-fluid collection
- soft tissue density wall
- wall enhancement
- Air –important-50% of cases:- bubble/streak/AFL
- Difficult to differentiate empyema from subphrenic collection
- US better in differentiating empyema from subphrenic collection

“ 3 ”
DDX
- Uninfected fluid collection → aspiration
- Bowel loop-contrast

Radionuclide studies
- Tc/In labeled leukocyte-if US/CT unsuccessful

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RETROPERITONEUM

Plain film: large mass
calcification
gas
three compartments

CT: organs: Adrenal; aorta; Retrocrural space;
Aorta & IVC; psoas muscles

US: normal adrenal rarely seen

MRI: few advantages over

CT: Multiplanar
Vascular extension of tumors

Fig. 10.8 (a) CT scan of normal retroperitoneum. Note that the aorta (Ao) and IVC are clearly outlined by fat and that there is a fat-containing space to the left of the aorta. The small white dots in the retroperitoneum are the opacified ureters. (b) An enlarged lymph

*** node is shown to the left of the aorta (arrow).

Lymphadenopathy
- Mild enragement (neoplastic/inflammatory)
- LNs of Metastases & Lymphoma appear identical
- Para-aortic 1cm; retrocrural -6 mm;
- >2cm invariably malignant

Adrenal
- CT best routine imaging
- US & MRI one advantage
- Calcification
- Enlargement

Functioning tumors
- CT/MRI localize tumor
- Usually adenoma; spherical enlargement
  a. Cushing’s adenoma: always >2cm; always seen with CT/MRI
  b. Hyperplasia: normal/mild enlargement
  c. Aldosteronoma usually <1cm; difficult to identify
d. **Pheochromocytomas:**
   Very large; all detected; 10% multiple; bilateral; extra-adrenal; malignant
   
   I labeled MIBG

e. **Nonfunctioning adrenal adenoma**
   - <3cm difficult to differentiate from metastases
   - >3cm mostly metastases or rarely carcinoma
   - Metastases common; frequently bilateral; lung common primary
   - Abscesses & hemorrhage usually bilateral & difficult to differentiate

**Retroperitoneal tumors**

**Liposarcoma/fibrosarcoma**

**Investigations:**
   - US
   - CT
   - MRI
   - Usually impossible to determine nature

Liposarcoma nearly always recognizable amount of fat with strands of soft tissue density.

**Aortic aneurysm**

**Plain film** best lateral view-calcification

**US** used for screening

**CT:** Both CT & US true dimension; thrombus

**MRI** rarely used.

**Angiography** not true dimensions; good for stenosis of branches
   - Bleeding easy with CT
   - >6cm chance of rupture

**Retroperitoneal Abscess**

Usually close to the organ of origin.

**Similar** US & CT features to hematoma & tumors

**CT findings**
   - Usually fluid center with gas inside
   - Enhancing wall
   - Psoas abscess-asymmetry

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