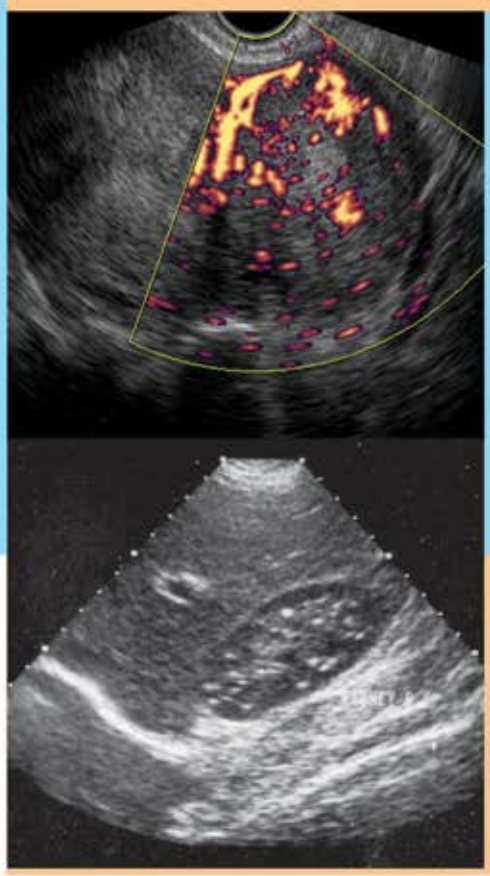
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Differential Diagnosis in ULTRASOUND



THIRD EDITION

Sumeet Bhargava
Satish K Bhargava

JAYPEE

DIFFERENTIAL DIAGNOSIS IN ULTRASOUND

Third Edition

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CHAPTER 7

Retroperitoneum

RETROPERITONEAL PATHOLOGIES

- Most common manifestation of a retroperitoneal pathology is "Presence of a Mass"
- Sonographic signs apart from above that localize the mass and differentiate mass from pseudomass are:
  - Displacement of normal structures
  - Direct invasion of adjacent organ
  - Asymmetry of normal paired structures
  - Silhouetting of normal structures
  - Loss of retroperitoneal details.

7.1 DIFFERENTIAL DIAGNOSIS OF SOLID MASSES

Signs for Organ of Origin of Solid Masses in Retroperitoneum

Phantom sign: Mass completely surround and envelops the organ. The organ is typically not seen sonographically.

Embedded organ sign: The organ is embedded in the mass.

Beak sign or claw sign: The mass is arising from the organ man makes acute angle with the organ suggesting origin from the organ.

Prominent feeding artery sign: Hypervascular masses are often supplied by prominent feeding arteries which are usually identified on CT/MRI, but may be sometimes seen on ultrasound.

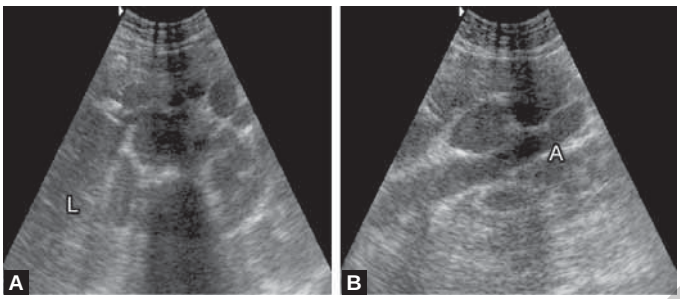
Lymphadenopathy

- Inferior to CT for this purpose as it is poorly reproducible and the image is degraded by gas
- *Size <1 cm = Normal:*
  - >1 cm, single = Suspicious abdominal nodes
  - >1 cm, multiple = Abnormal
  - >1.5 cm, single = Abnormal
  - >.6 cm = Abnormal-retrocrural
  - >1.5 cm = Pelvic
- *Signs of malignancy:*
  - Longitudinal to transverse ratio <2, i.e. round/oval
  - Eccentric cortical thickening Narrow/absent echogenic hilum
  - Displaced/distorted intranodal vessels
  - Intranodal avascular areas
- *Causes:*
  - Malignant deposits—testes, Gastrointestinal (GI), lung, pelvic tumors
  - Lymphoma **(Figs. 7.1.1A and B)**
    - Multiple hypoechoic masses **(Fig. 7.1.2)**
    - May fuse to form a mantle
    - May invade the retroperitoneum
- Infections.

Primary Retroperitoneal Tumors

- Adult mainly
- Mostly malignant
- Mostly mesenchymal
- More in men

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Figs. 7.1.1A and B: (A) TS and (B) LS—retroperitoneal lymphadenopathy in a case of lymphoma. (A: aorta; L: liver)

- *Main lesions are:*
  - Lipoma sarcoma—has echogenic fat
  - Leiomyosarcoma—hypoechoic
  - Malignant fibrous histiocytoma
  - *Teratoma:*
    - Fat fluid levels
    - Calcification
  - Germ cell tumors.

Secondary Deposits

- Intranodal **(Figs. 7.1.3 and 7.1.4)**
- Extranodal
- Direct invasion.

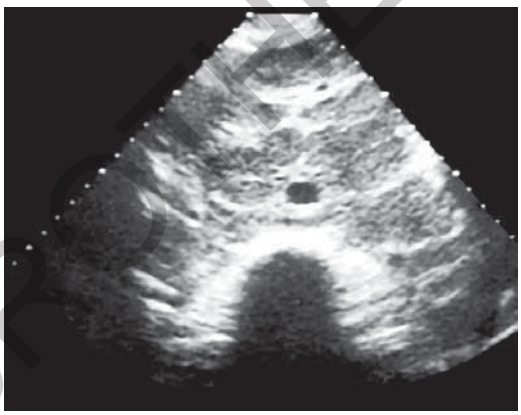


Fig. 7.1.2: Conglomerate lymph nodes mass seen in the preaortic region.

Retroperitoneal Fibrosis

- Also known as Ormond's disease
- *Causes:*
  - Idiopathic (68%)
  - Malignancies (8%) (stomach, lung, breast, colon, prostate, kidney), Methisergide (12%)
  - Crohn's disease
  - Riedel's struma
  - Sclerosing cholangitis
  - Radiotherapy
  - Aneurysm leak/surgery
  - Infection
  - Urine leak
  - Hypoechoic, smooth marginated homogeneous fibrous clumps are noted
  - Ureters medially deviated due to psoas abscess **(Figs. 7.1.5 to 7.1.8)**.



Fig. 7.1.3: A single rounded echogenic lumen seen anterior to the aorta. SMA is seen on the left side. PV is anterior to the LN. It was a metastatic LN from adenocarcinoma colon. (SMA: superior mesenteric artery; PV: portal vein; LN: lymph nodes)

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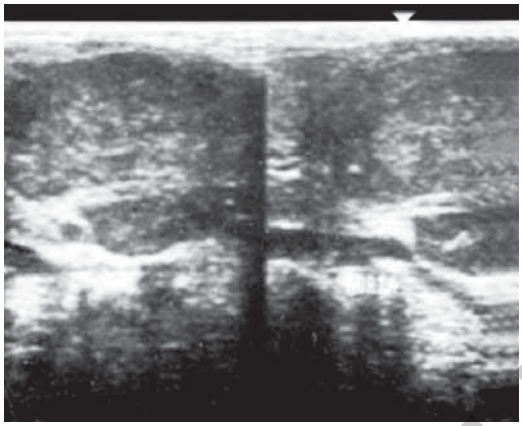


Fig. 7.1.4: A large ill-defined solid hypoechoic lesion seen anterior to the compressed aorta turned out to be a retroperitoneal sarcoma.

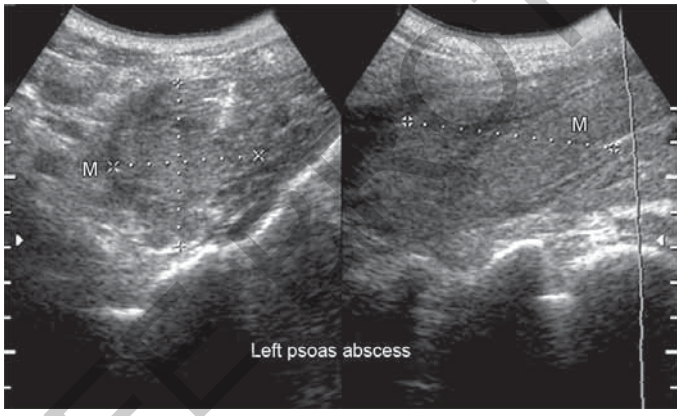


Fig. 7.1.5: US scans show psoas abscess in iliac fossa. (M: mass)

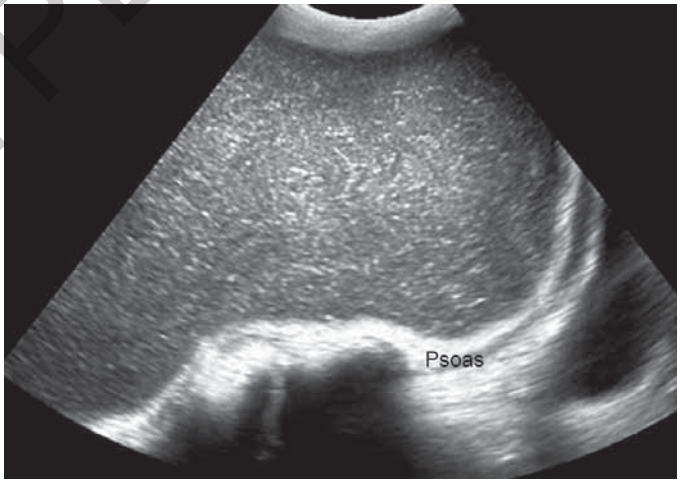


Fig. 7.1.6: A large psoas abscess filling the retroperitoneum and displacing the bowel loops.

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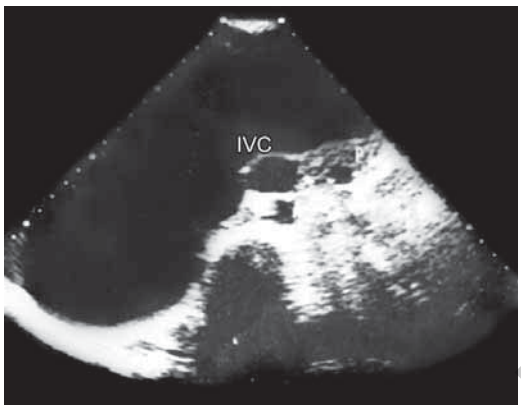


Fig. 7.1.7: A huge completely anechoic retroperitoneal cyst is seen in this transverse scan. (IVC: inferior vena cava).

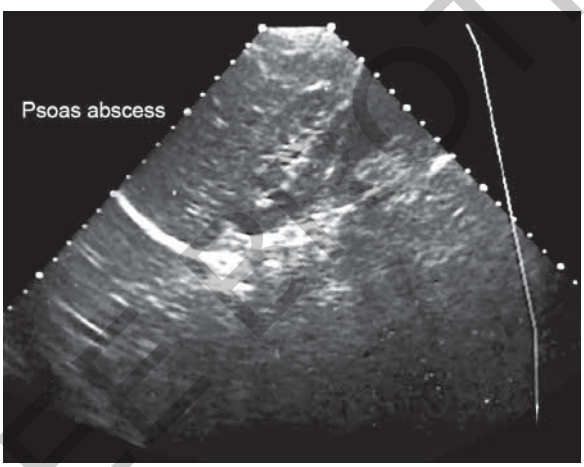


Fig. 7.1.8A: Psoas abscess—there is a hypoechoic collection in right psoas muscle.

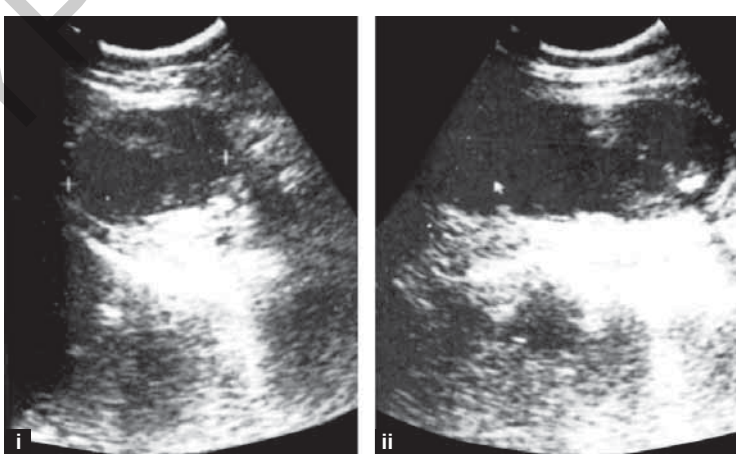


Fig. 7.1.8B: Psoas abscess—(i) transverse, (ii) longitudinal scan showing a collection in psoas muscle with evidence of internal echoes, thick posterior wall and calcification.

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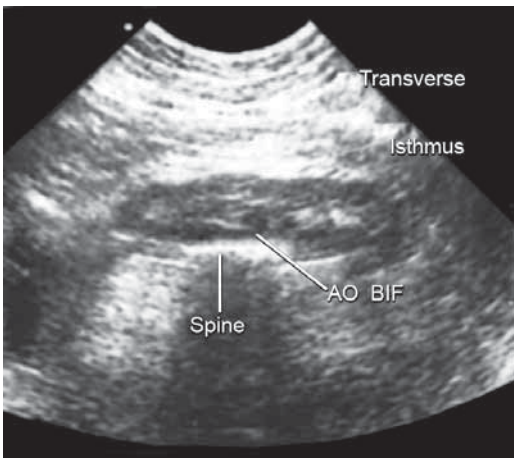


Fig. 7.2.1: Horseshoe kidney: Transverse scan shows the isthmus connecting the lower poles of the right and left kidneys anterior to the aorta. (AO BIF: aortic bifurcation)

7.2 DIFFERENTIAL DIAGNOSIS OF PSEUDOMASSES

- *Horseshoe kidney* ***(Fig. 7.2.1):***
  - Intravenous pyelogram (IVP) diagnostic
  - Mild to moderate hydronephrosis
- *Ptotic kidney:*
  - Also called as floating or wandering kidney
  - Descent of kidney more than 5 cm or two vertebral levels when a person moves from supine to upright position
  - IVP diagnostic
- Low-lying pancreas
- Varix
- Extramedullary hematopoiesis
- Hematoma
- Duplication cyst of gut.

7.3 DIFFERENTIAL DIAGNOSIS OF CYSTIC LESIONS AND FLUID COLLECTION

- Primary retroperitoneal cysts
- *Lymphangioma:*
  - Congenital
  - Cyst with multiple thick septa or unilocular
- *Lymphoceles:*
  - Like simple cysts
  - Lateral to bladder within 3 cm of abdominal wall
  - Mostly postsurgical
- *Urinoma:*
  - Hypoechoic loculated collection
  - Perilesional fibrosis
  - Following obstruction, trauma, surgery
- Varix
- *Pancreatic pseudocyst:*
  - In any space but mostly anterior pararenal space
  - Definite evidence of pancreatitis present
- *Hematoma/hemorrhage:*
  - Due to trauma intervention, aneurysm, bleeding diathesis, tumor bleed
  - Heterogeneous fluid collection
  - Changing appearance with time
- *Infections:*
  - Psoas abscess in Pott's spine
  - Spread of infection from adjacent organ
  - Predisposed by diabetes, AIDS, trauma, surgery, alcohol.

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