

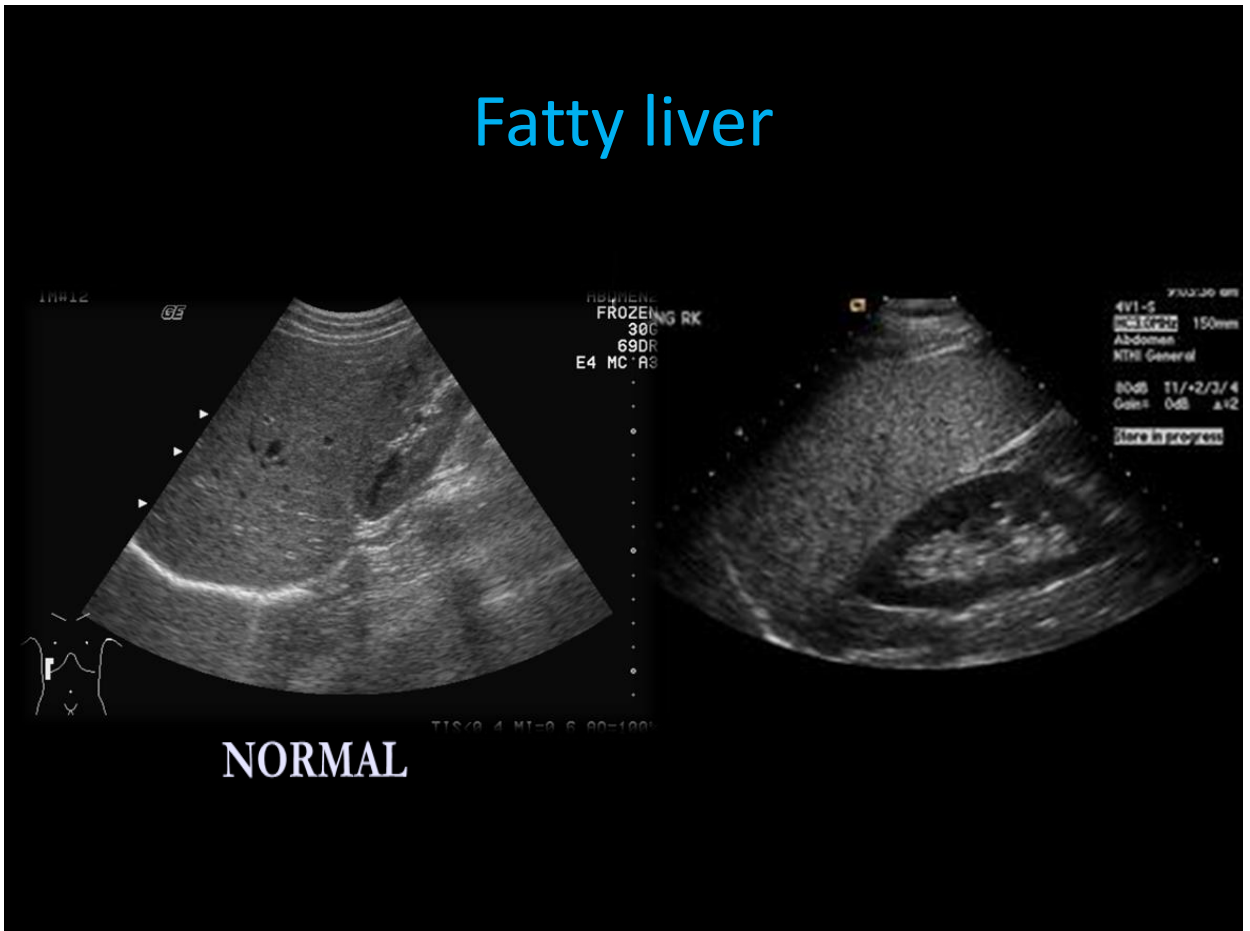
Basics Of Abdominal Ultrasonography

台中榮民總醫院

放射線部

放射師：張晏齊

Fatty liver

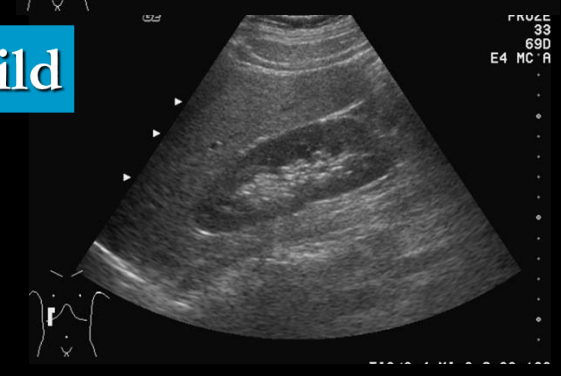


Diffuse change (Fatty liver)

NORMAL

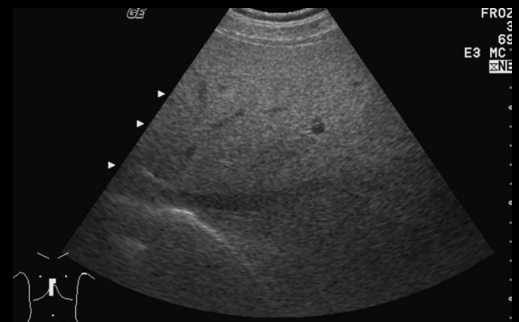
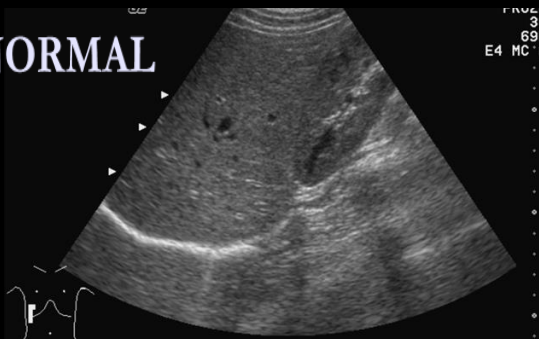


Mild

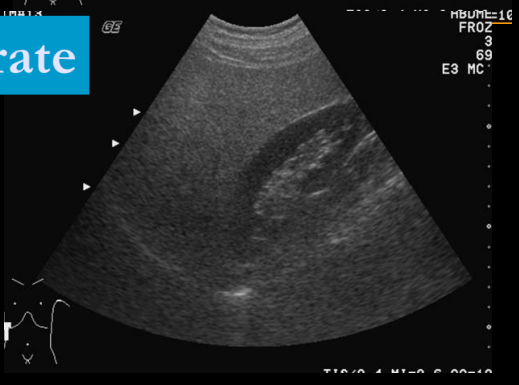
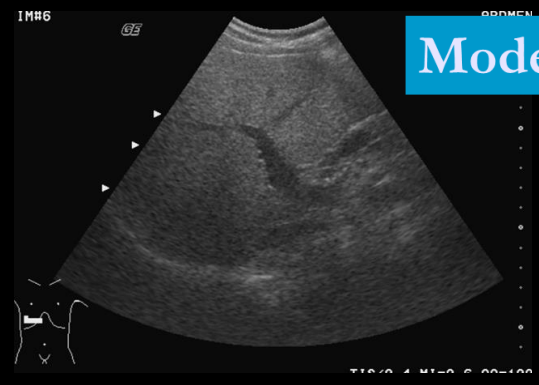


Diffuse change (Fatty liver)

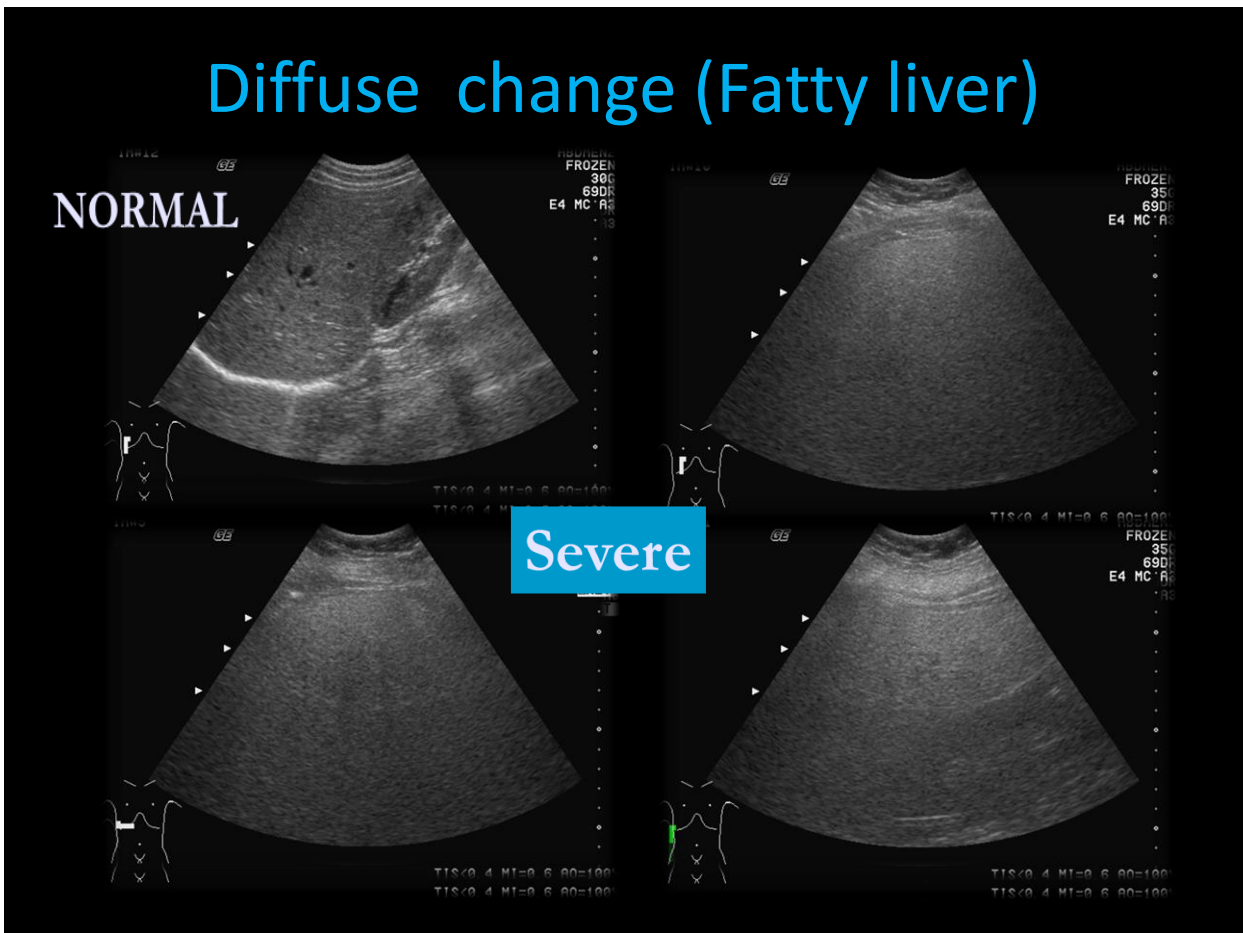
NORMAL



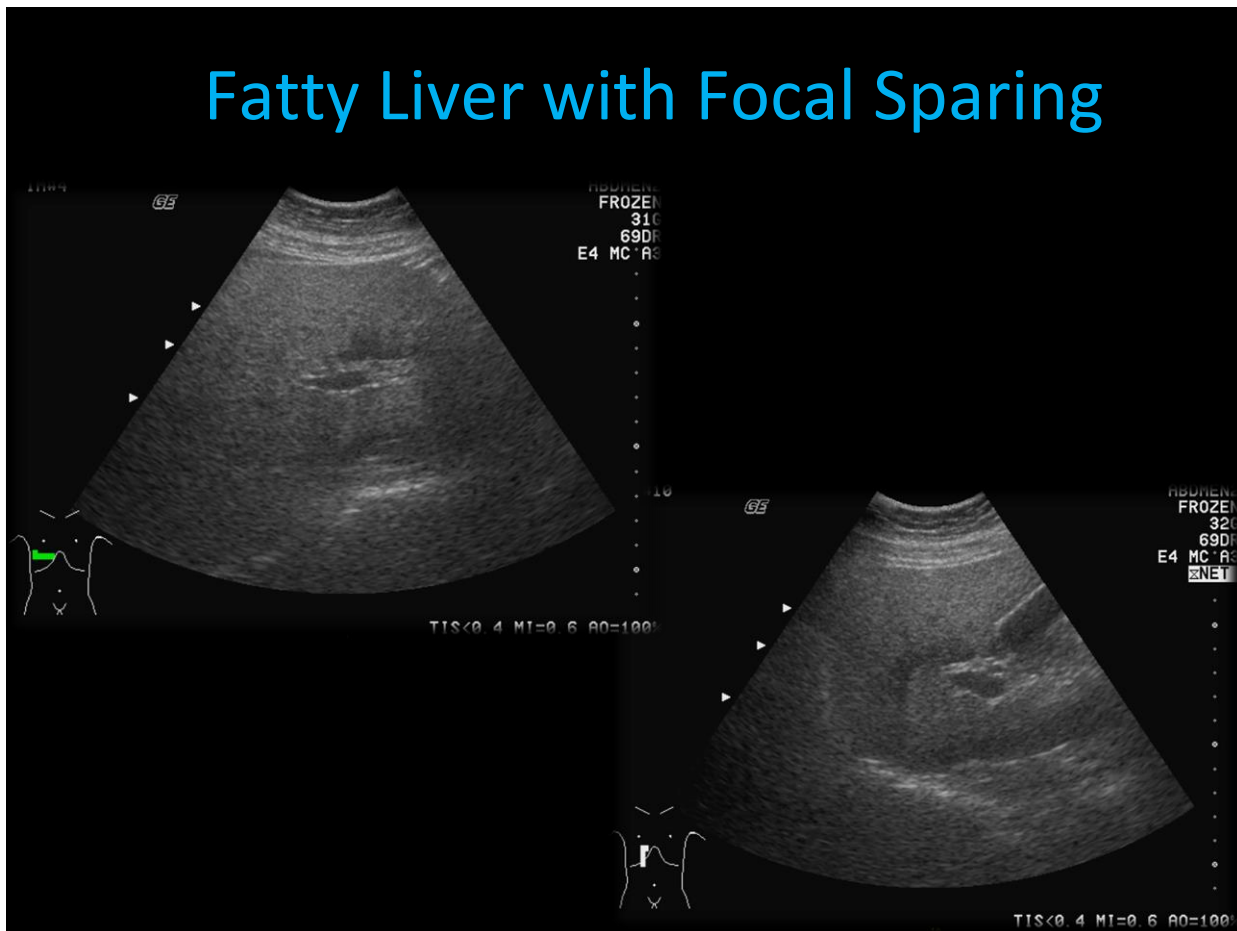
Moderate



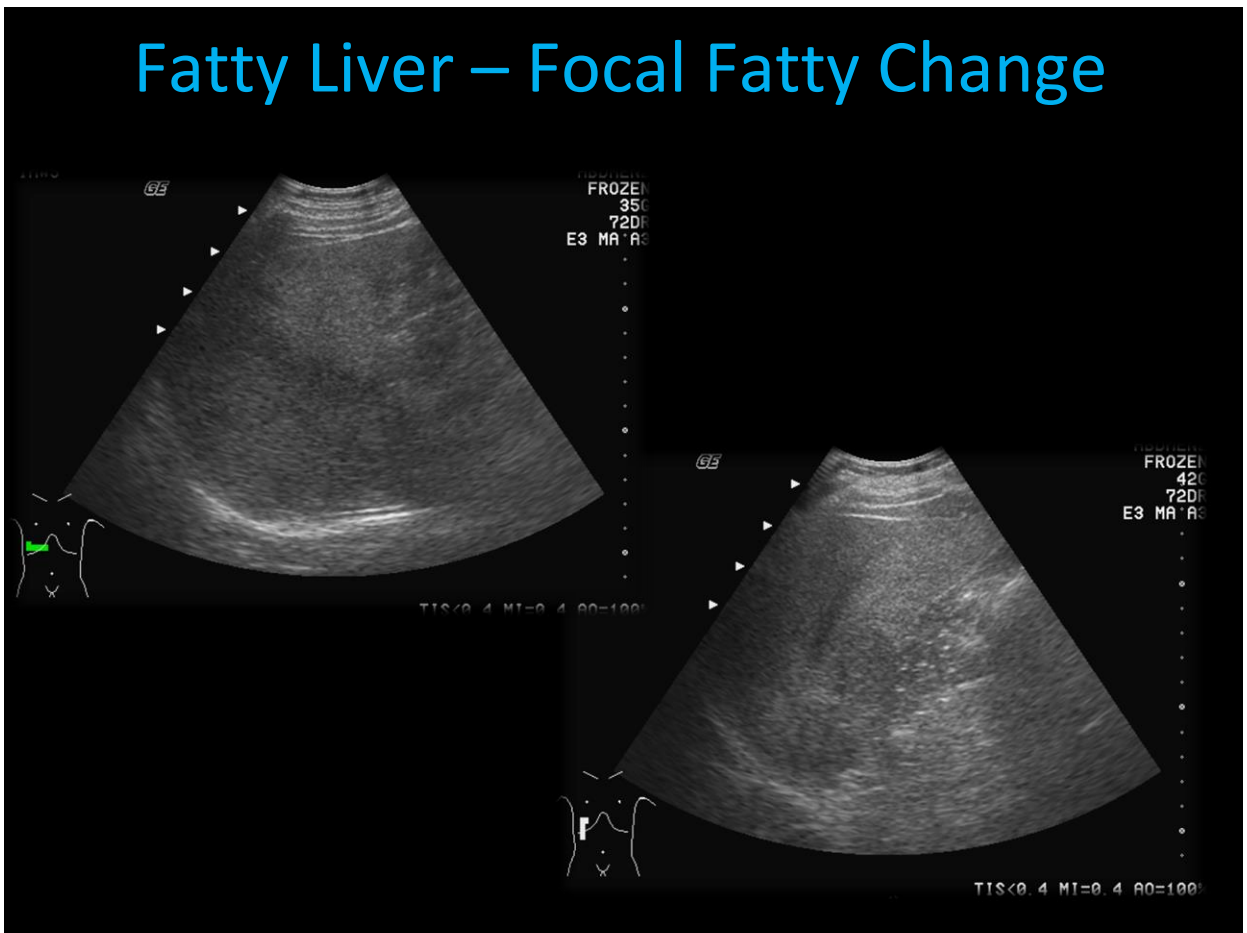
Diffuse change (Fatty liver)



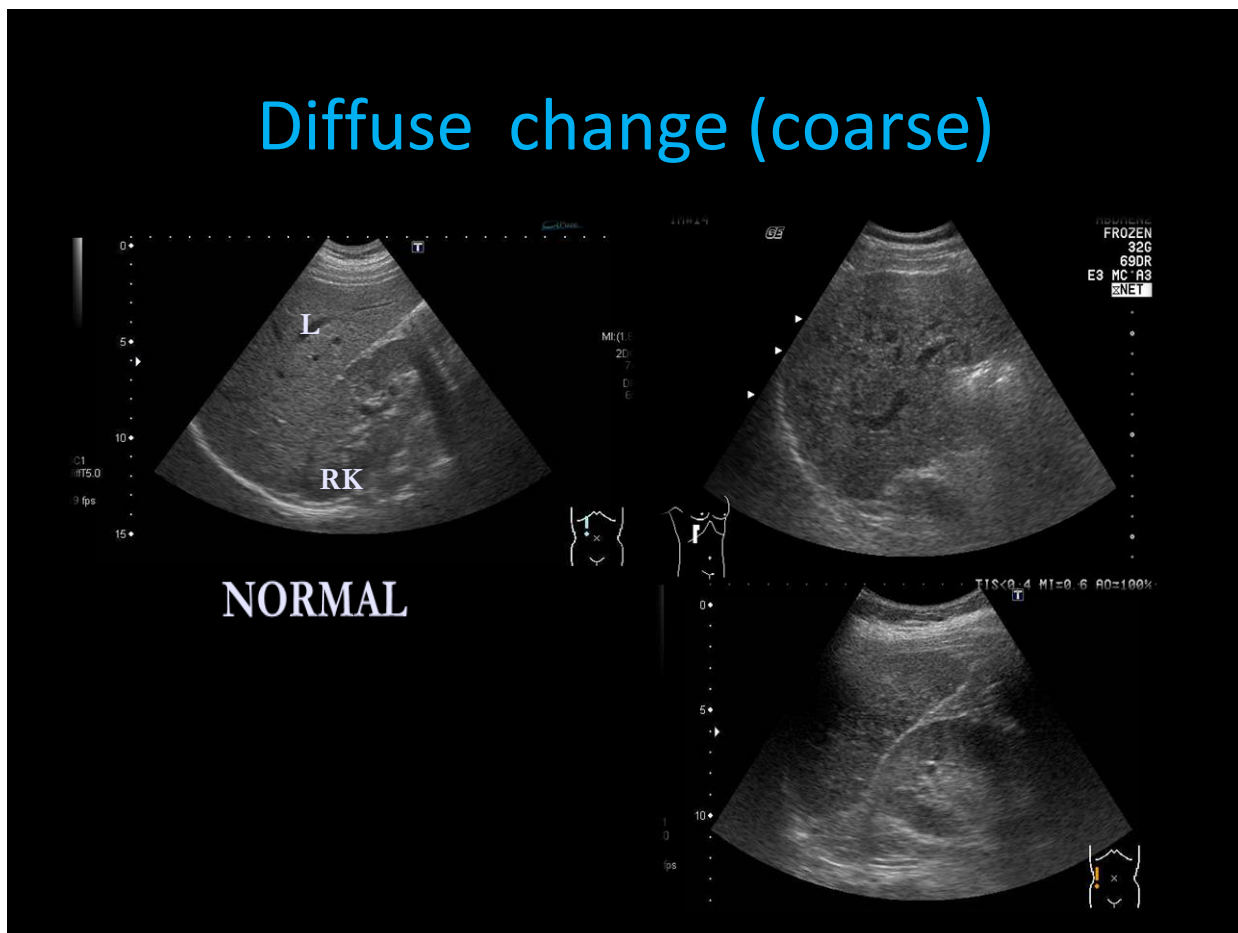
Fatty Liver with Focal Sparing



Fatty Liver – Focal Fatty Change



Diffuse change (coarse)

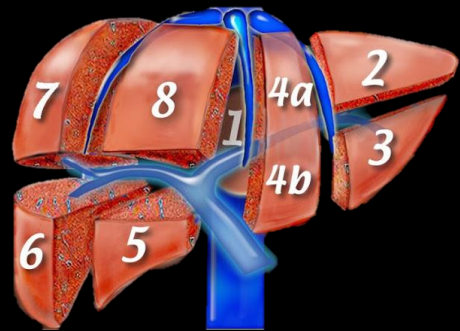


Liver

Size:

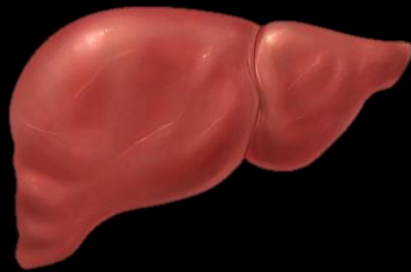
L't lobe (5-10cm)

R't lobe (8-15cm)

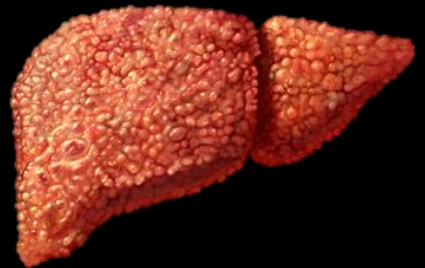


1. Liver cirrhosis
2. Polycystic liver disease

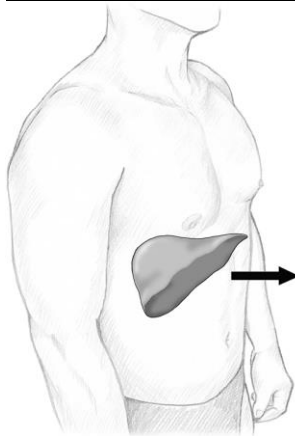
Liver Cirrhosis



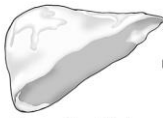
Normal Liver



Cirrhosis

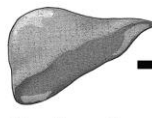


Fatty liver



Deposits of fat cause liver enlargement.

Liver fibrosis



Scar tissue forms. More liver cell injury occurs.

Cirrhosis



Scar tissue makes liver hard and unable to work properly.

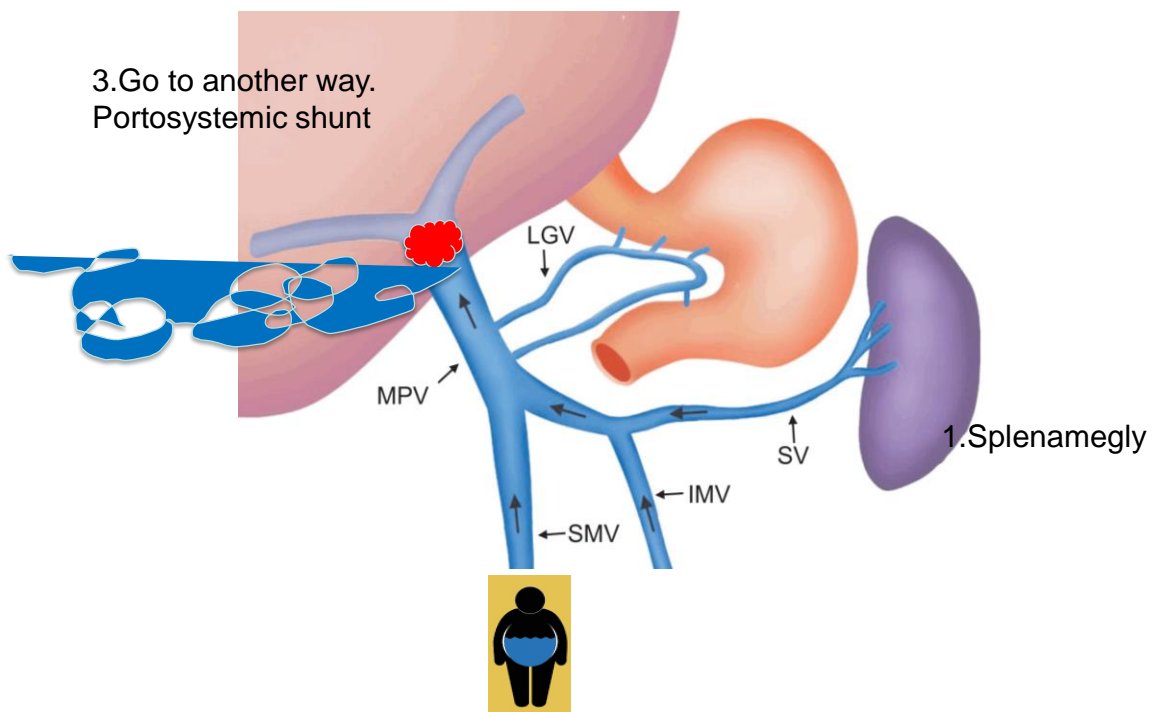
Liver Cirrhosis

- Coarsening
- Enlargement of the caudate lobe
- Bulging contours
- Vascular irregularities(collateral circulation)
- Recanalized umbilical vein
- Ascites , splenomegaly

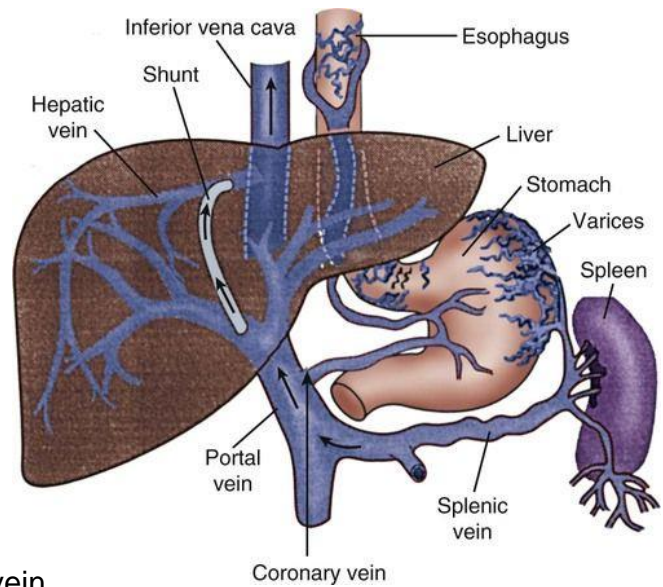
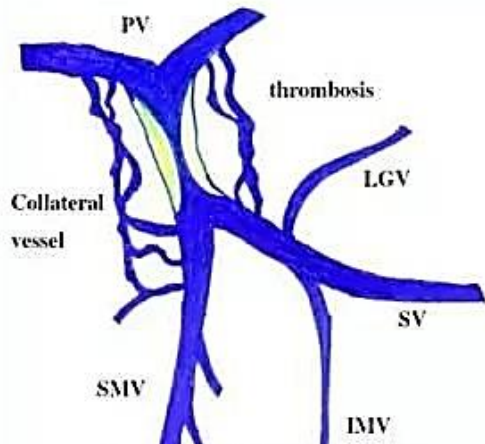
Liver Cirrhosis

1. Coarsening
2. Liver cirrhosis
3. Portal hypertension
4. Portal vein thrombosis
5. vascular irregularities
 - Cavernous transformation
 - Collateral circulation

Portal vein thrombosis



Portosystemic shunt

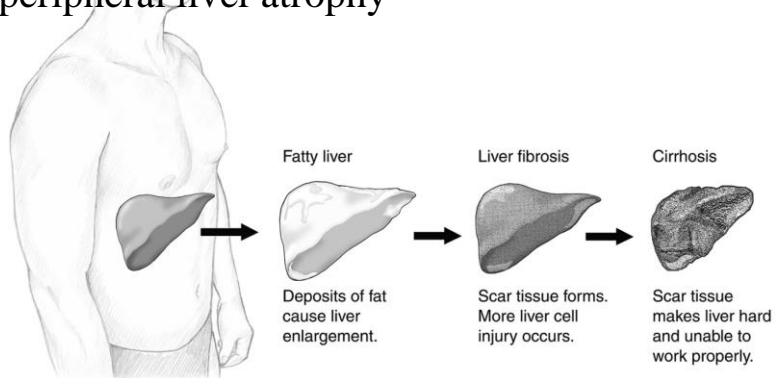


Cavernous transformation of the portal vein

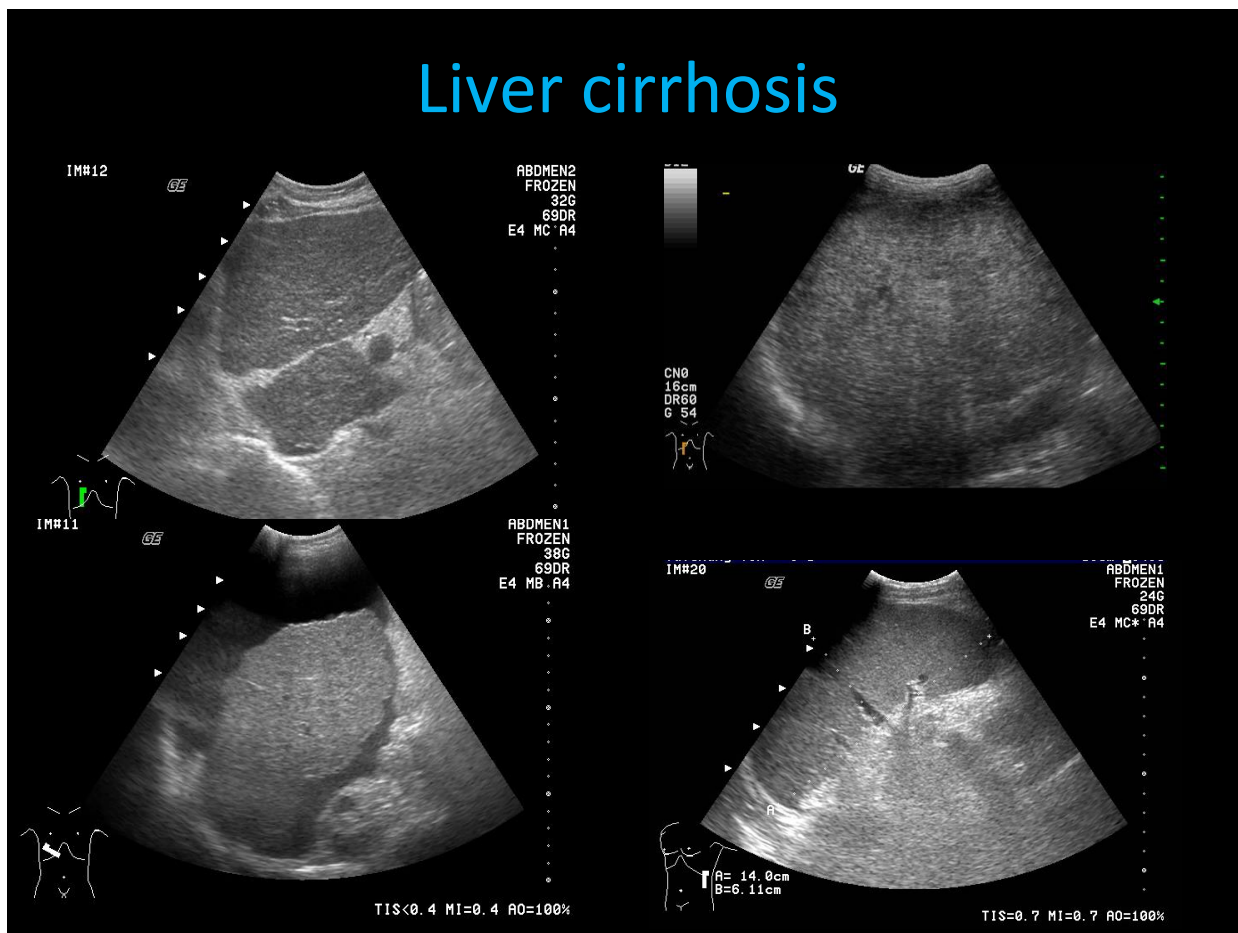
1. Esophageal varices
2. Collateral system (Caput medusae)

Cavernous transformation of the portal vein (CTPV)

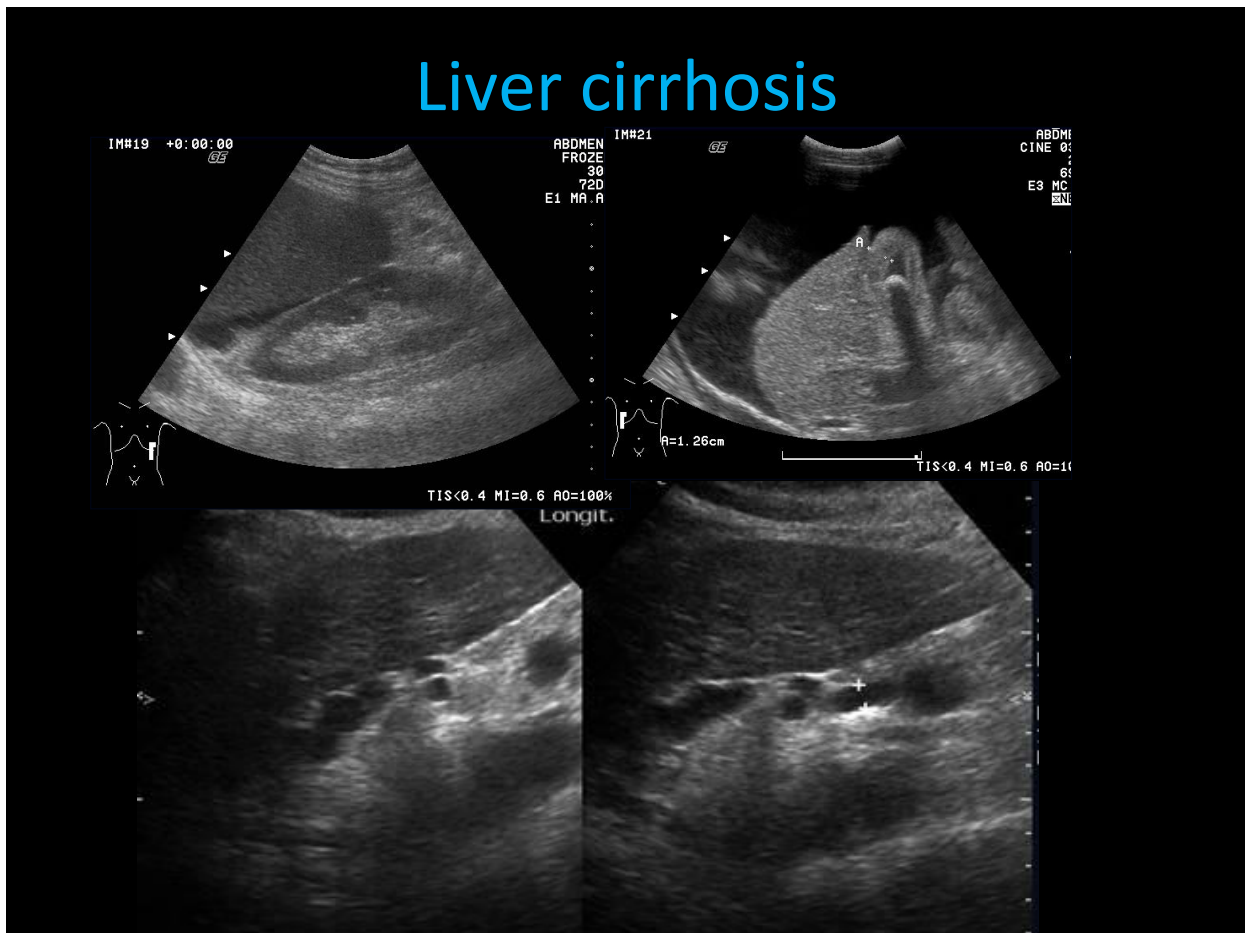
CTPV is most of the times inefficient in guaranteeing adequate portal vein inflow to the liver parenchyma far from the hilum and, therefore, is associated with an increased hepatic arterial flow to those peripheral liver segments. These changes lead to a central liver hypertrophy and peripheral liver atrophy



Liver cirrhosis

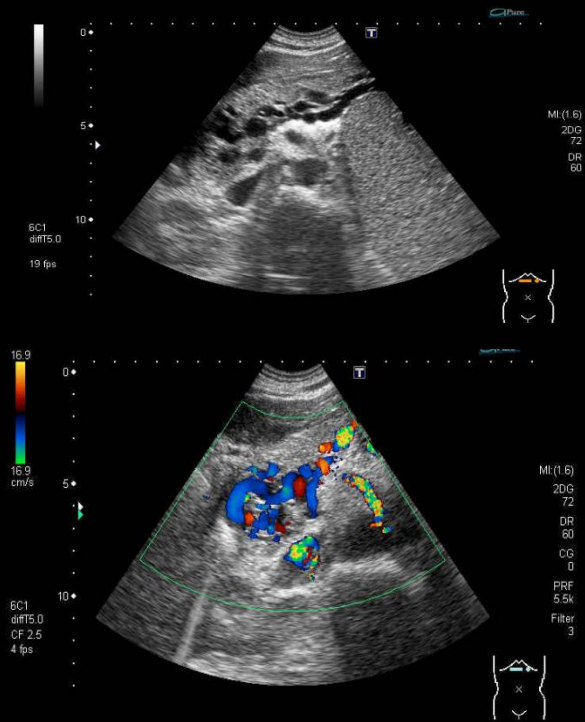
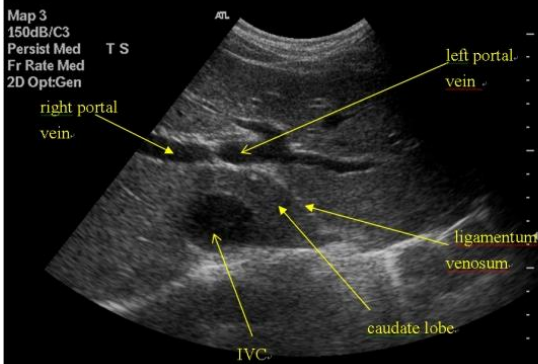


Liver cirrhosis

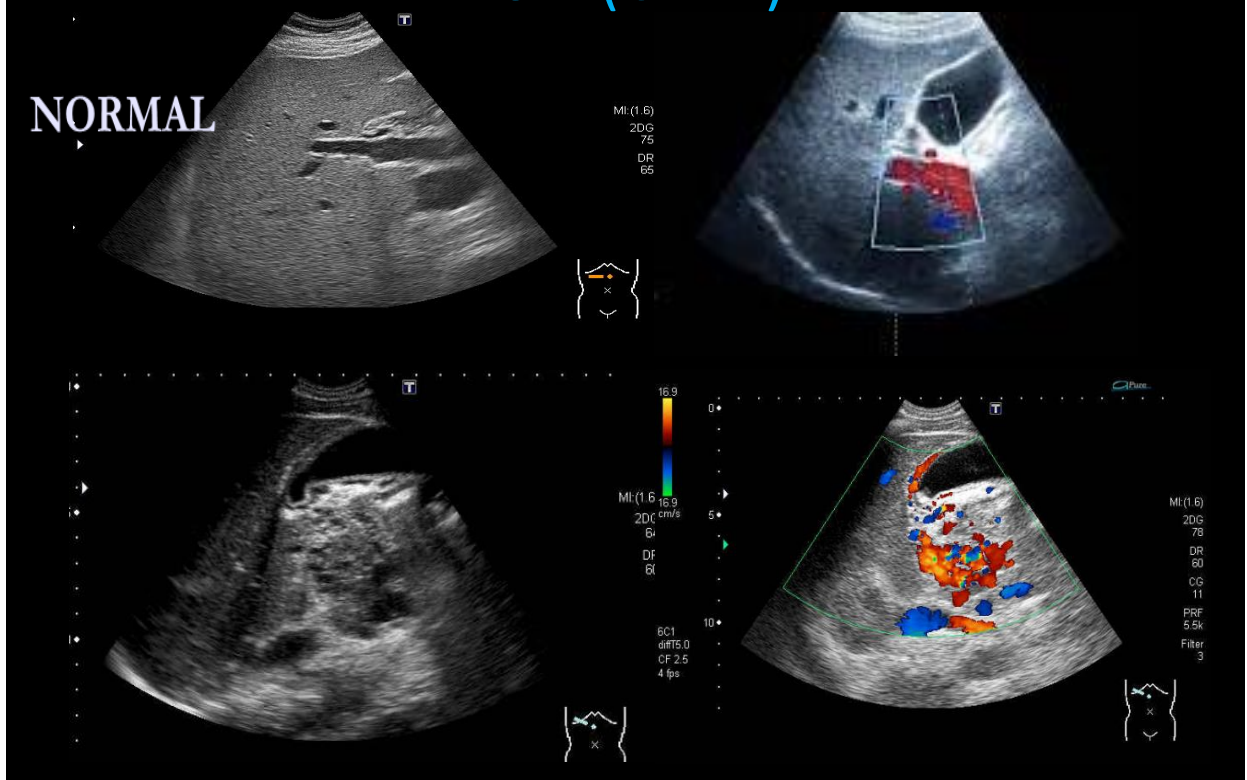


Cavernous transformation of the portal vein (CTPV)

NORMAL

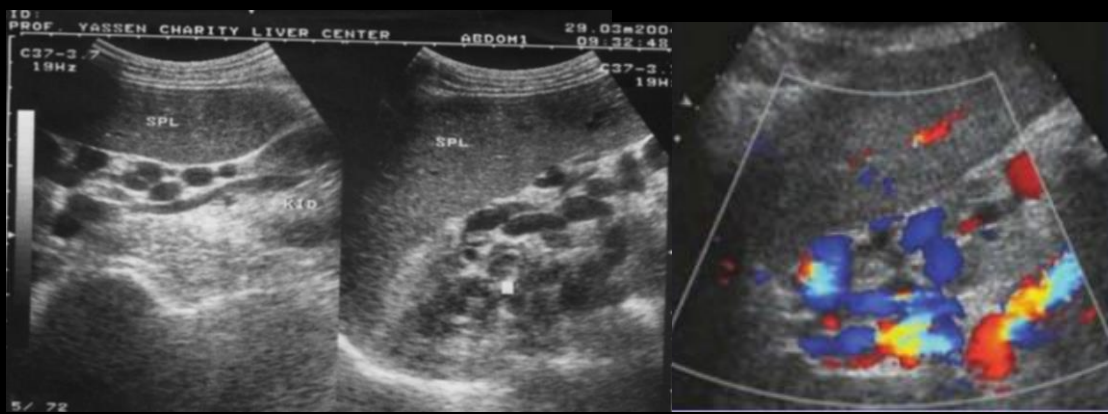


Cavernous transformation of the portal vein (CTPV)

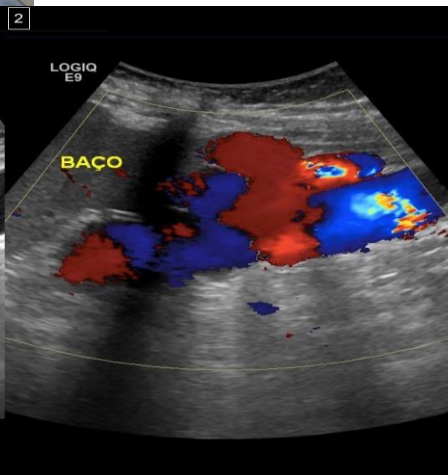


Collateral system

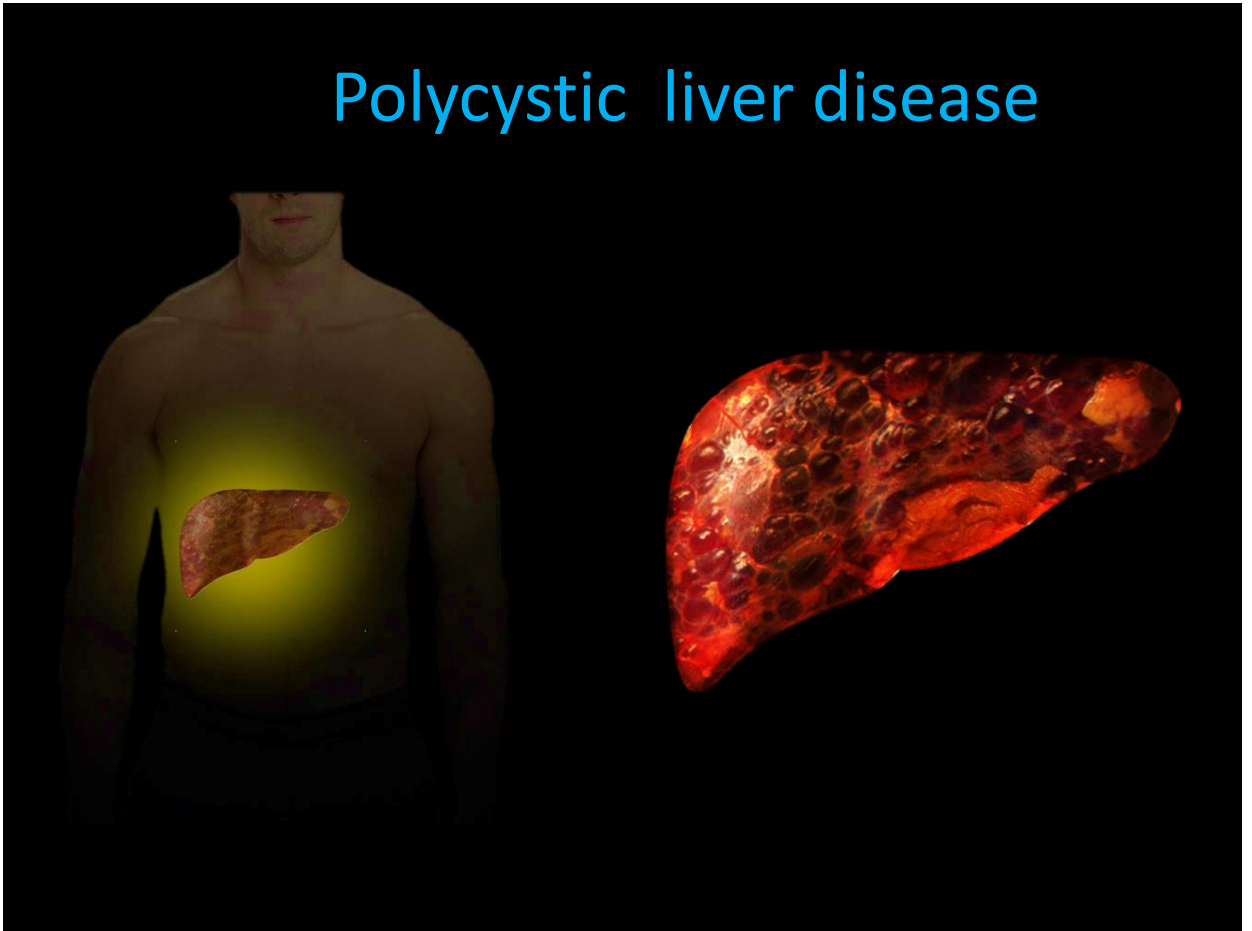
NORMAL



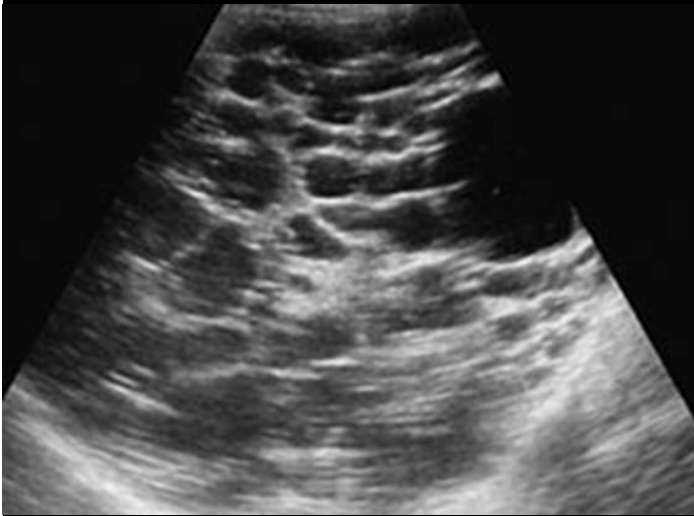
Caput medusae(collateral system)

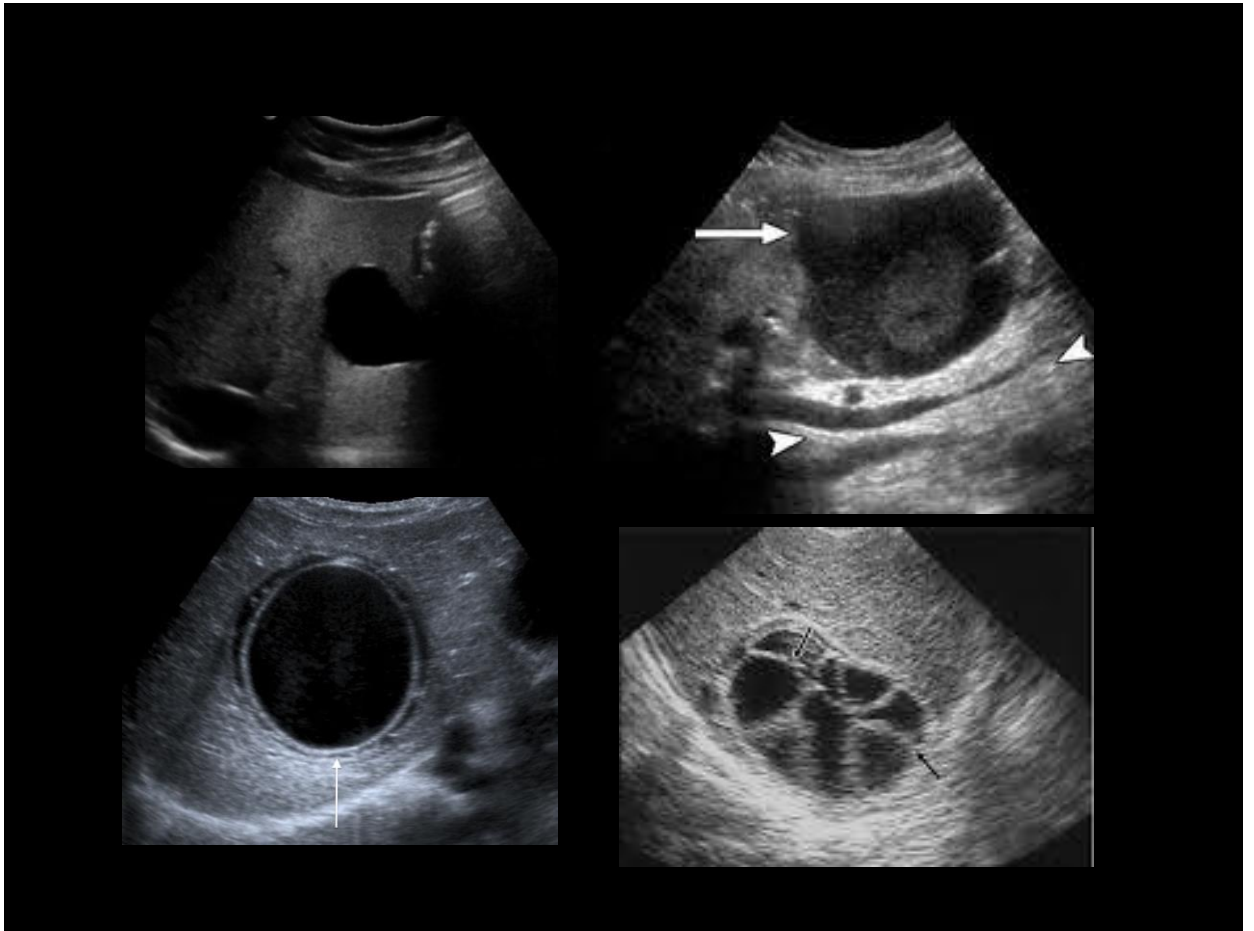


Polycystic liver disease



Polycystic liver disease

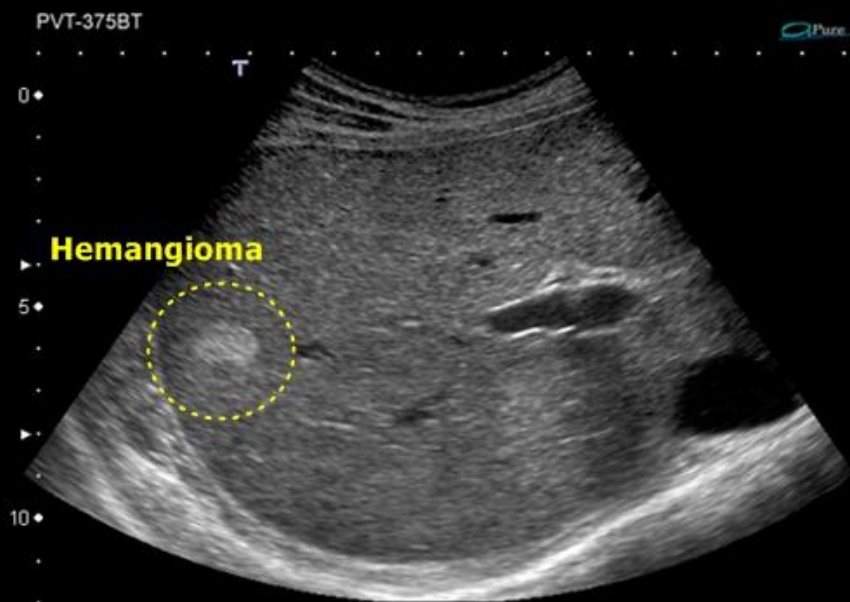




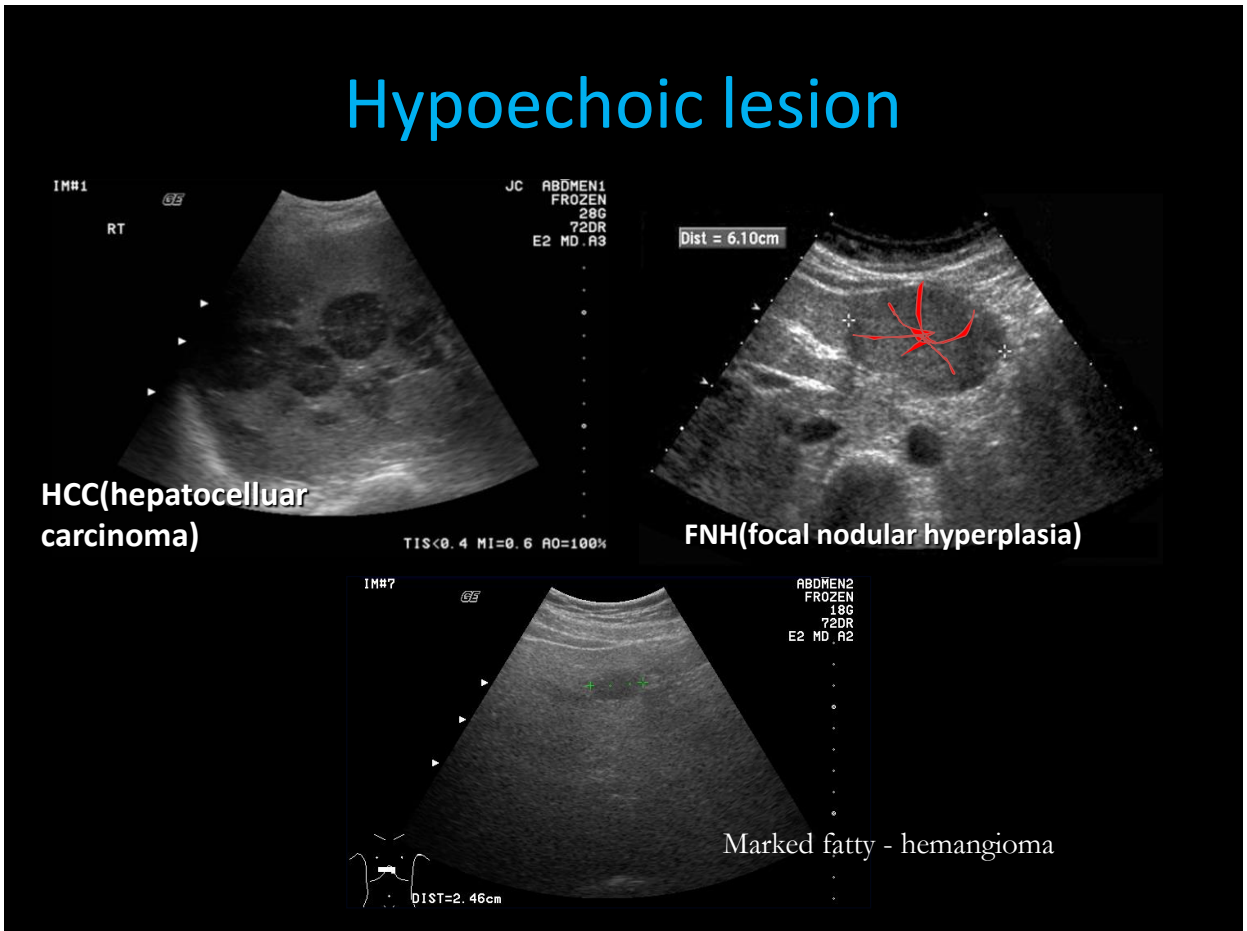
Liver mass

- Hyperechoic lesion
- Hypoechoic lesion
- Anechoic
- Heterogeneous
- Metastasis

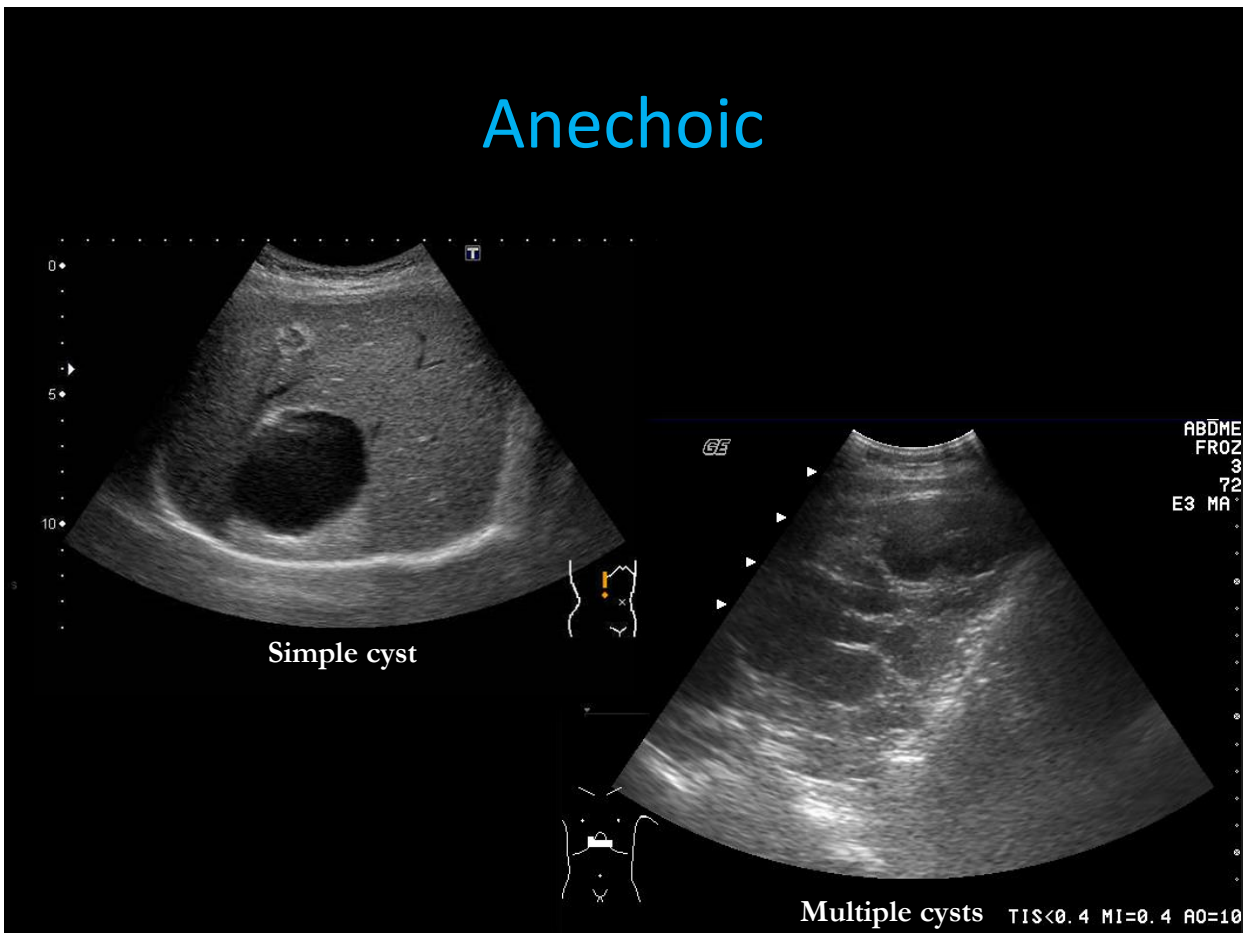
Hyperechoic lesion



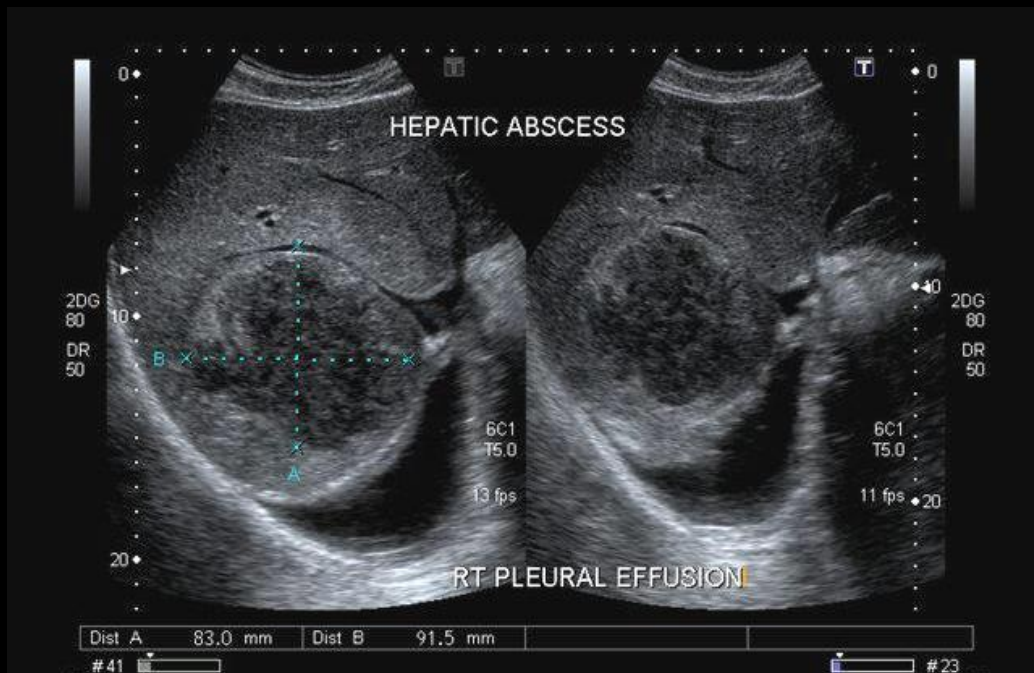
Hypoechoic lesion



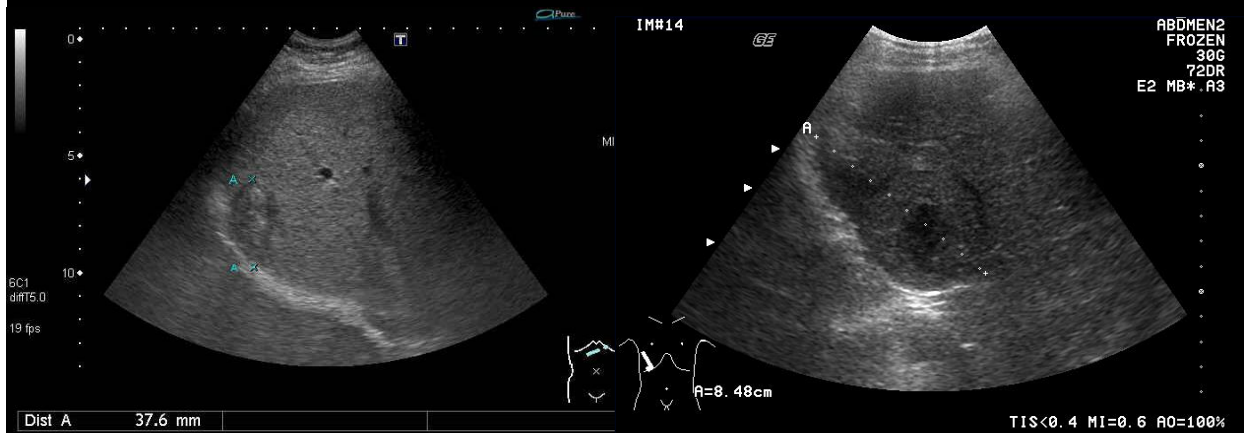
Anechoic



Heterogeneous



Heterogeneous

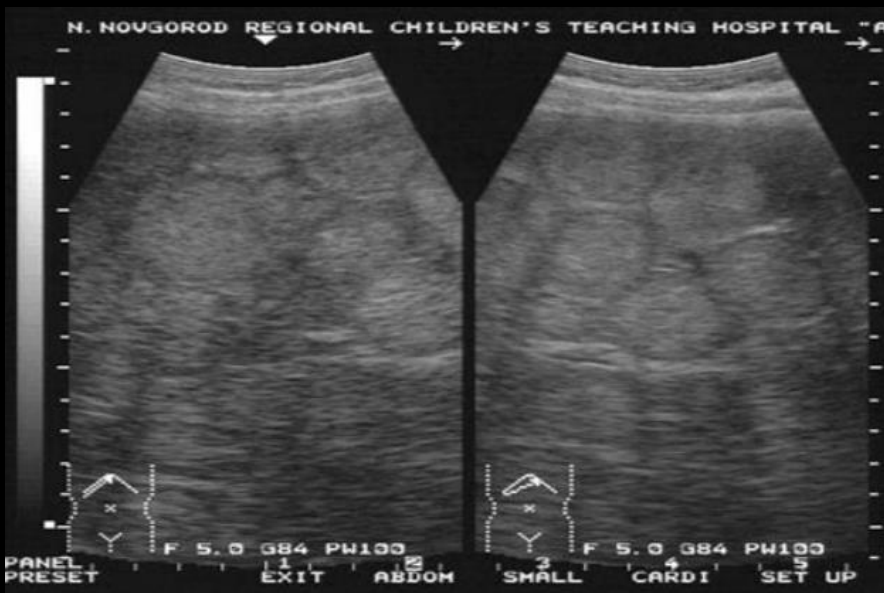


HCC Post RFA

HCC - necrosis

Metastasis

Heterogeneous

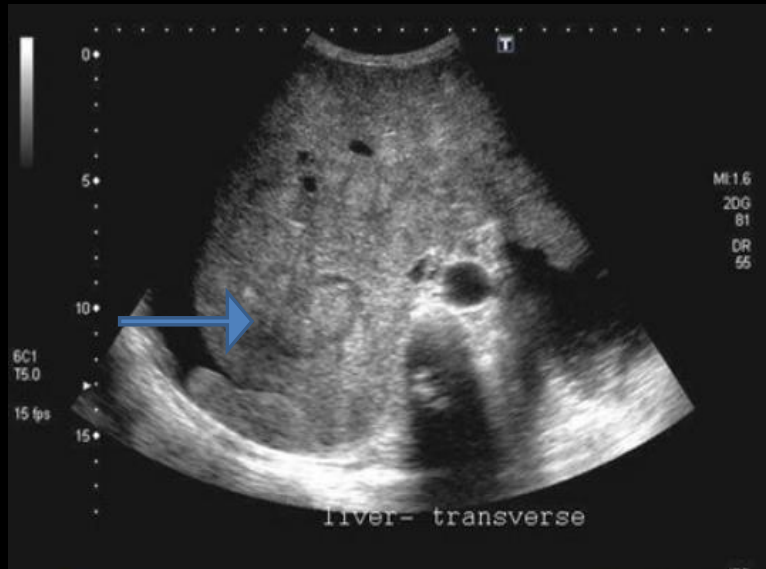


Multiple metastases in the liver

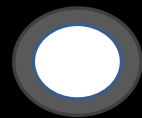
Cluster sign

Metastasis

Heterogeneous



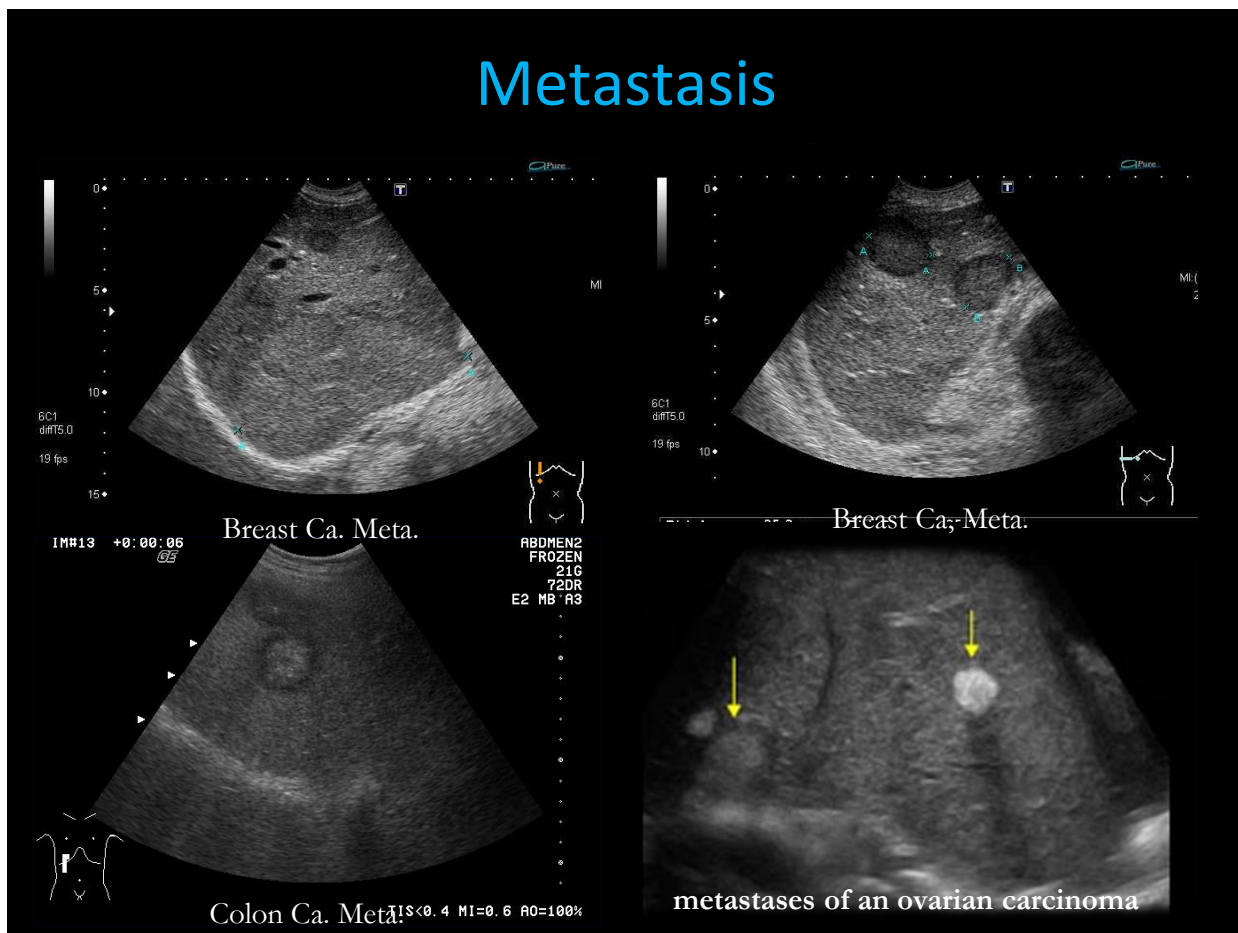
Target sign



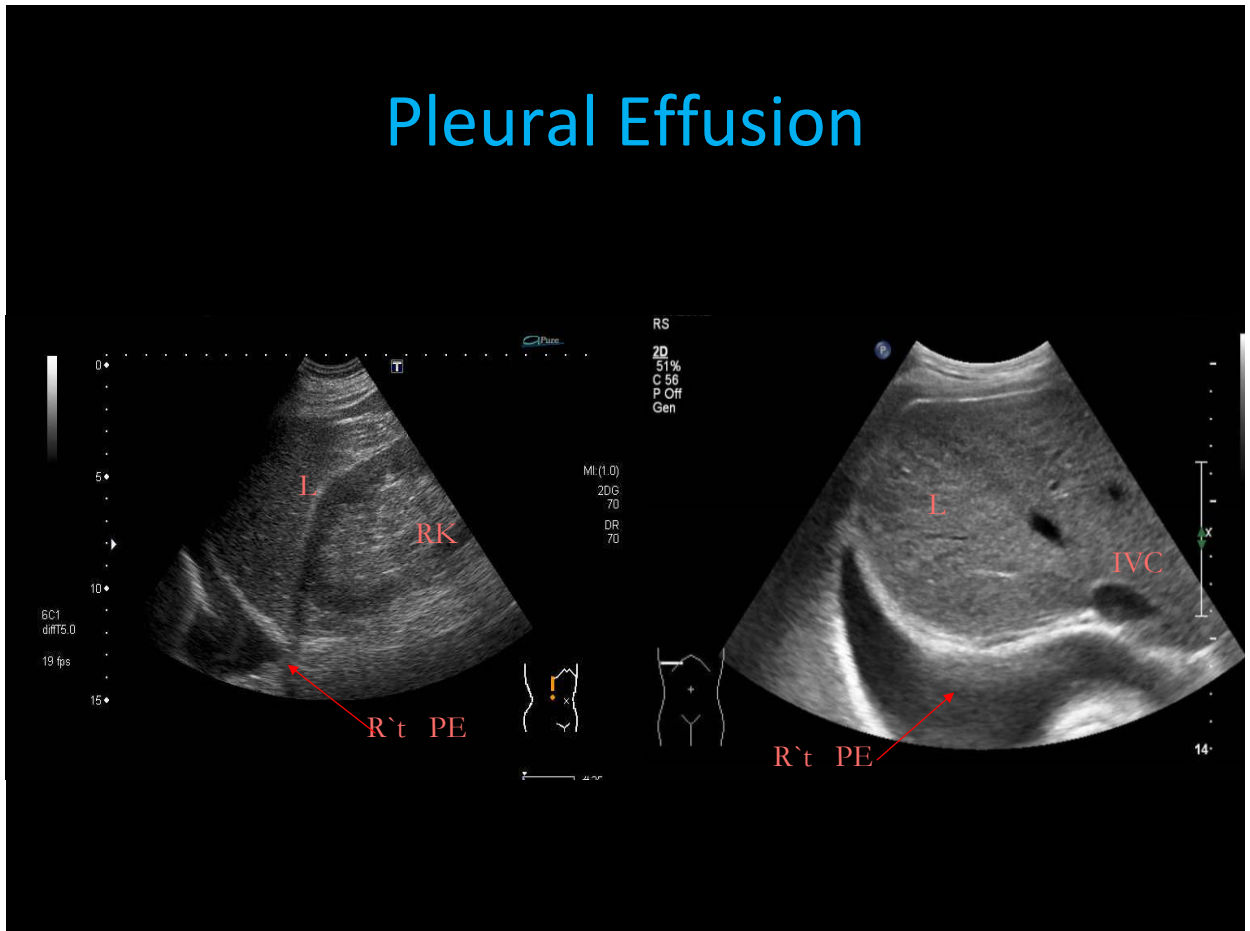
Bull's eye

Metastases in the liver

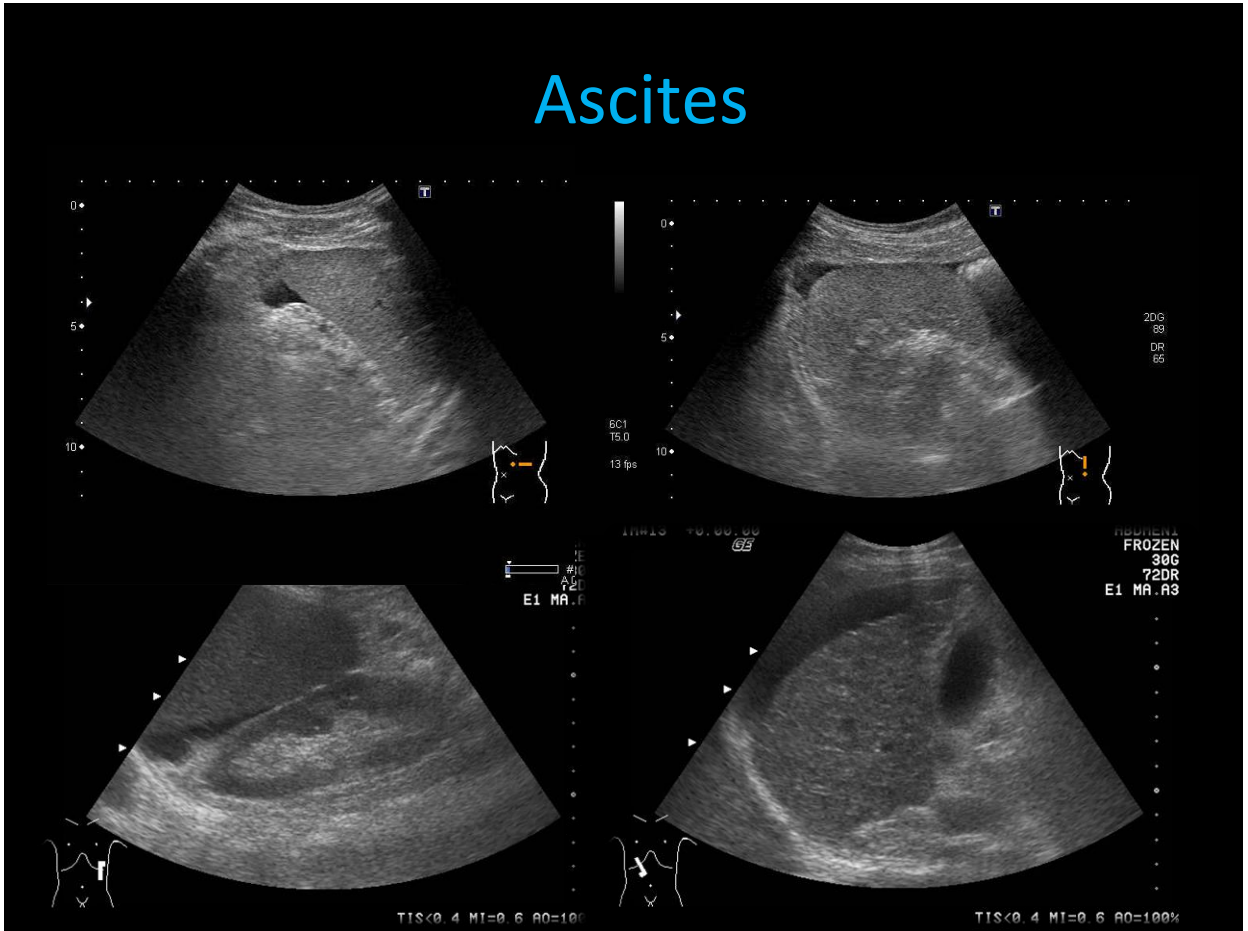
Metastasis



Pleural Effusion



Ascites



Gall bladder

Gall bladder

Size:

Long axis 6-12cm

Short axis 3-5cm

Contract < 5cm

Distended > 12cm when patient is fasting

Gall bladder

Wall thickness:

Measured in the side in contact with the liver.

Normally it is up to **3mm**

From **3-5mm** >>> suspect thick wall

Gall bladder

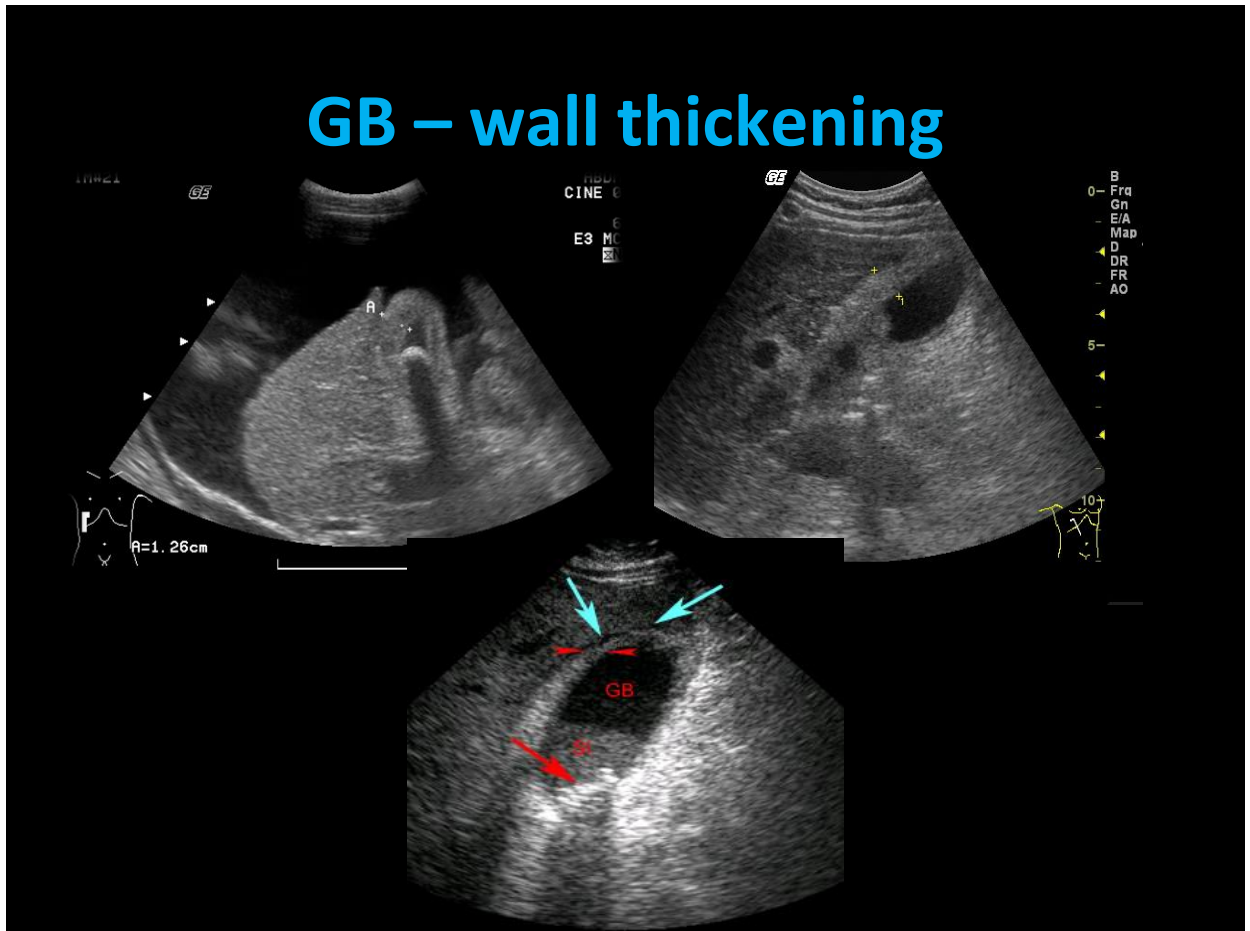
>5mm→It is a thick wall gall bladder which is seen in:

1. Cholecystitis(acute-chronic)
2. Ascites
3. Hepatitis(viral)

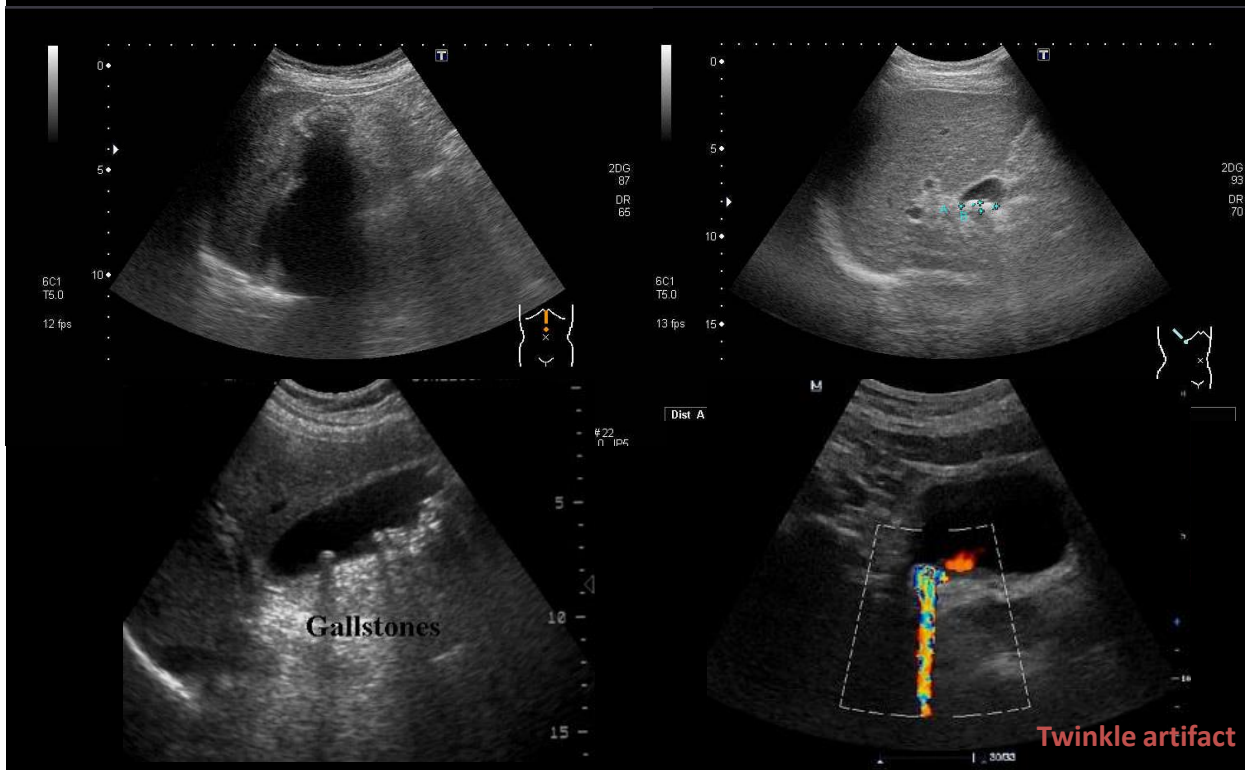
GB – wall thickening



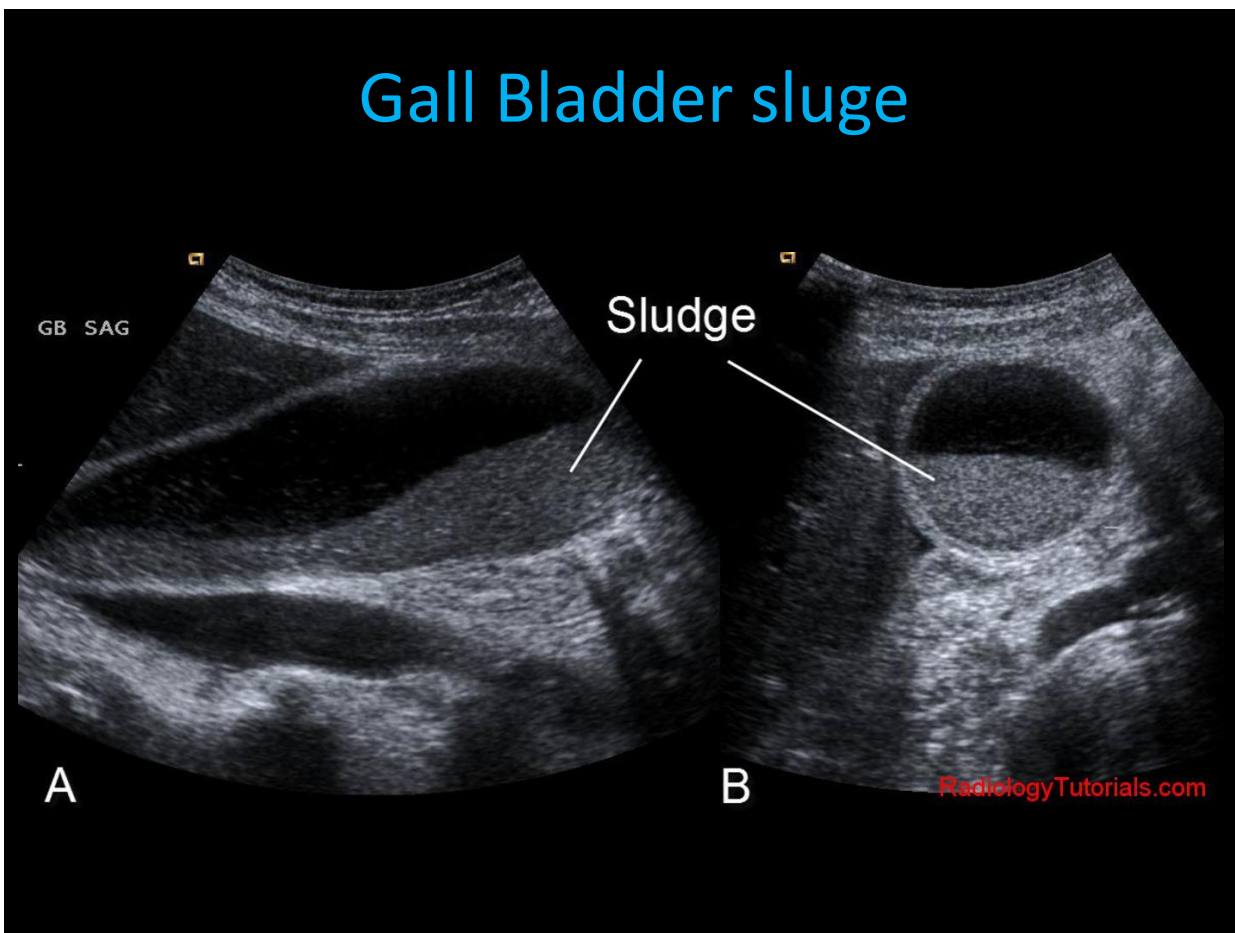
GB – wall thickening



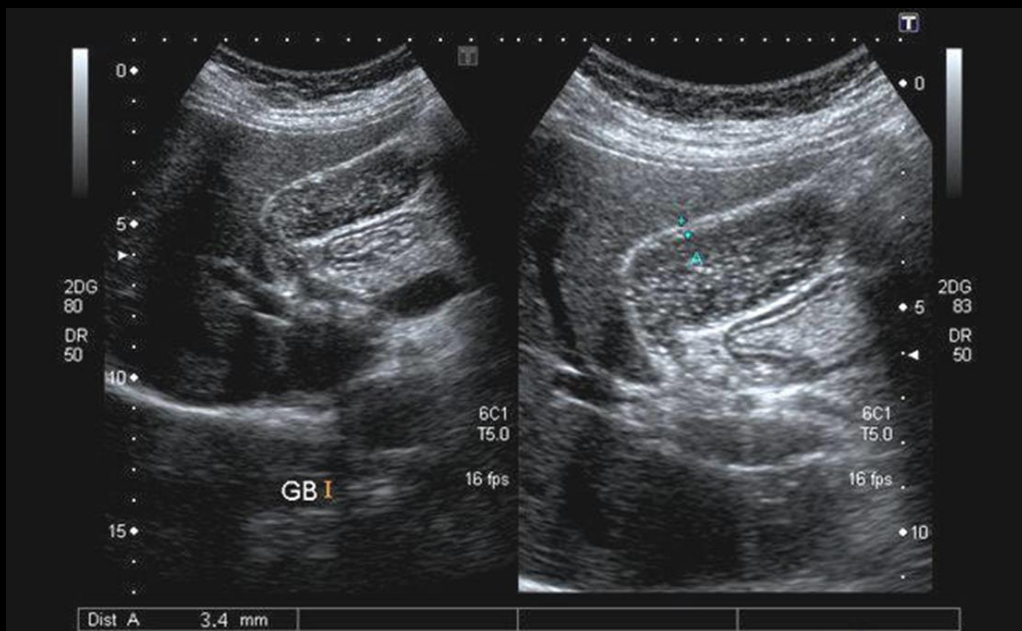
GB stone



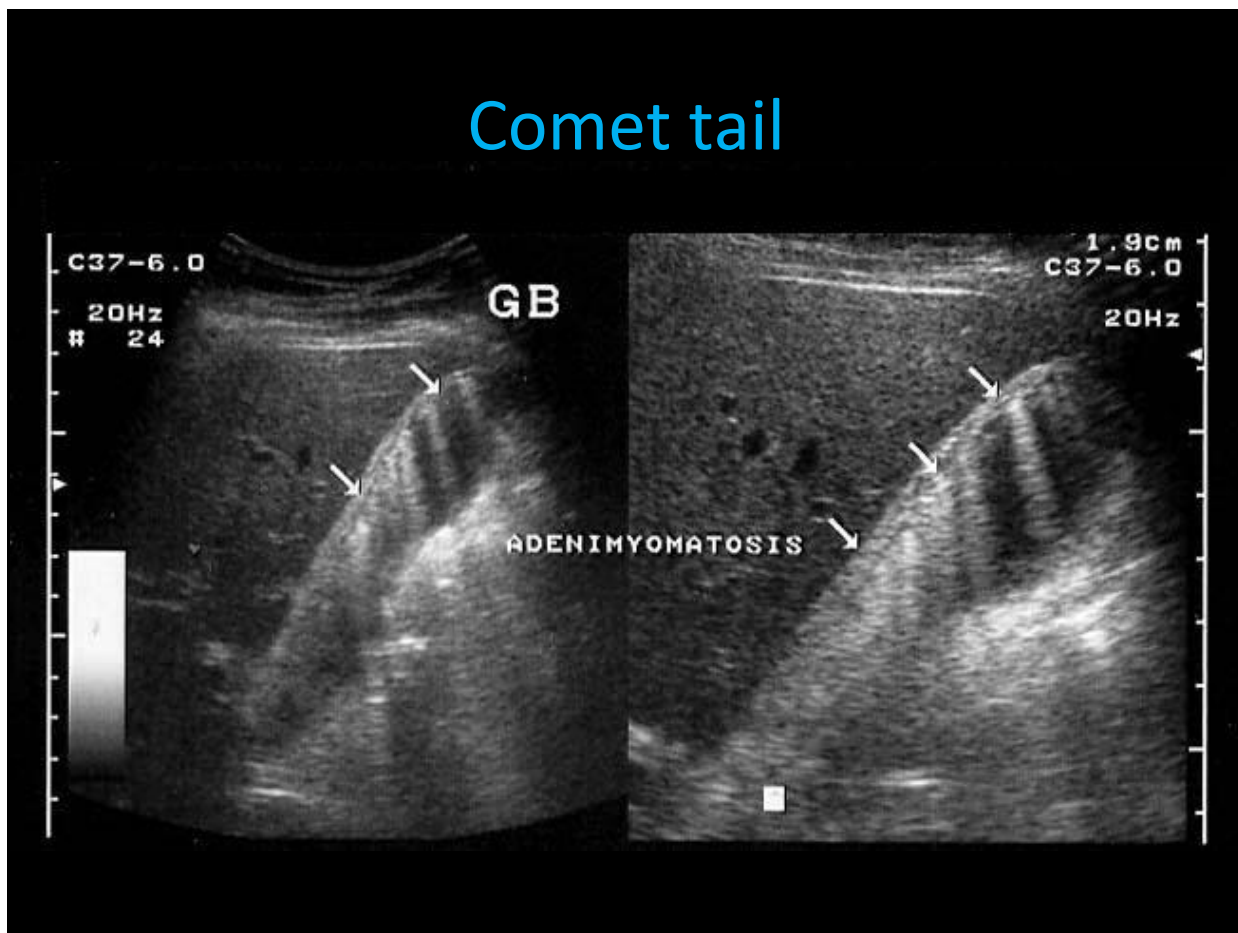
Gall Bladder sludge



Gall bladder mud



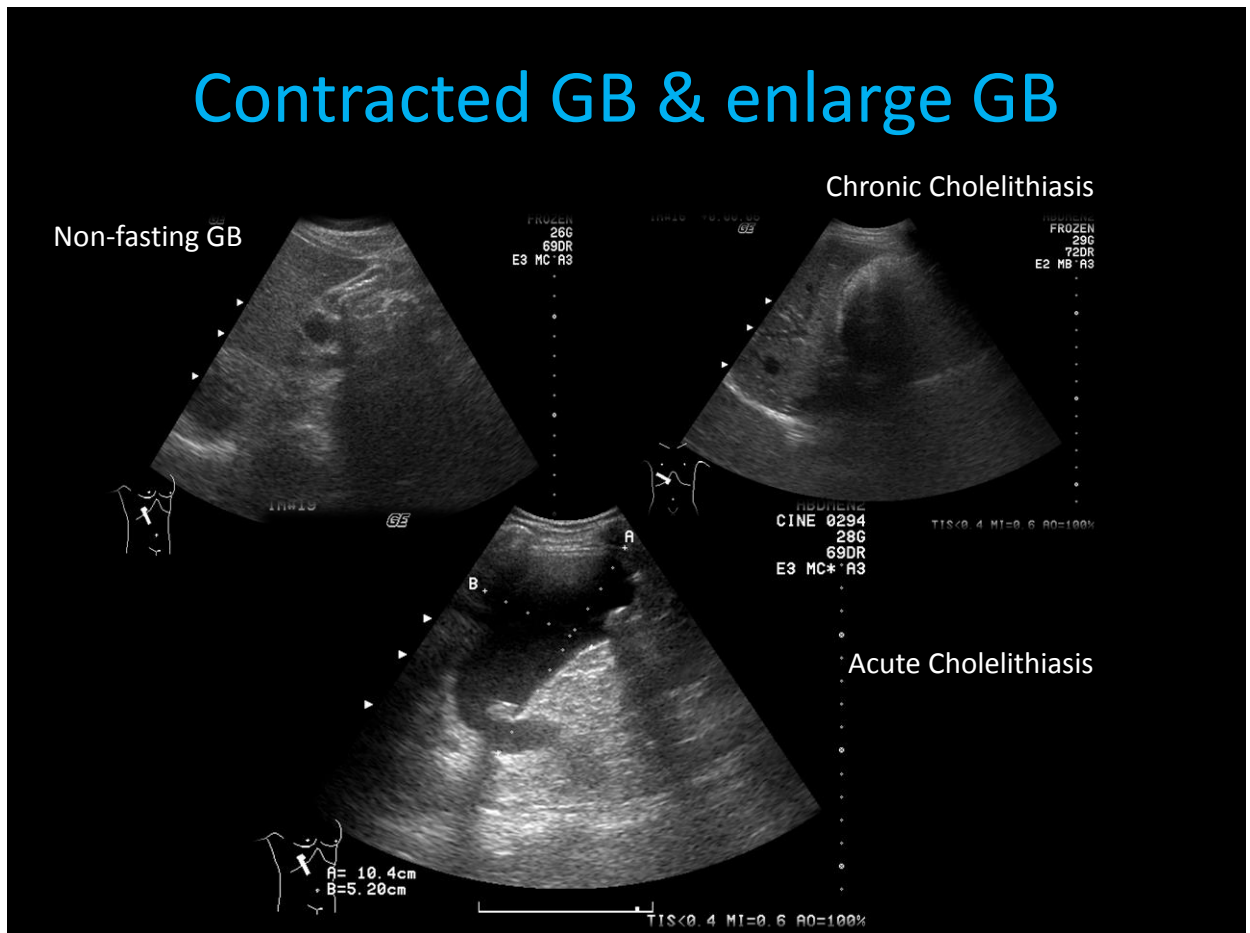
Comet tail



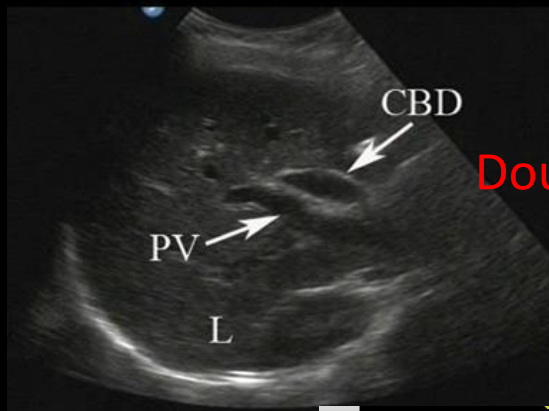
GB polyp



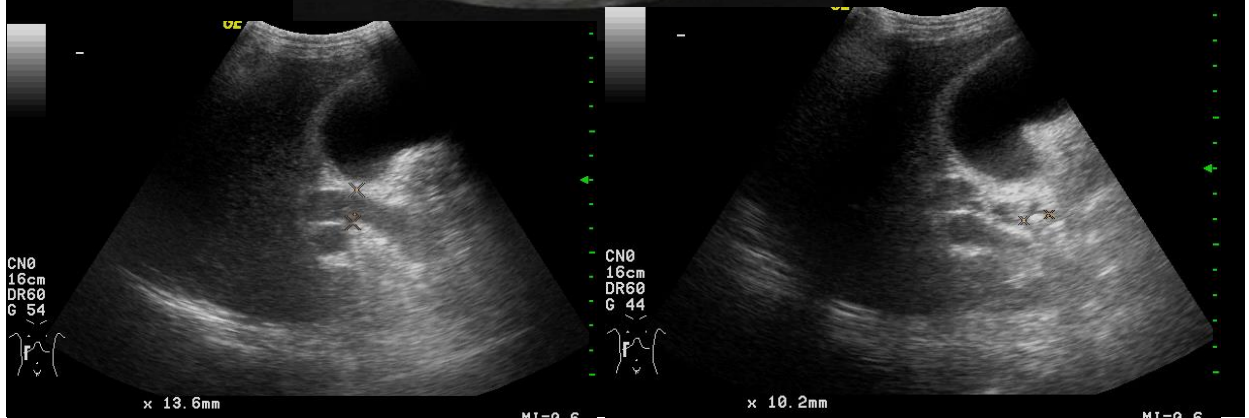
Contracted GB & enlarge GB

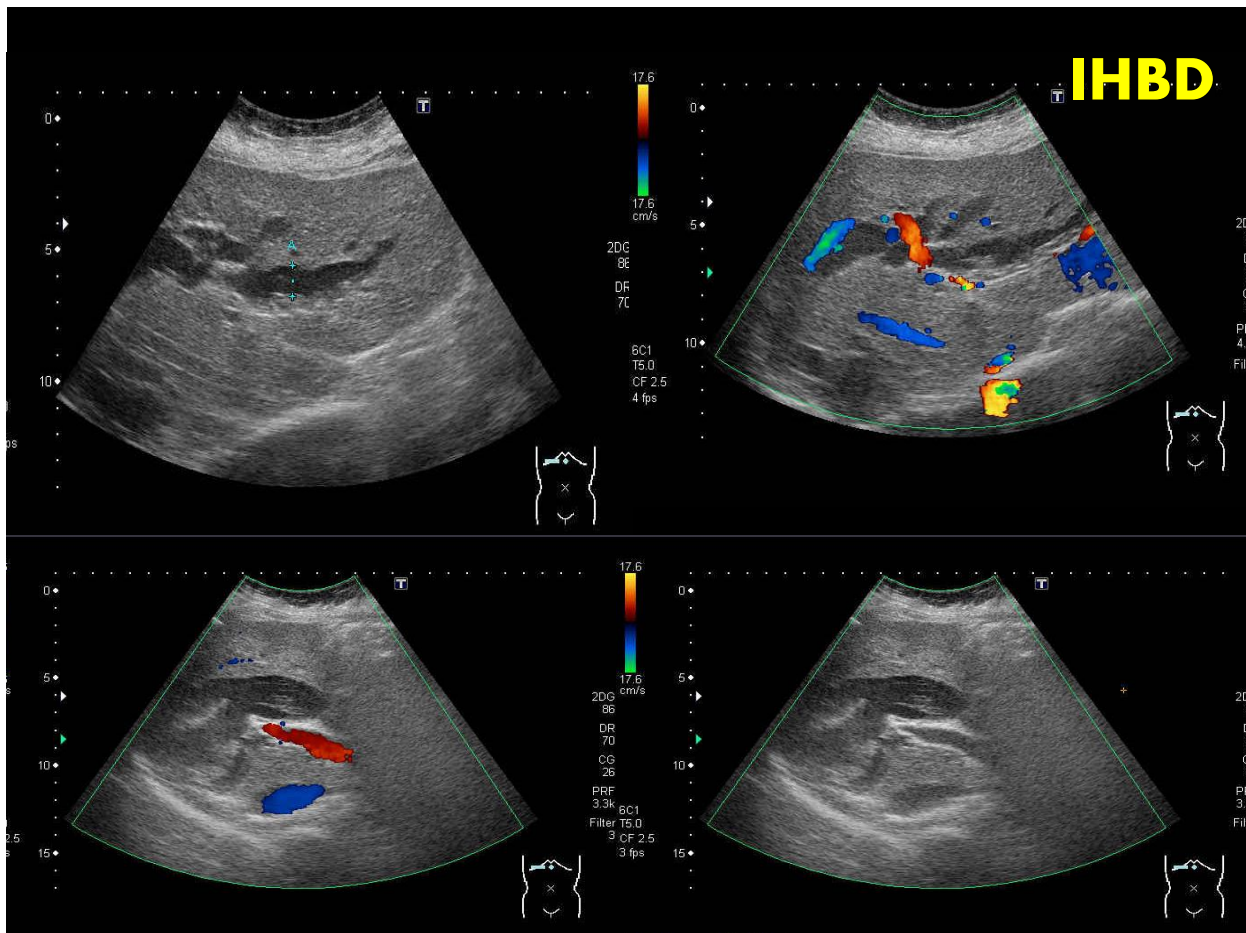


Common bile duct (CBD)

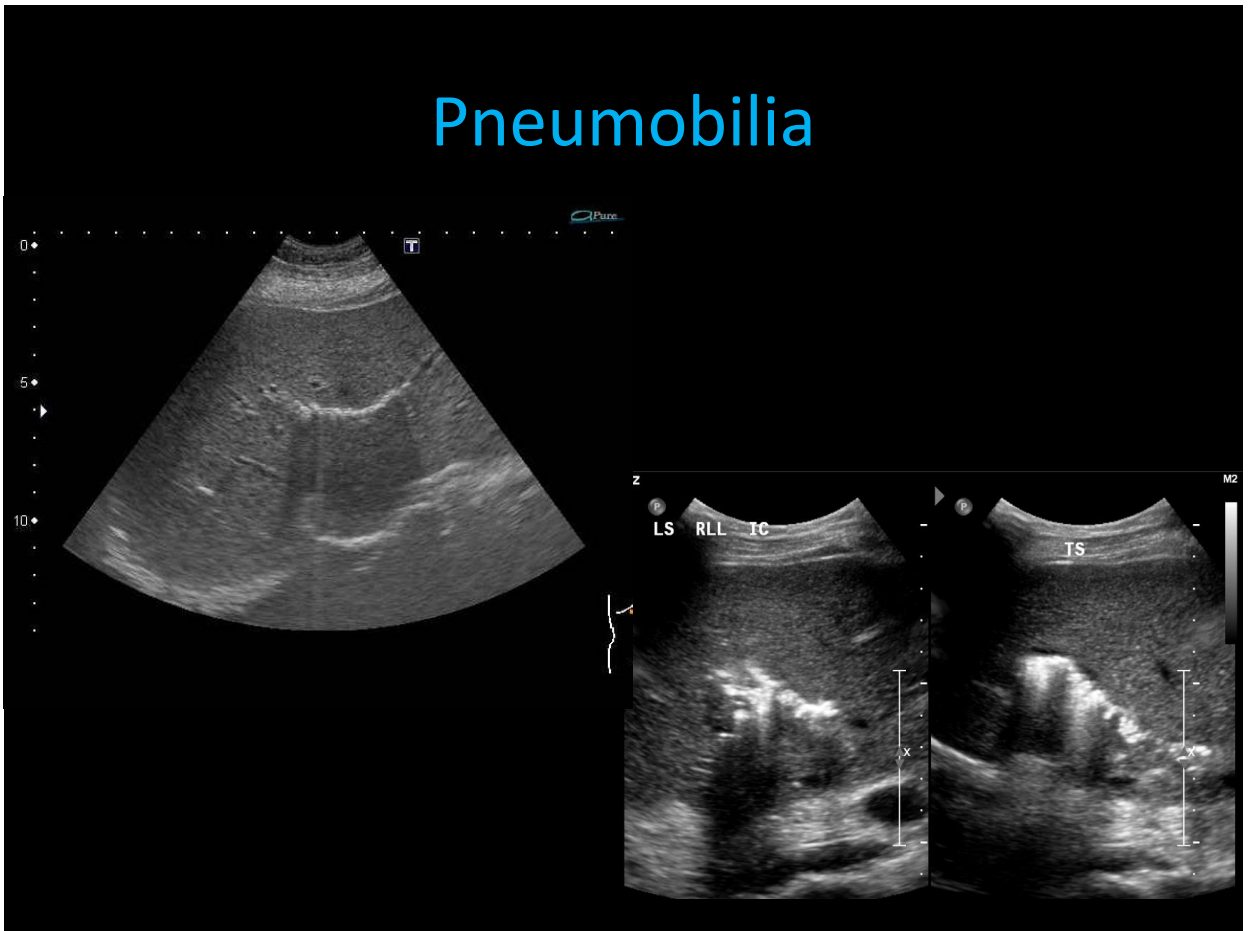


Double gun sign



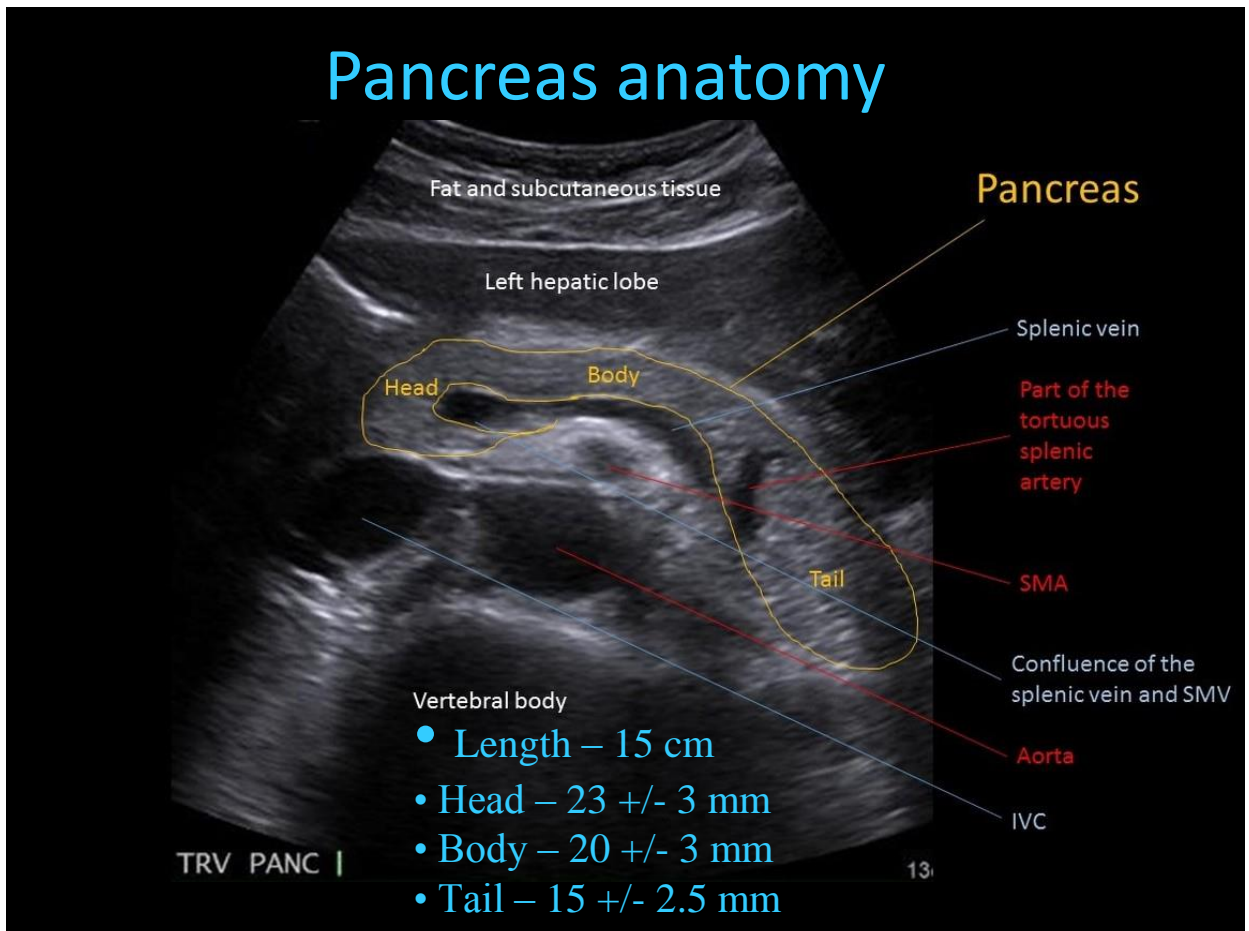


Pneumobilia



Pancreas

Pancreas anatomy



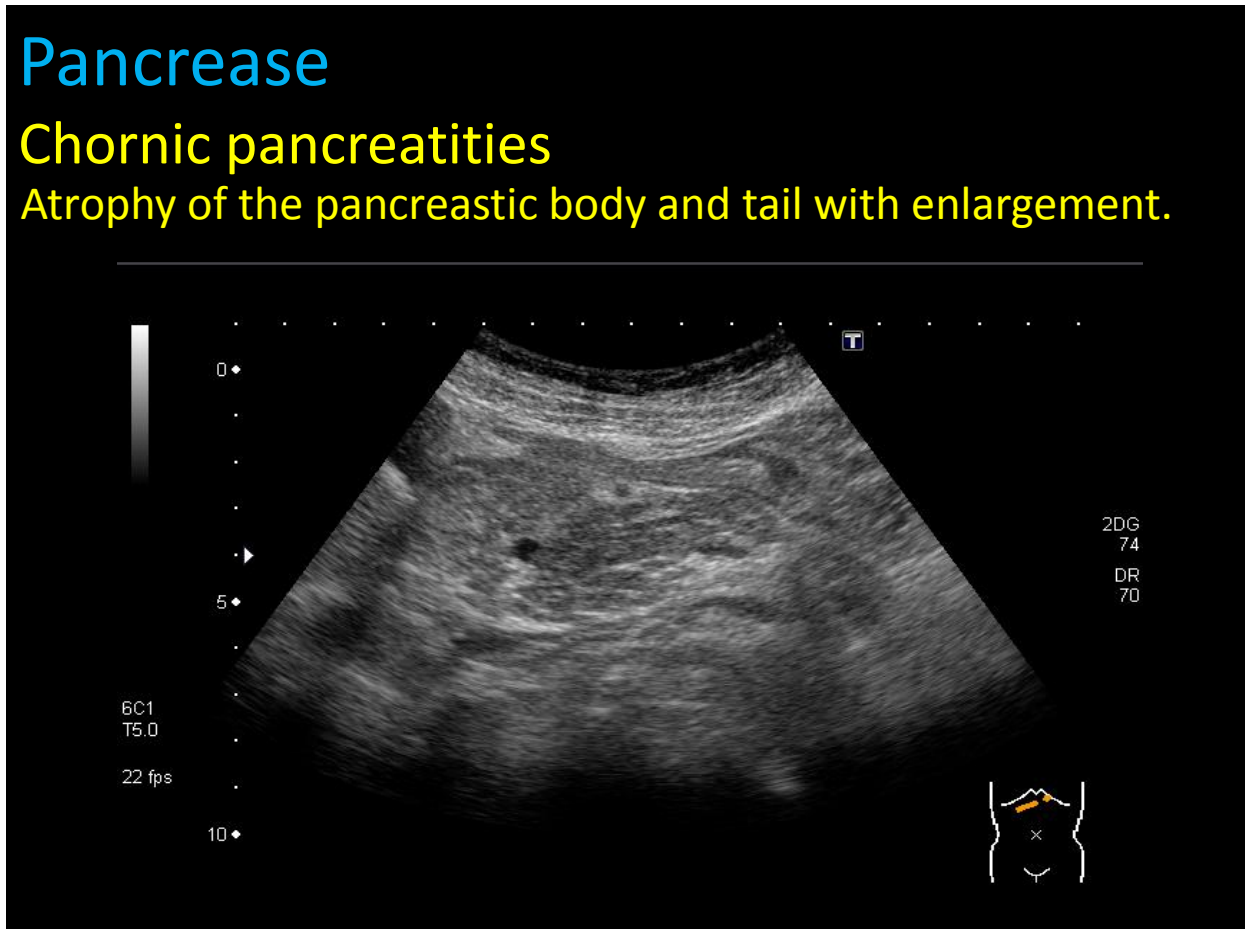
Pancreas

- Chronic pancreatitis
- Acute pancreatitis
- 1. Acute interstitial and edematous pancreatitis.(急性水腫間質性胰臟炎)
- 2. Acute necrotizing pancreatitis.(急性壞死性胰臟炎)

Pancreas

Chronic pancreatitis

Atrophy of the pancreatic body and tail with enlargement.



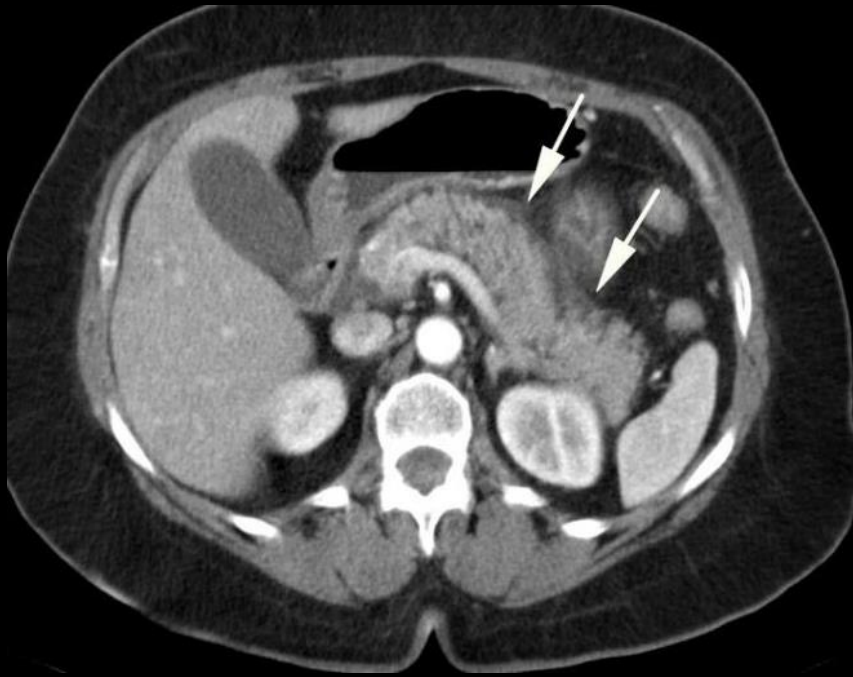
Pancreatitis

- Acute pancreatitis
- 1. 1.Acute interstitial and edematous pancreatitis.(急性水腫間質性胰臟炎)

2.Acute necrotizing pancreatitis.(急性壞死性胰臟炎)

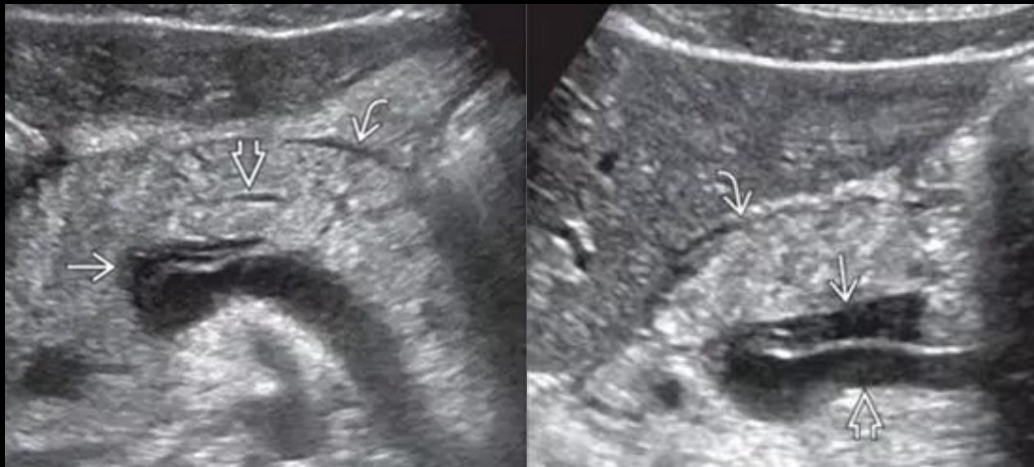
Acute interstitial and edematous pancreatitis.(急性水腫間質性胰臟炎)

- These patients have no organ failure.
- Most of them have small amount fluid collections and no necrosis.
- These patients usually recover by the end of the **first week**.
- **Fat stranding** (胰臟周圍脂肪有輕微發炎之現象)



Acute interstitial pancreatitis. Normal enhancing pancreas with swelling and little peripancreatic fat stranding (arrows).

Acute interstitial pancreatitis.



2.Acute necrotizing pancreatitis

Clinical features

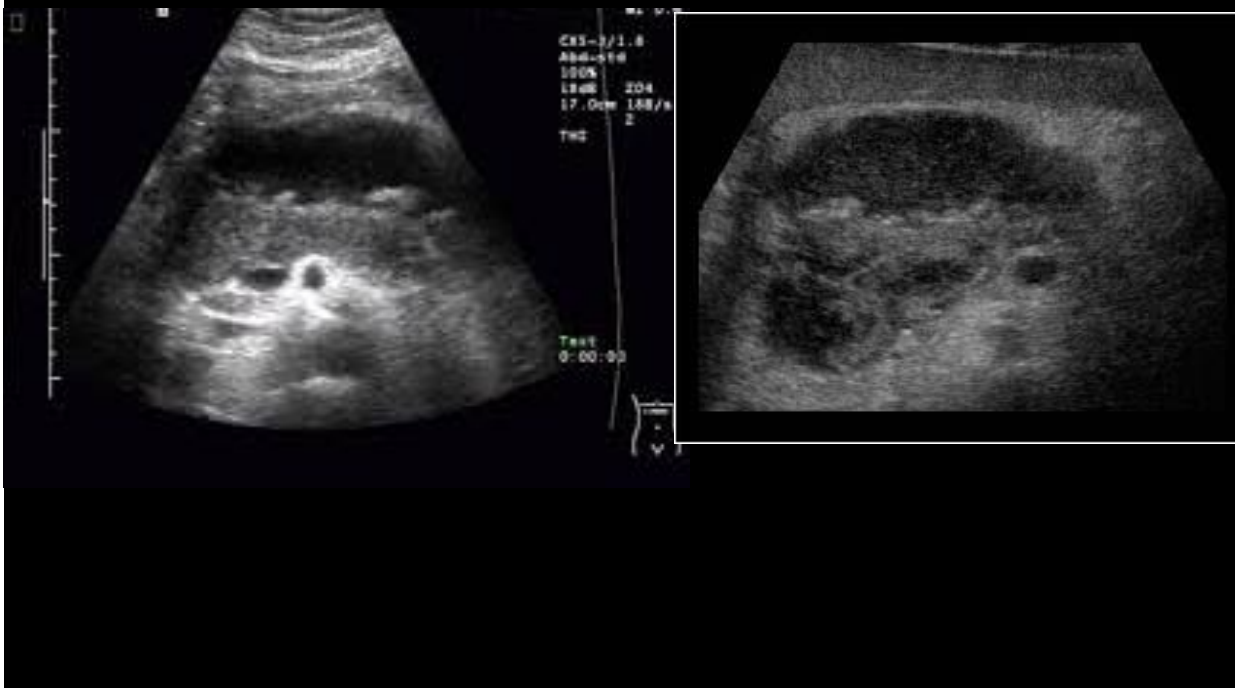


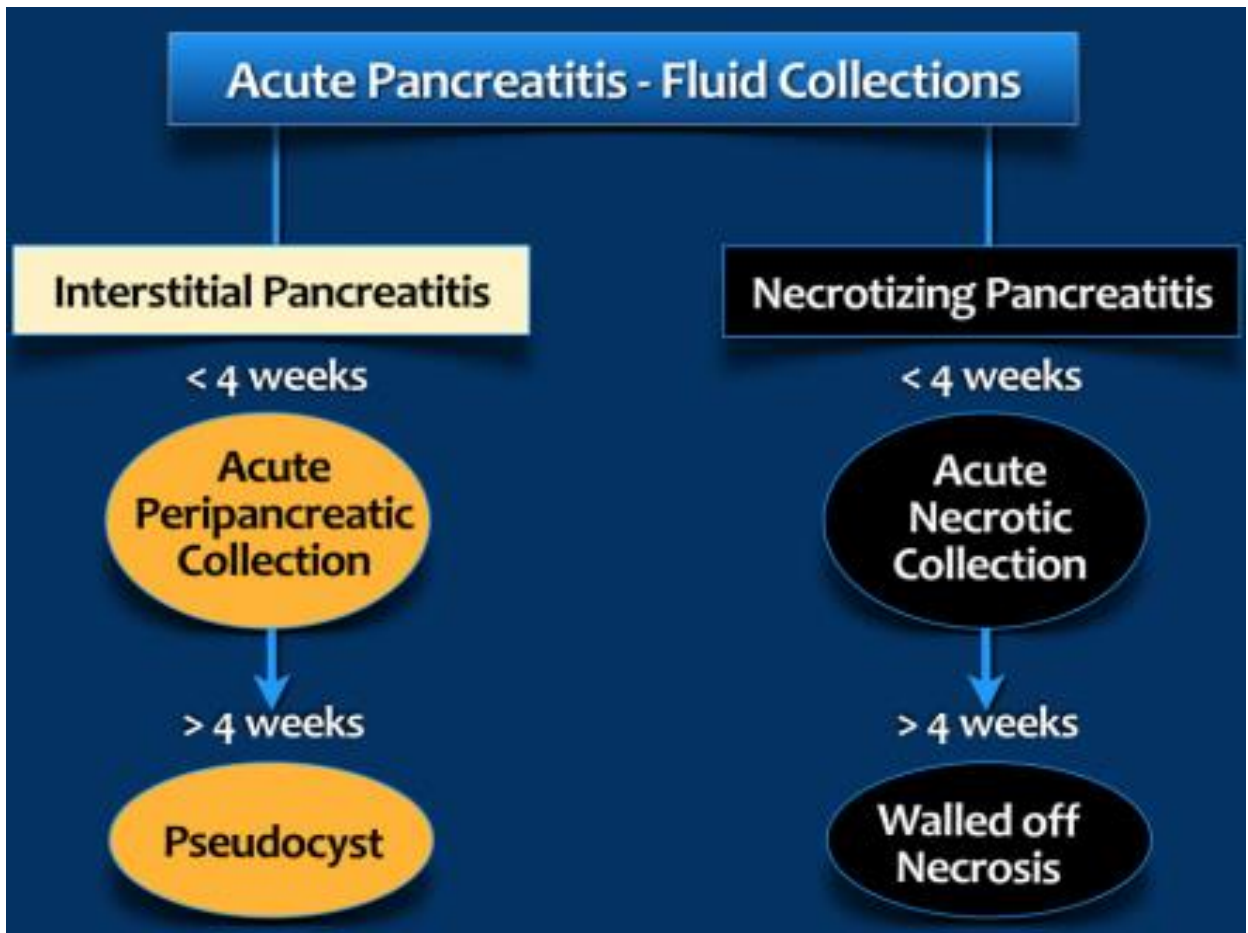
Cullens sign



Grey turners sign

Acute necrotizing pancreatitis





Pseudocyst

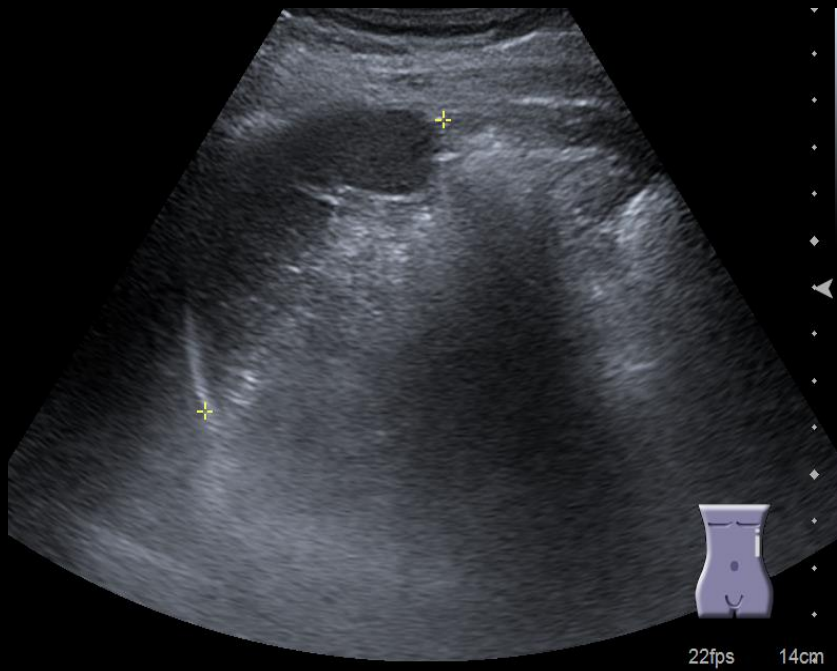


Aorta

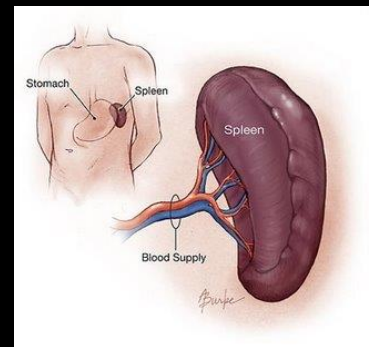


Spleen

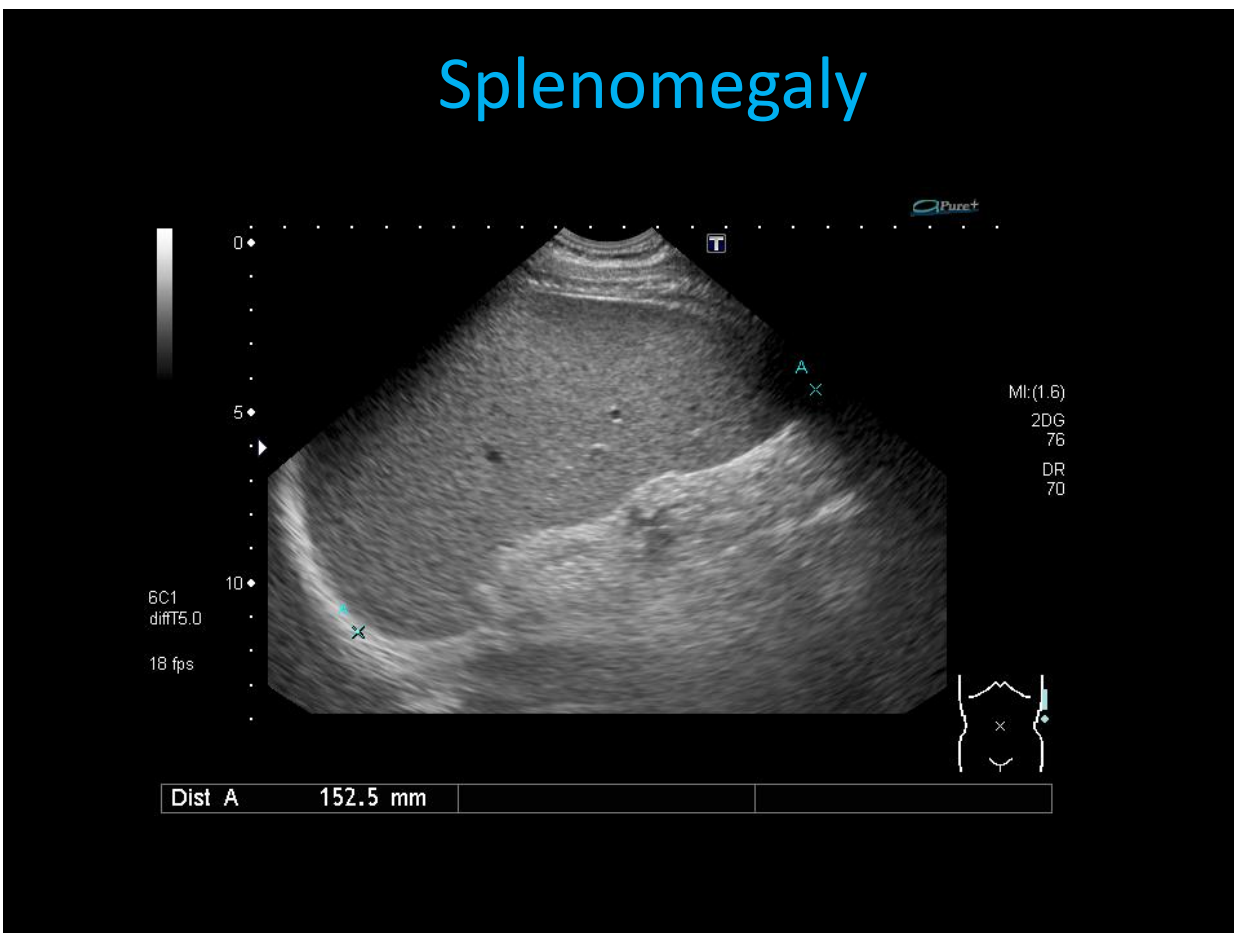
Spleen



6C1 HD / Abdomen
General
2D _____ 100%
THI / H4.00 MHz
10 dB / DR 65
ASC 3 / DTCE M
Map E / ST 2
D=8.38 cm



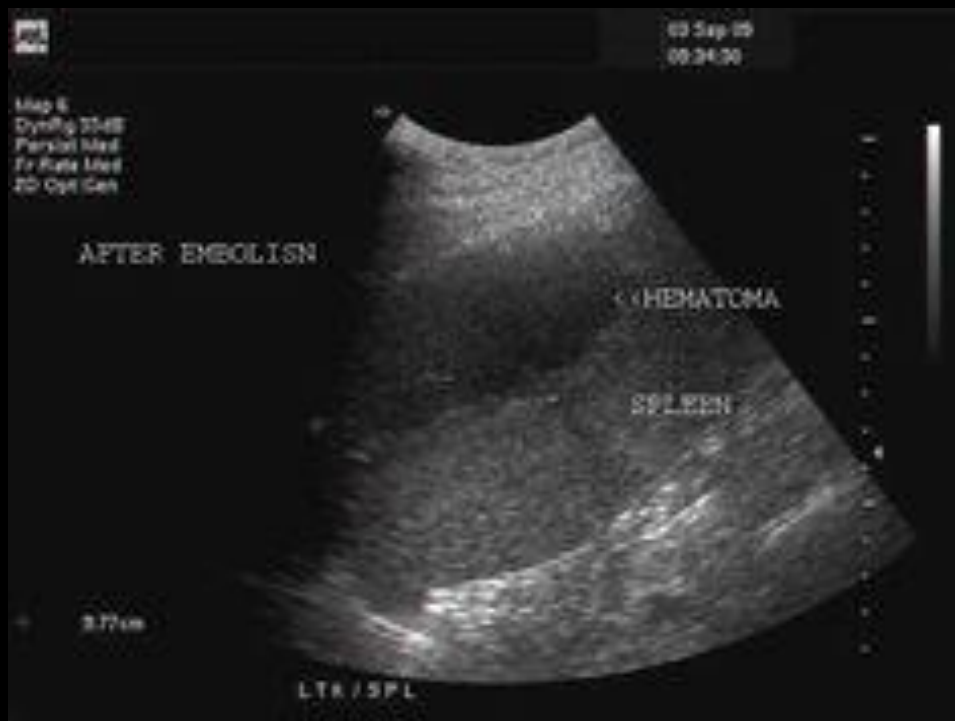
Splenomegaly



Accesarry spleen



Spleen Hematoma





Spleen

Hemosidrosis:

- 1.White dots in spleen
- 2.Means portal hypertension

Spleen

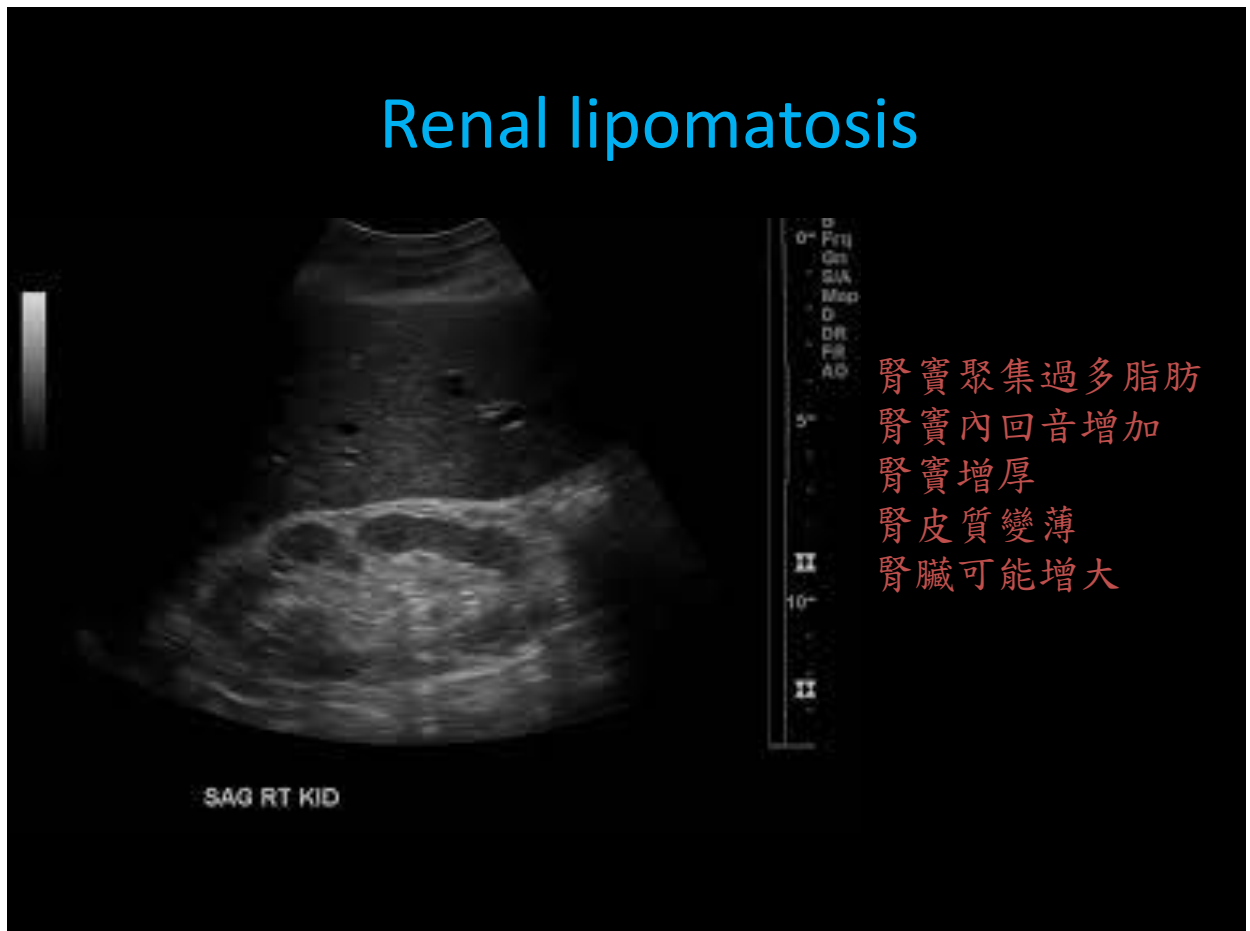


Kidney

Unilateral Enlarged Kidney

- Compensatory hypertrophy
- Renal lipomatosis
- Focal mass
- Hydronephrosis / pyonephrosis

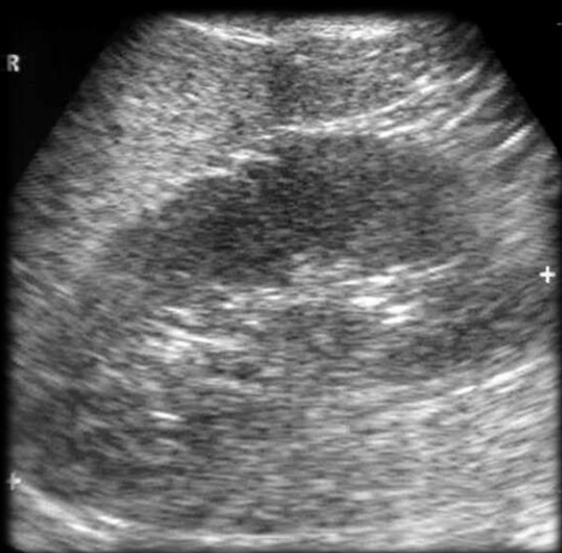
Renal lipomatosis



Bilateral Enlarged Kidney - DM

RK: 138.5 mm

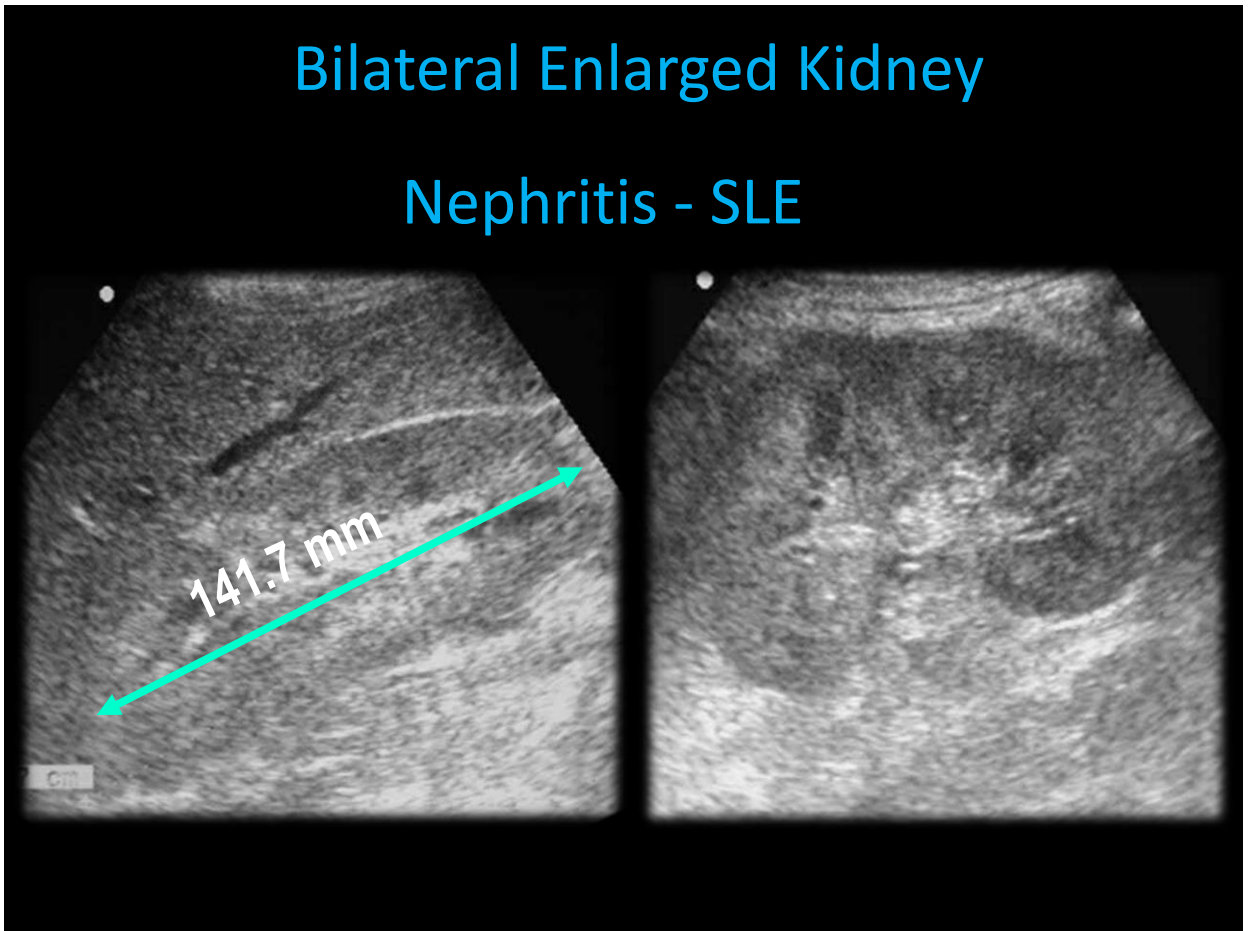
LK: 149.6 mm



腎臟變大，皮質增厚，皮質回音增強

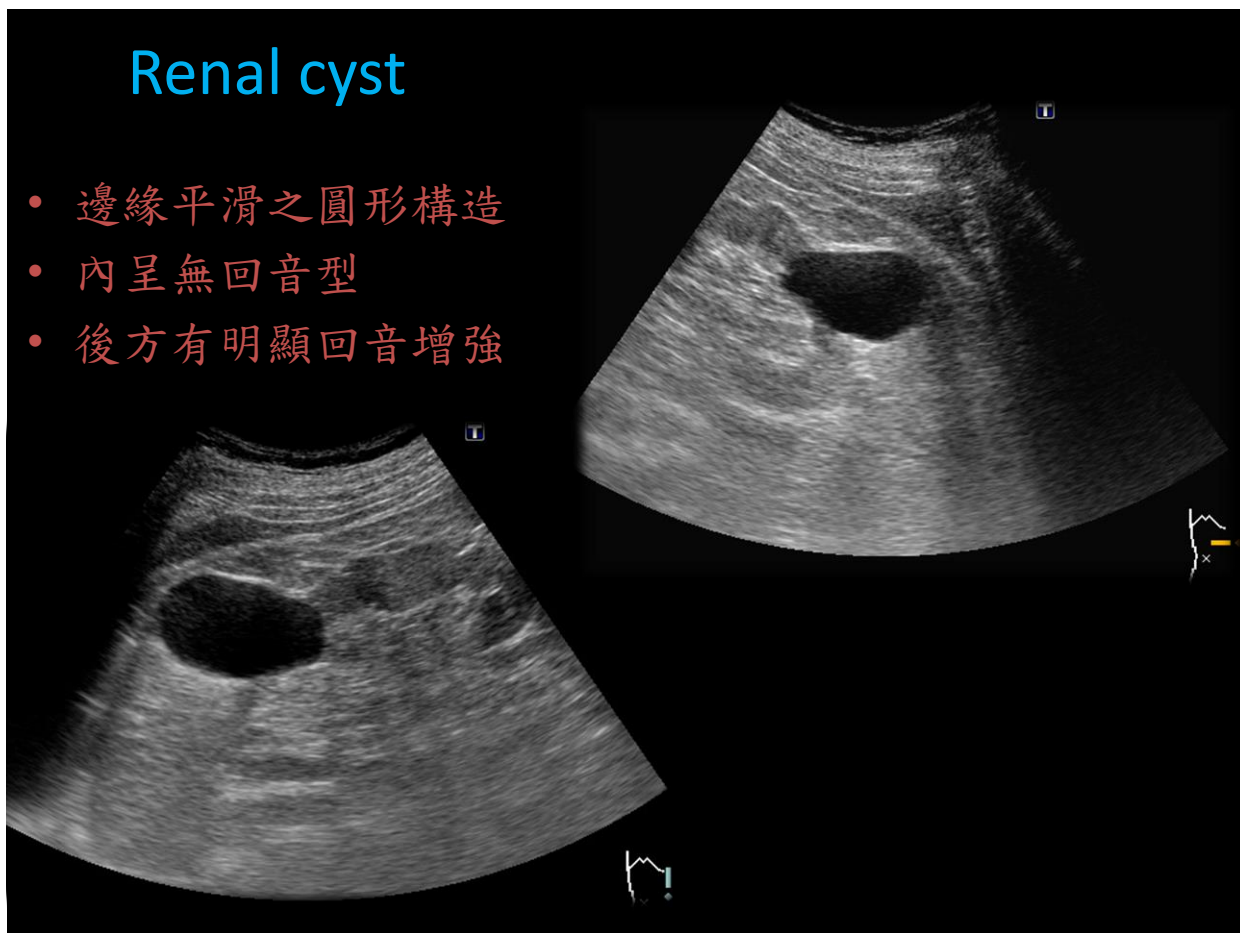
Bilateral Enlarged Kidney

Nephritis - SLE

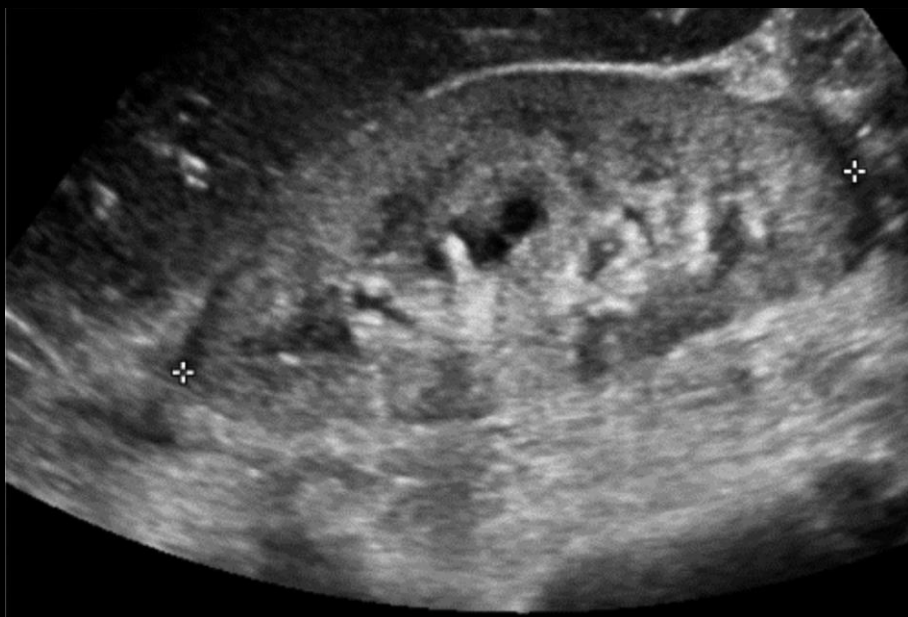


Renal cyst

- 邊緣平滑之圓形構造
- 內呈無回音型
- 後方有明顯回音增強

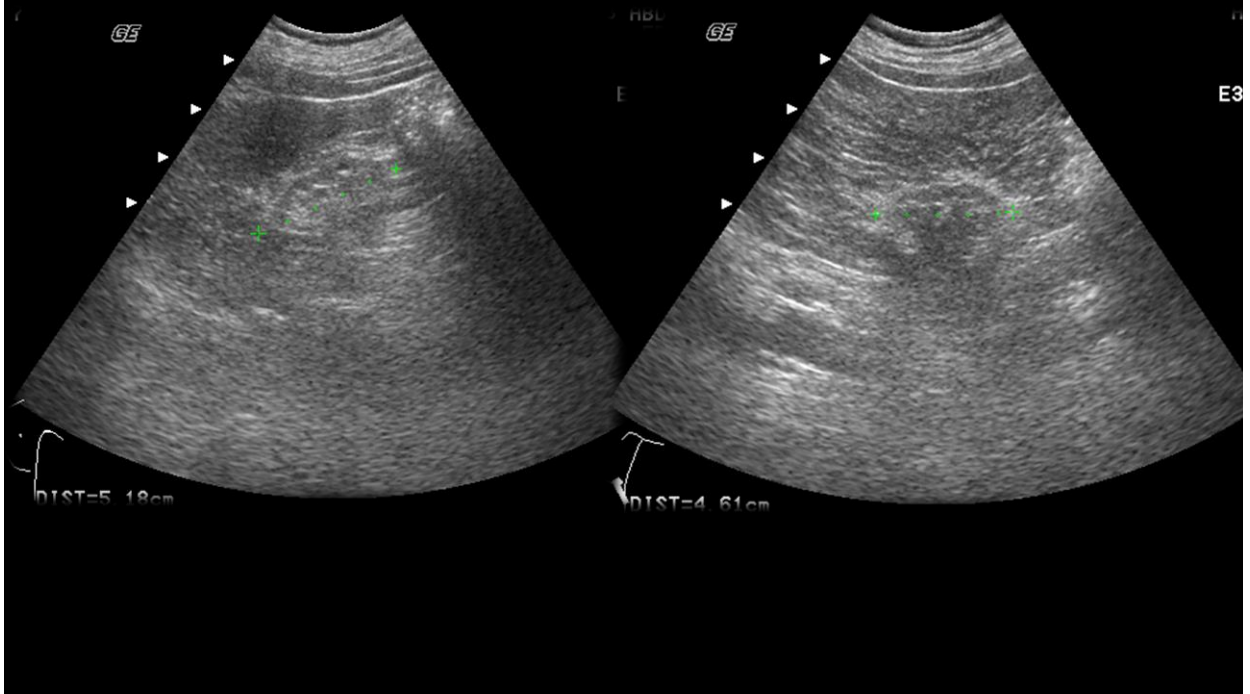


Nephrotic syndrome(腎病症候群)



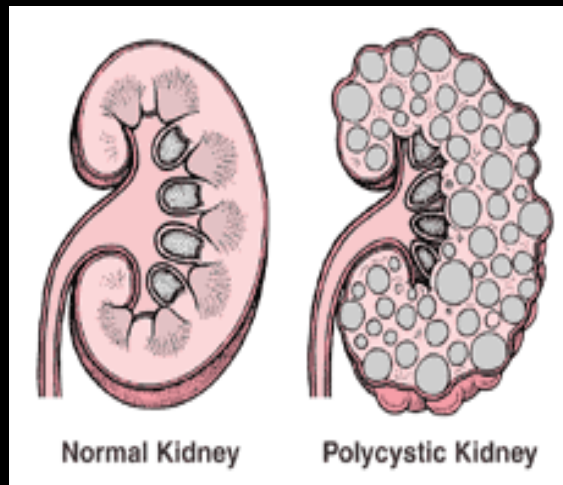
Bilateral Reduced Kidney

End-stage renal disease



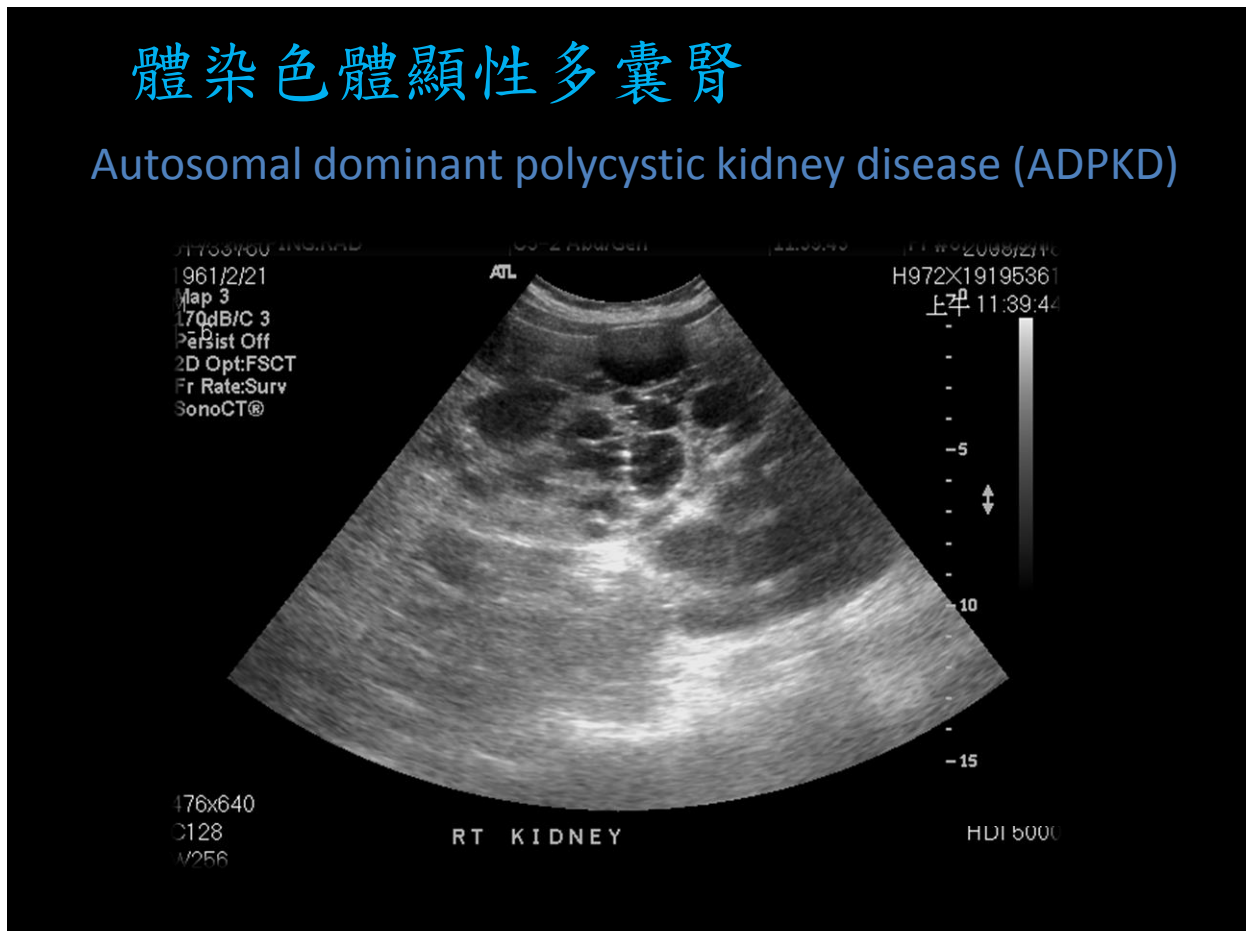
Polycystic kidney (PCK)

- 整個腎臟佈滿囊腫
- 腎臟腫大
- 兩側腎臟皆有病變
- 腎臟邊界模糊不清



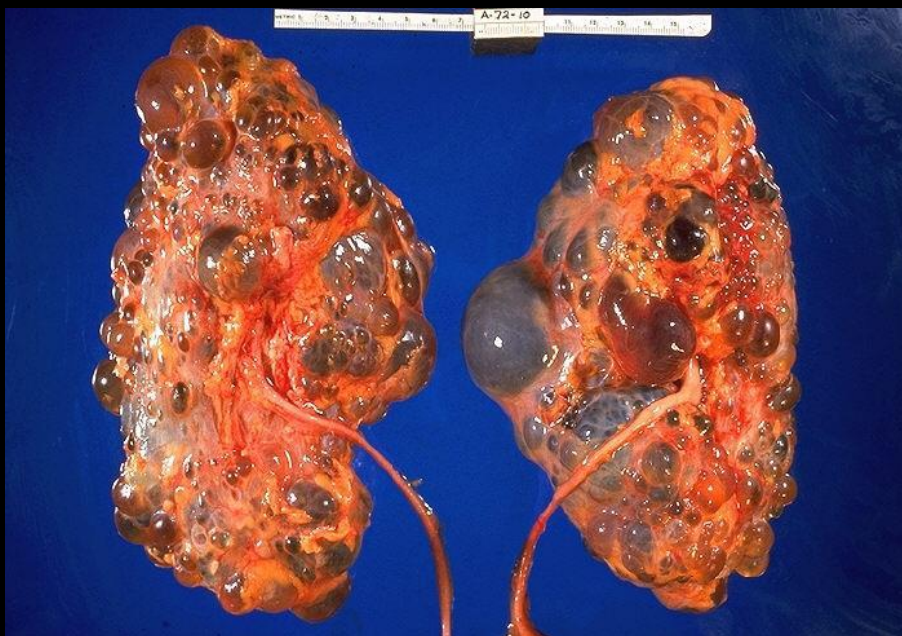
體染色體顯性多囊腎

Autosomal dominant polycystic kidney disease (ADPKD)

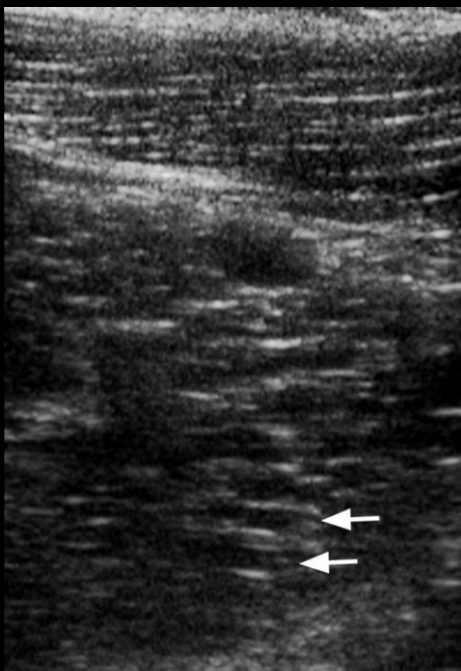


體染色體顯性多囊腎

Autosomal dominant polycystic kidney disease (ADPKD)



體染色體隱性多囊腎



12歲女性，瀰漫性腎小管擴張

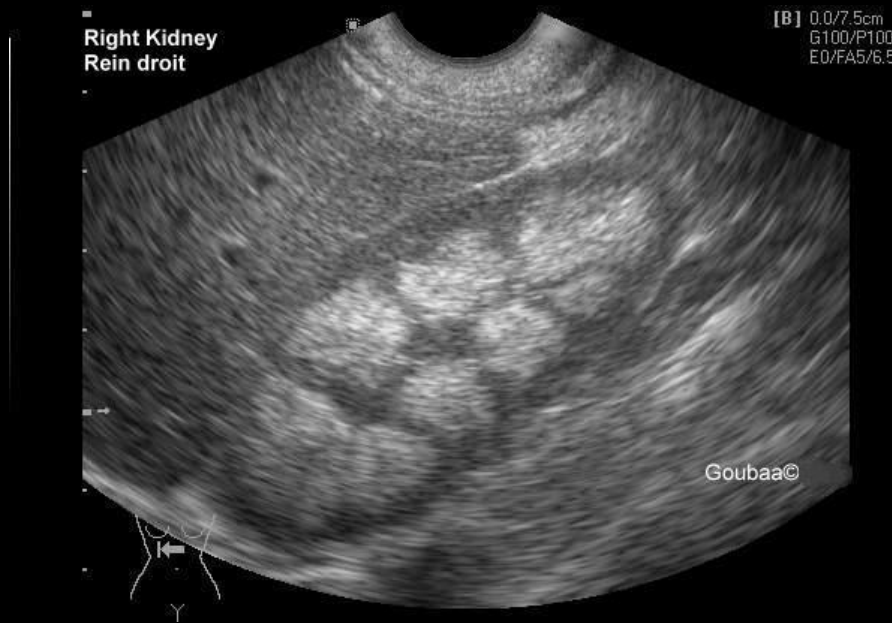
Renal stone



Renal stone(Milk Calcium)



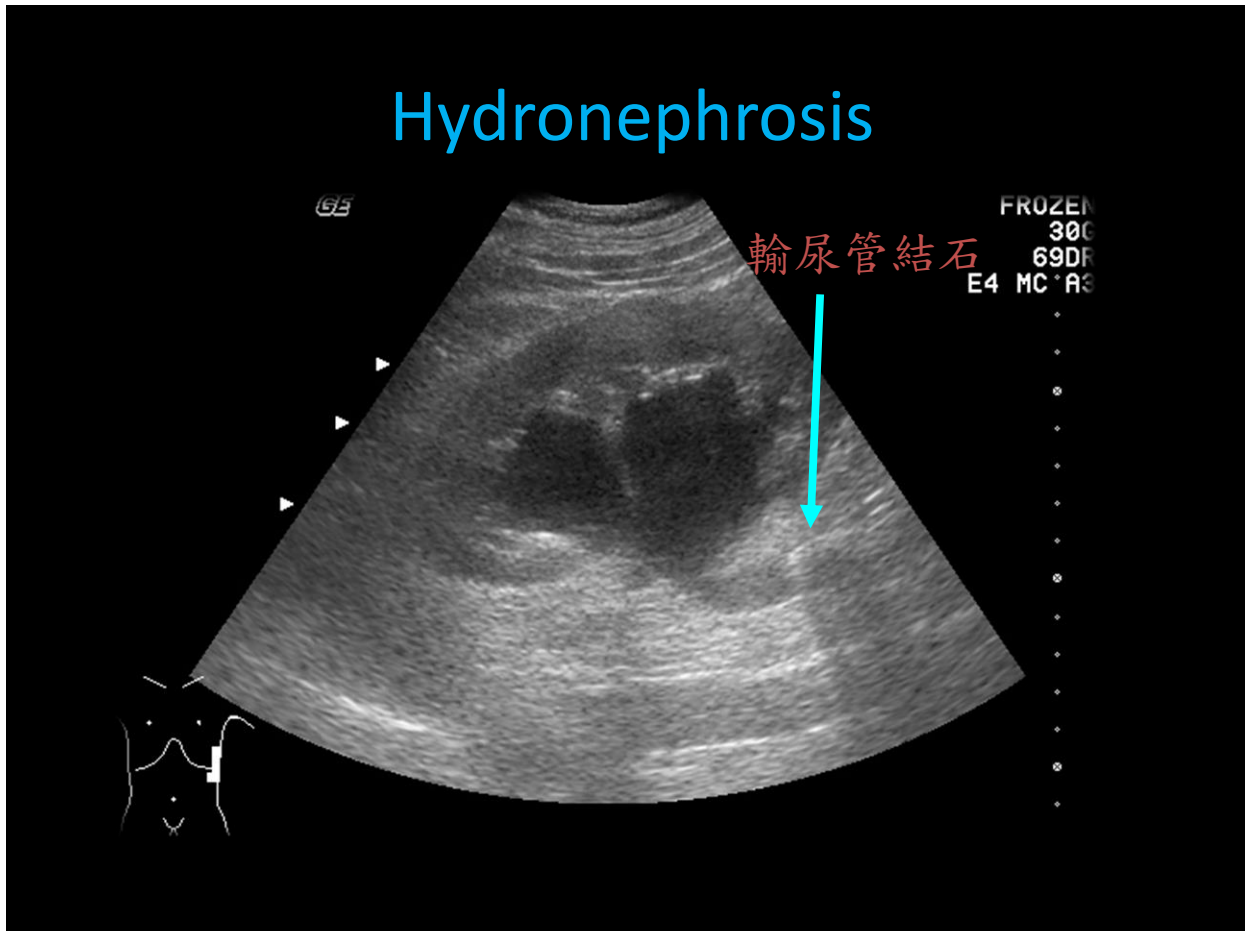
Renal stone(gouty kidney)



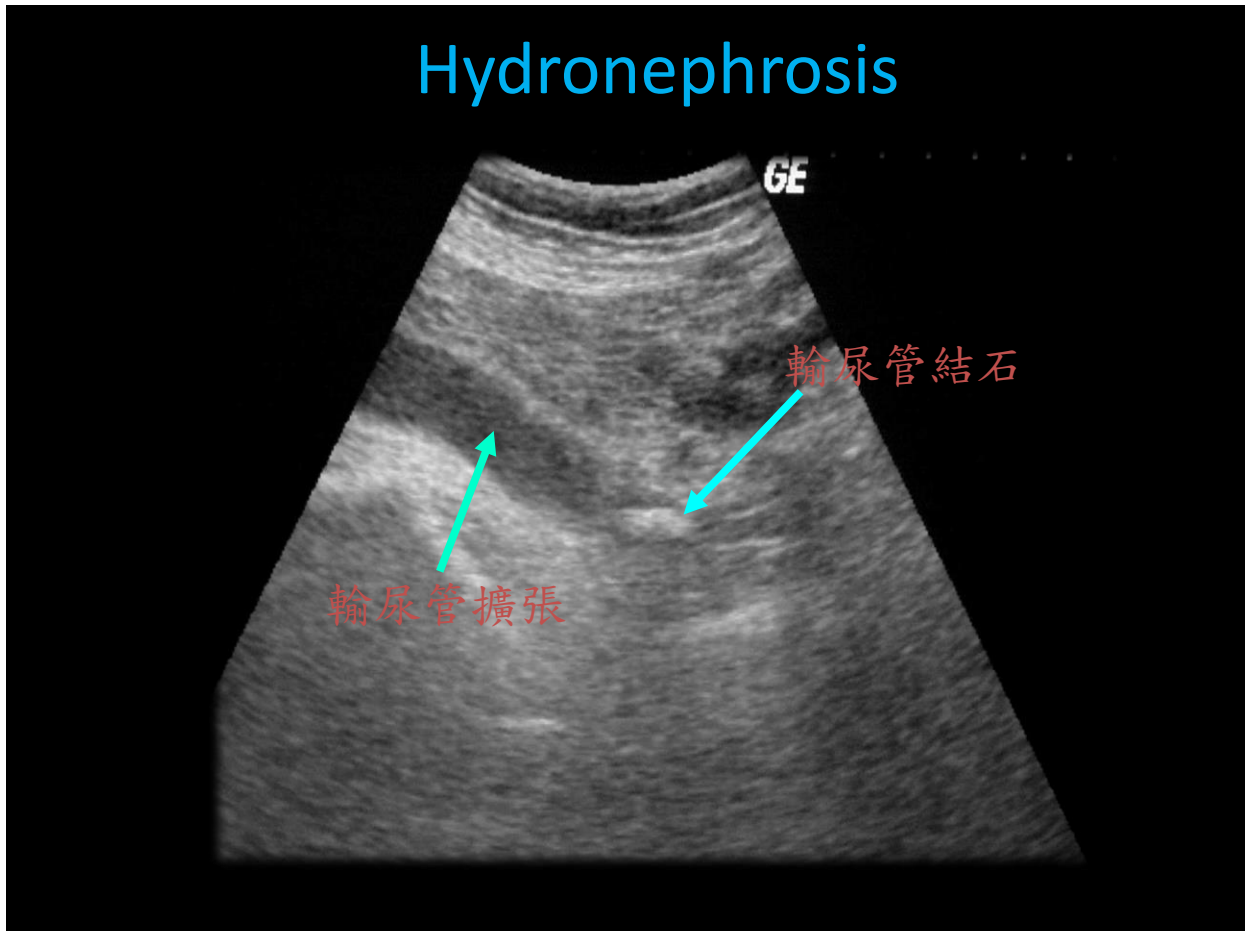
Hydronephrosis

- 腎臟變大、皮質變薄
- 腎竇內出現低回音之集尿系統
- 腎盞(renal calyx)擴張清晰可見
- 擴張之輸尿管內可能出現結石

Hydronephrosis



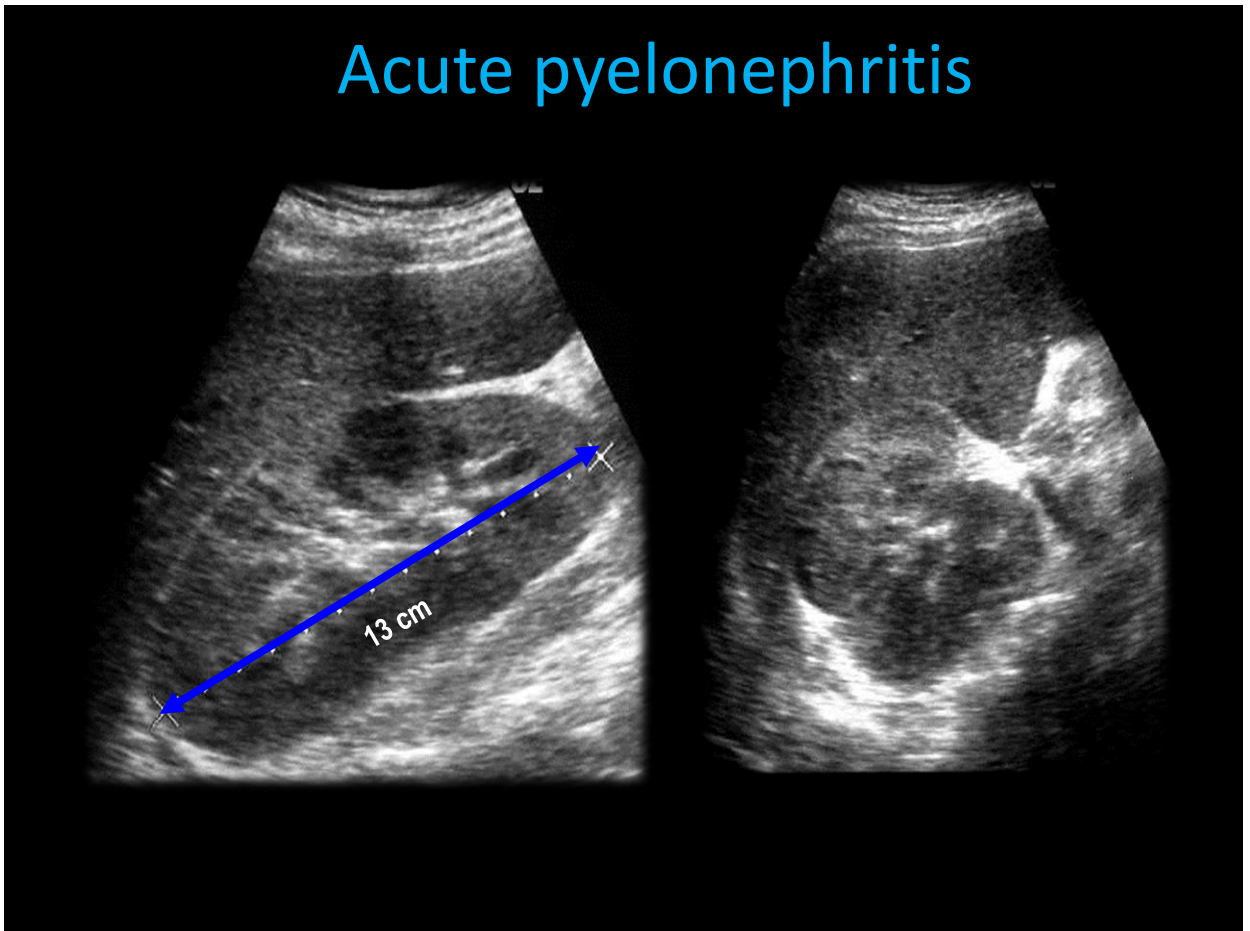
Hydronephrosis



Acute pyelonephritis(急性腎盂腎炎)

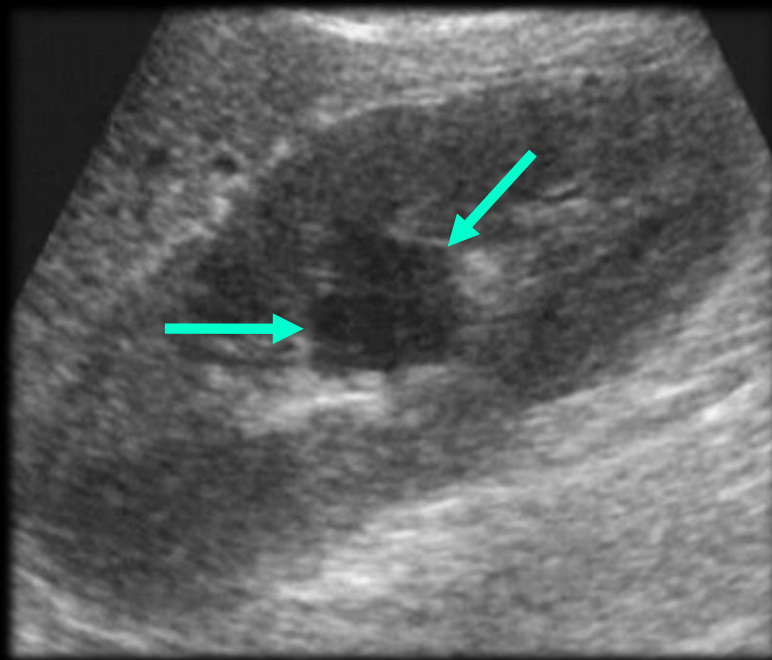
- 病患會發燒, 畏寒, 腰痛, 白血球增加, 膿尿, 菌尿
- 女性多於男性
- 腎臟可為正常或腫脹變大
- 腎臟實質回音降低
- 實質與髓質分界消失
- 腎竇模糊不清

Acute pyelonephritis



Renal abscess

邊緣不規則之低回音區

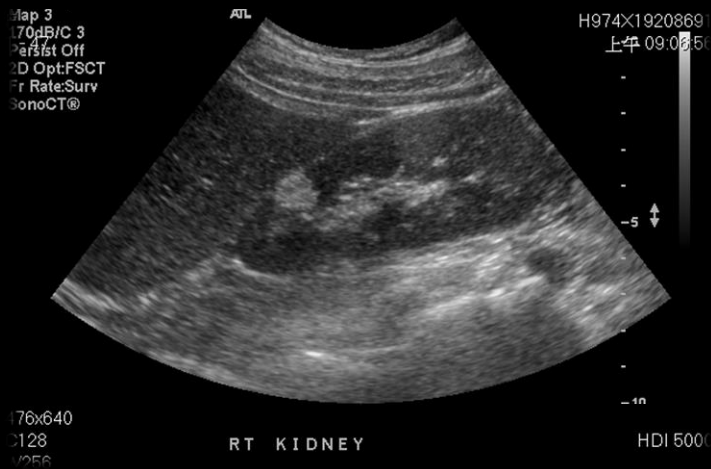


Renal angiomyolipoma

- 內含脂肪,肌肉,及血管不等成份之良性腫瘤
- 又可稱之為過誤瘤(hamartoma)
- 常發生於女性
- 較大之腫瘤易破裂出血

Renal angiomyolipoma

- 腫瘤呈混合回音型
- 腫瘤內可出現高回音之脂肪

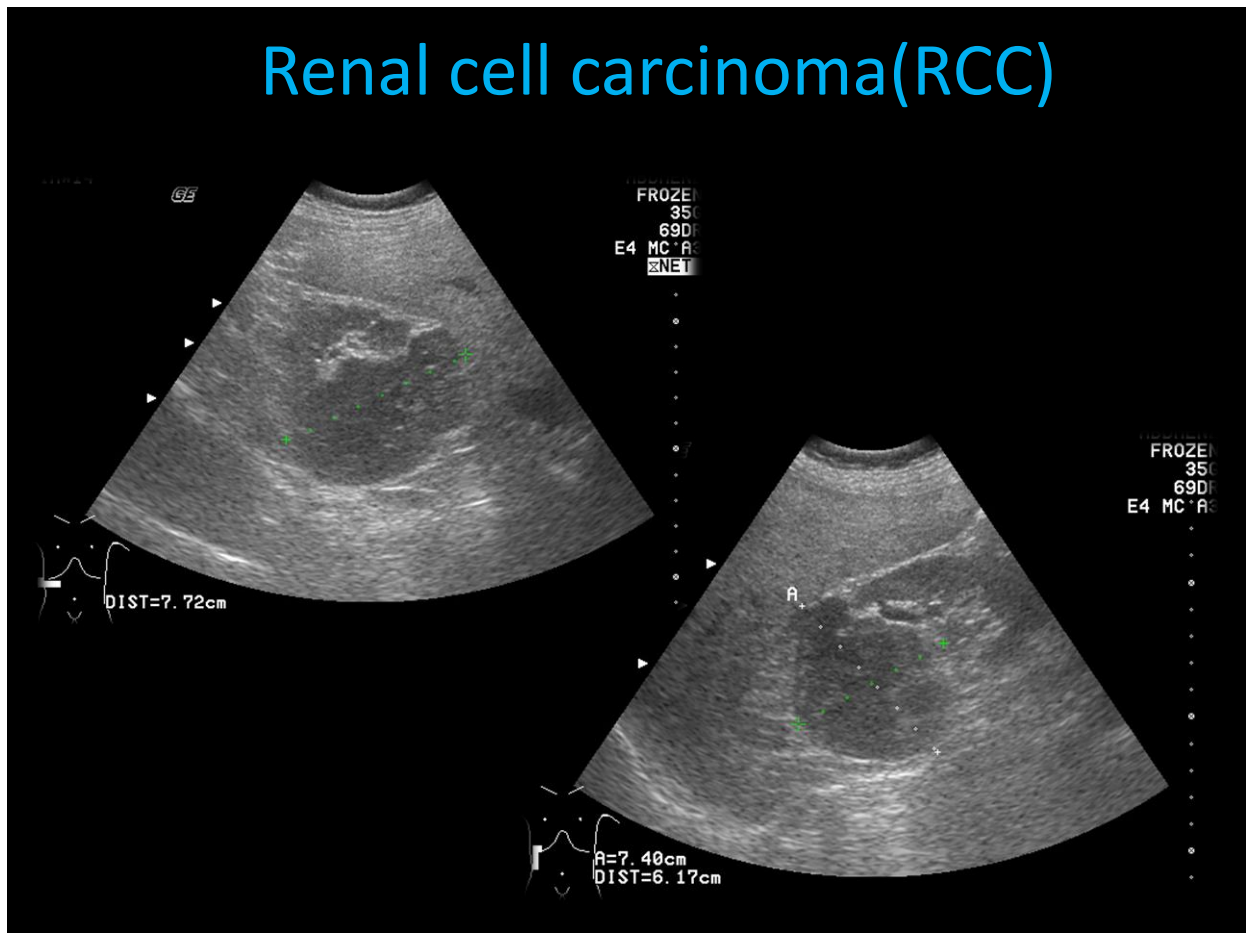


Renal cell carcinoma(RCC)

- 腎臟輪廓變形邊緣鼓出
- 腫瘤呈混合回音型
- 可侵蝕腎靜脈

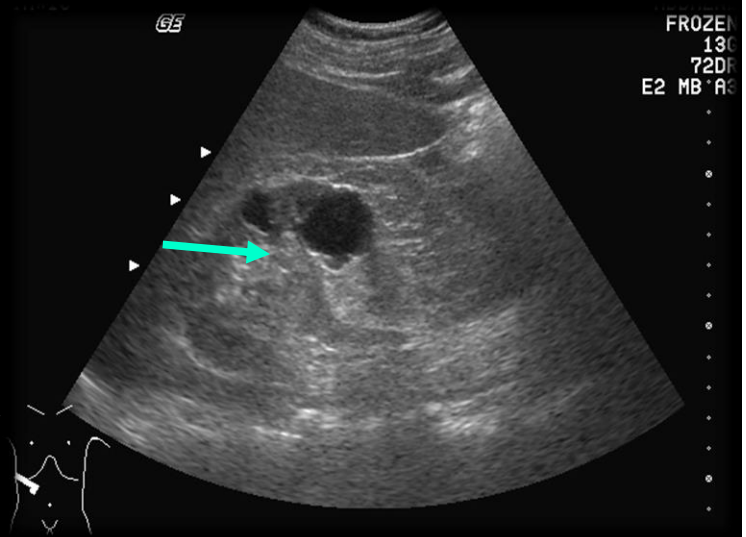


Renal cell carcinoma(RCC)

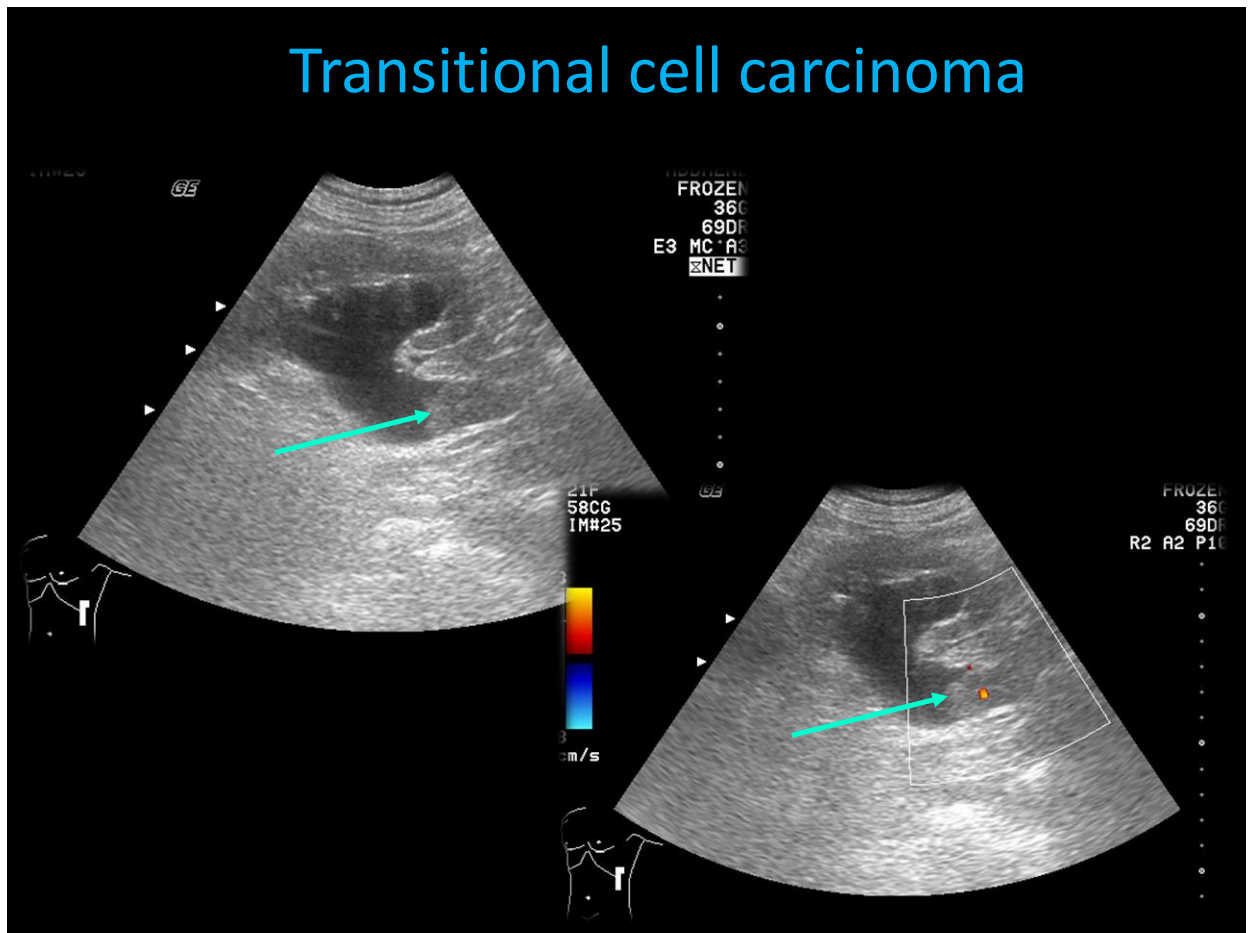


Transitional cell carcinoma(TCC)

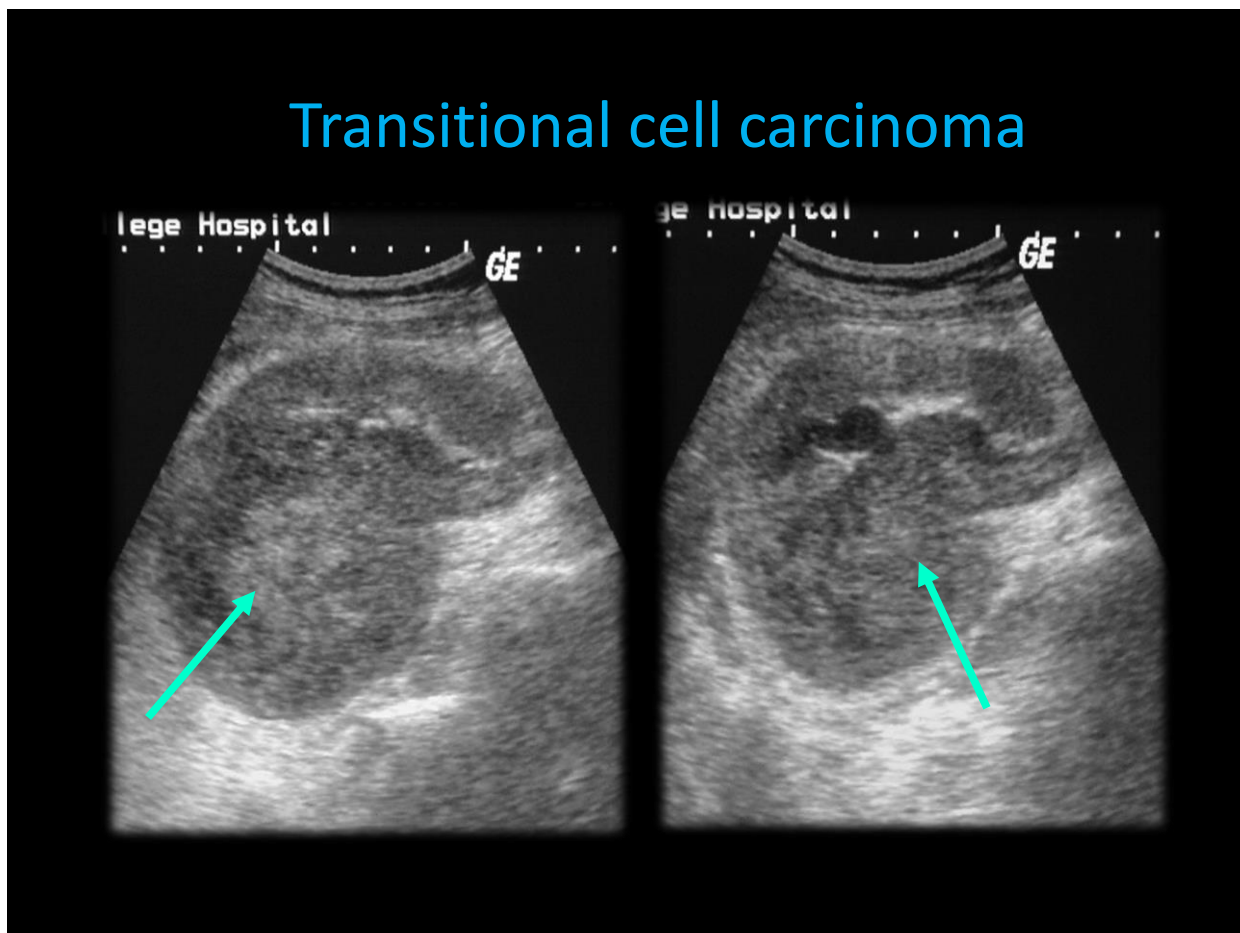
- 臨床上表現為血尿或潛血尿
- 通常為位於集尿系統或位於腎竇之實質腫瘤
- 常合併有腎盂積液 (hydronephrosis)



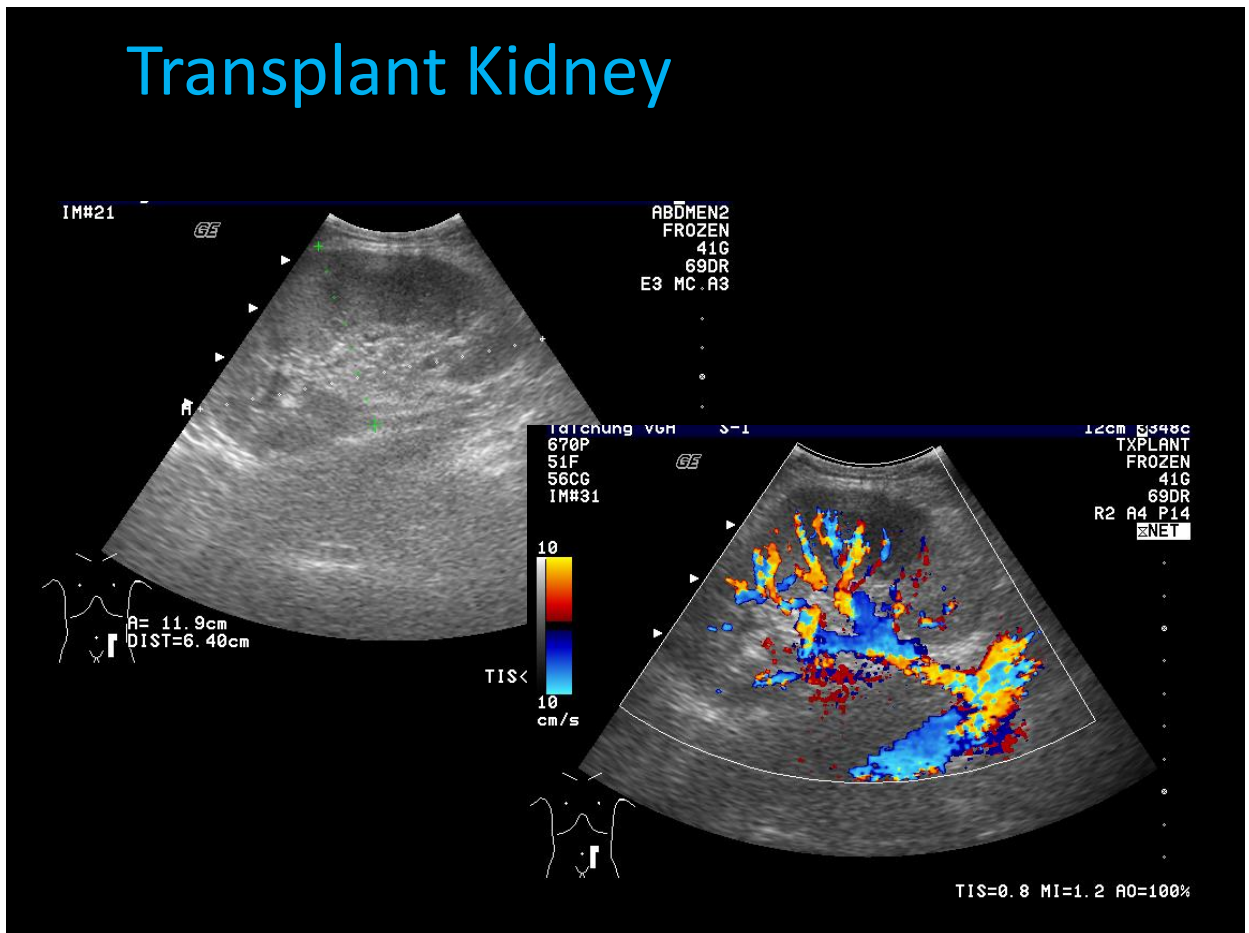
Transitional cell carcinoma



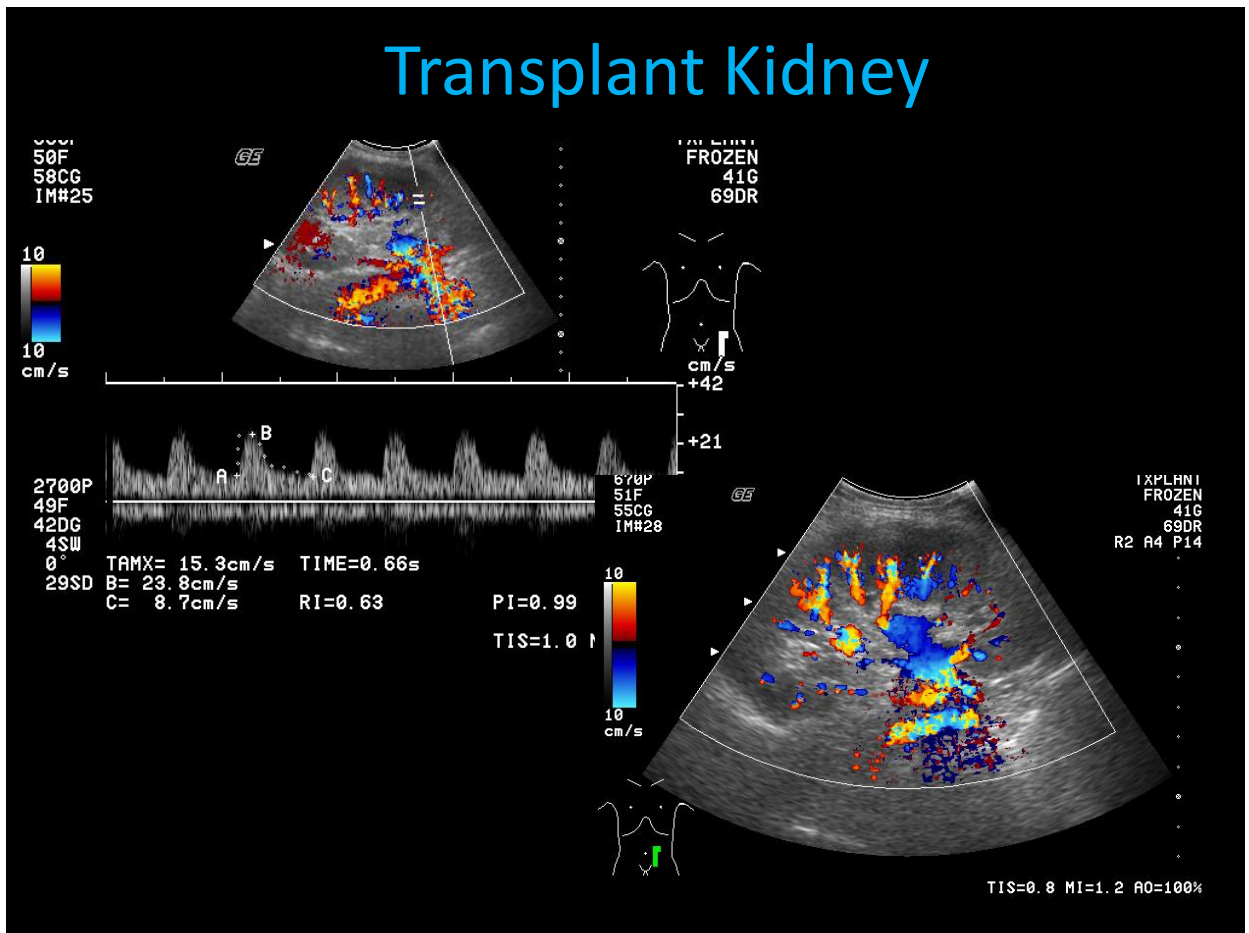
Transitional cell carcinoma



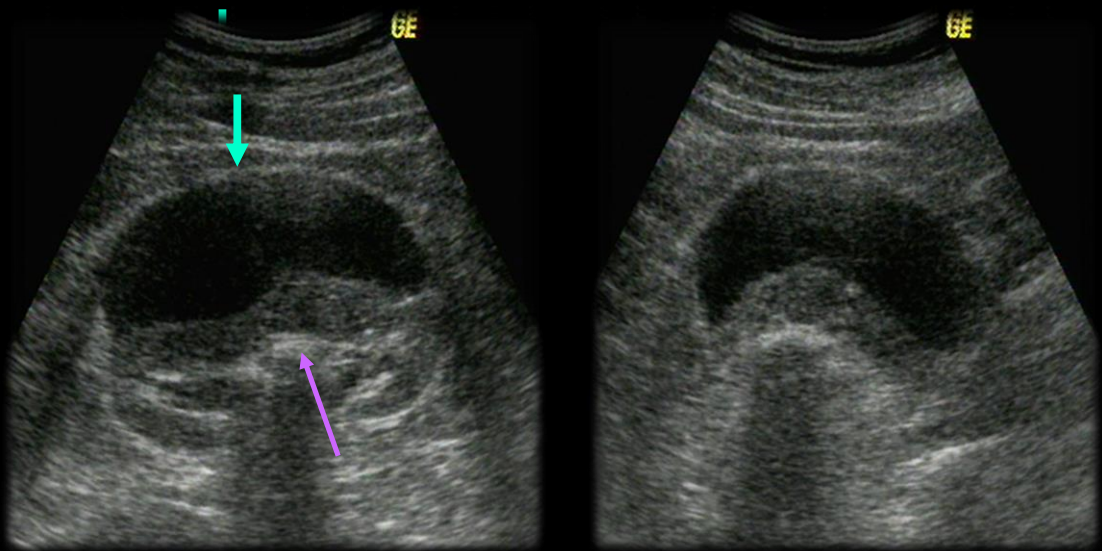
Transplant Kidney



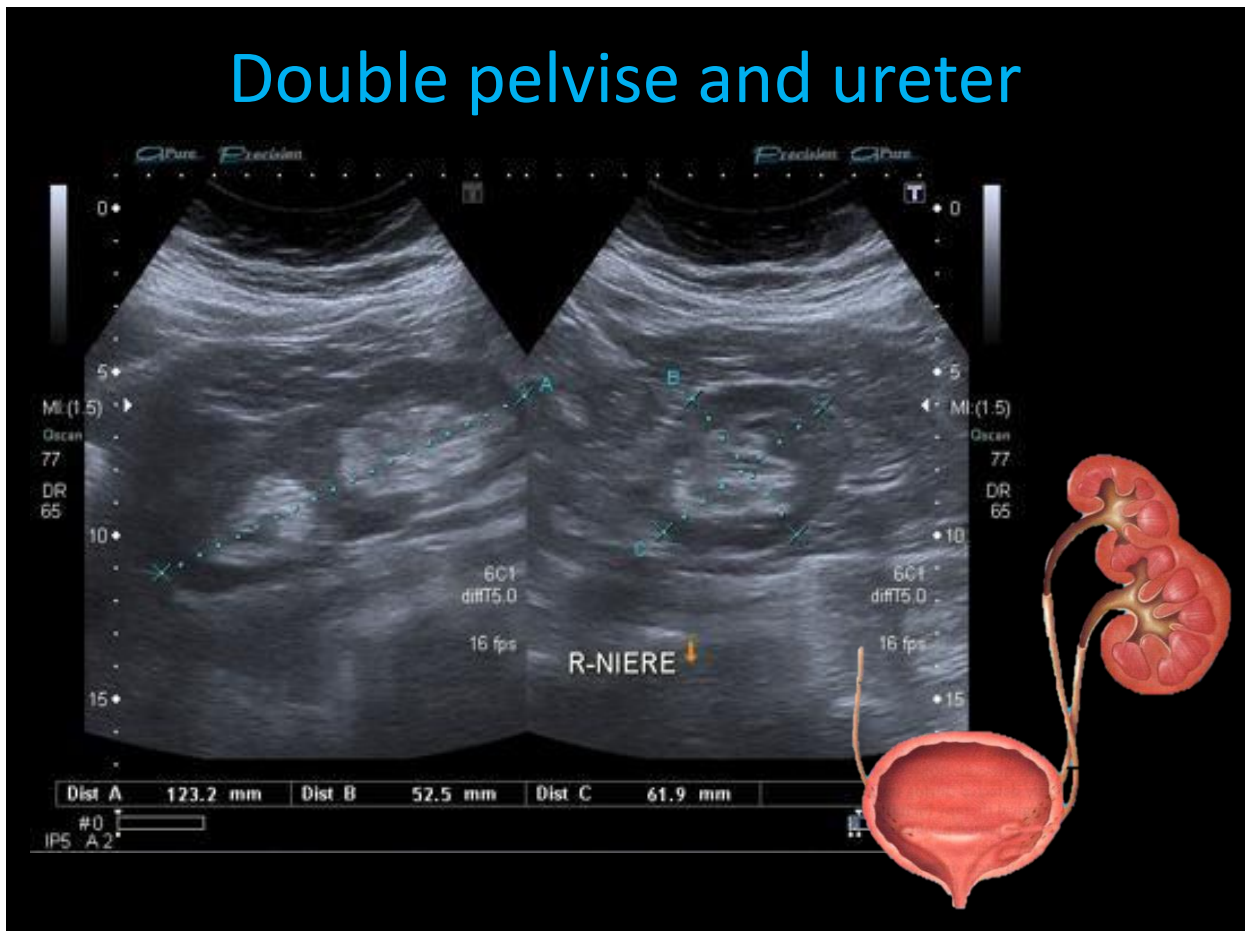
Transplant Kidney



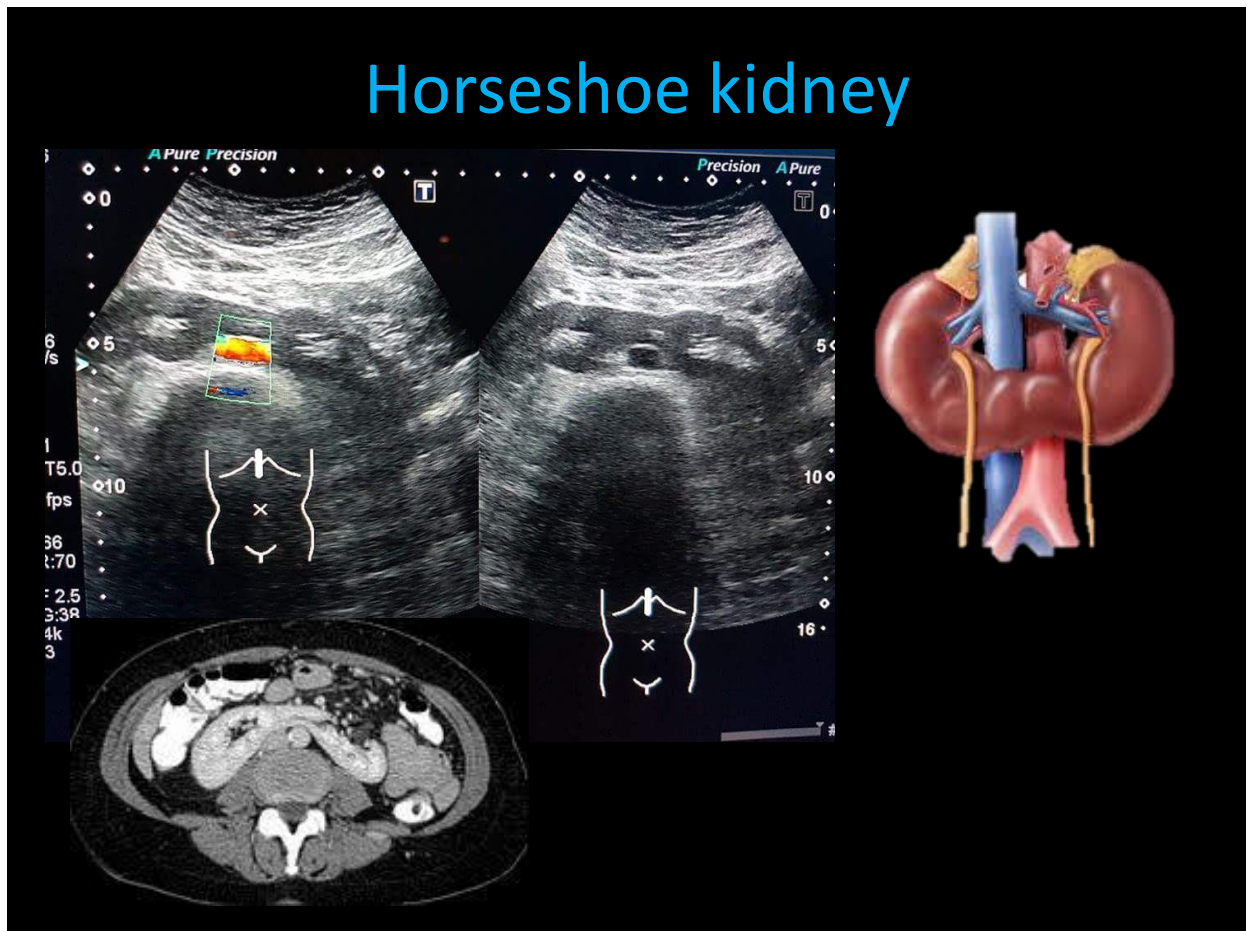
Post-biopsy Subcapsular Hematoma



Double pelvise and ureter



Horseshoe kidney



Thank you!