

腹部超音波基礎課程

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大綱：

- ◆超音波檢查技術基本概念與注意事項
- ◆腹主動脈&下腔靜脈超音波
- ◆胰臟超音波
- ◆肝臟超音波
- ◆膽道系統超音波
- ◆脾臟超音波
- ◆泌尿道系統超音波

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超音波檢查技術基本概念 與注意事項

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檢查前準備工作

受檢人員

- (1)上腹部需禁食八小時
- (2)下腹部需要喝水漲膀胱(患者如有導尿管，須先將尿管綁起來，使膀胱膨脹起來)

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檢查前準備工作

受檢人員

上腹部檢查姿勢
平躺在檢查床上
上衣拉高至胸部，褲子放低至肚臍下
雙手放在頭的兩側



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上腹部超音波檢查注意事項

- 1.檢查前一餐禁食6~8小時：
 - ※早上檢查者，前晚午夜12點後禁食。
 - 下午檢查者，早餐後禁食。
 - ※受檢者有高血壓等須服藥，要正常服藥。
 - ※糖尿病患者不要吃藥須禁食。可嘴巴含糖果，以免血糖太低。
 - ※除上腹部檢查要禁食，其他檢查皆不需禁食，可以吃東西。

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上腹部超音波檢查注意事項

- 2.如同一天安排上腸胃道鋇劑攝影、胃鏡者，超音波掃瞄應先檢查，以免鋇劑或空氣阻礙超音波傳導。
- 3.膽囊切除患者，可進食。

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下腹部超音波檢查注意事項

1. 檢查前1小時先，500cc~800cc開水，並禁止小便，使膀胱膨脹。
2. 導尿管，先喝開水，檢查前1小時先將導尿管綁起來，使膀胱膨脹起來。
※洗腎病患不能喝水，就不喝水。
※若膀胱太脹可以先解一半。

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超音波操作基本認知

- FREEZE
- 探頭(線)
- GEL 擦拭

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探頭

- (1)上、下腹部：2.5MHz~5.0MHz
- (2)軟組織：7.5MHz~15MHz



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探頭



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掃描技術

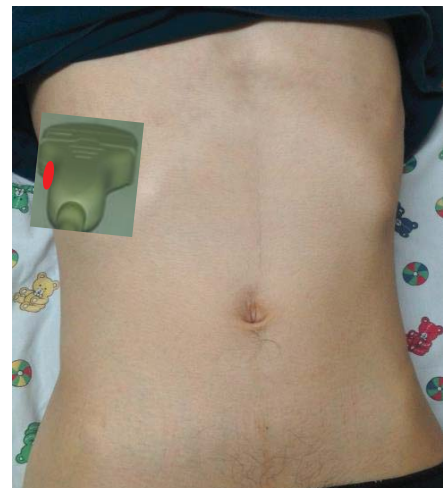
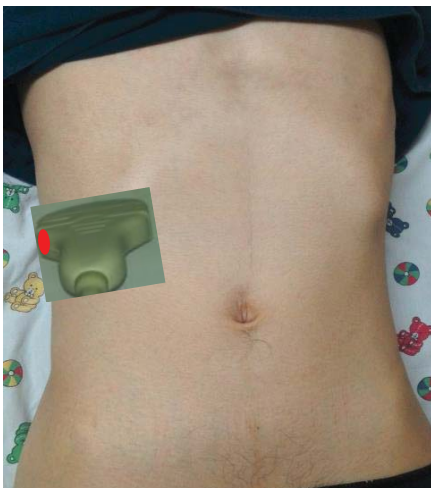
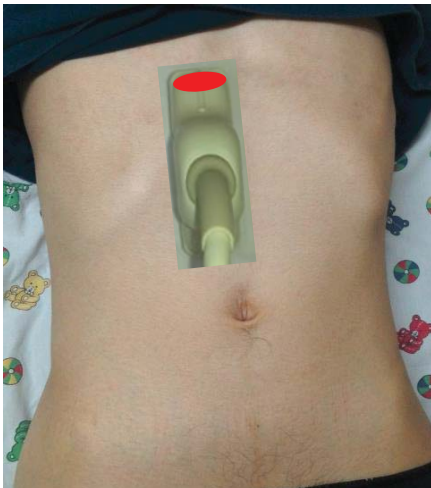
- 解剖及臨床知識
- 探頭的掃描方向(橫切,縱切)
- 探頭掃描的位置(肋下,肋間)
- 病人的配合(吸閉氣及姿勢)
- 有系統的掃瞄方式(principles & protocol)
- 儀器功能及熟悉操作
- 耐心、多練習

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掃描方式

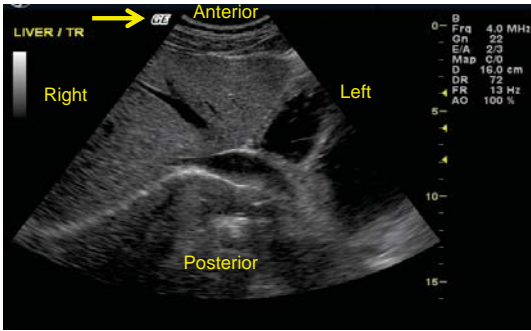
1. 橫掃描 (Transverse scan)
2. 縱掃描 (Longitudinal scan, Sagittal scan)
3. 右肋間掃描 (Right intercostal scan)
4. 右季肋部斜掃描 (Right hypochondriac oblique scan)
5. 右肋弓下掃描 (Right subcostal scan)
6. 左肋弓下掃描 (Left subcostal scan)
7. 左肋間掃描 (Left intercostal scan)

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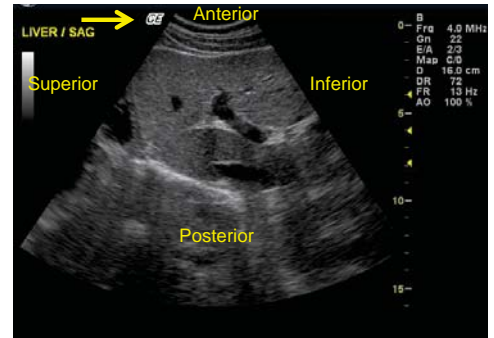
影像判讀概念

Transverse(橫掃描) .Axial image



影像判讀概念

縱掃描(Longitudinal scan, Sagittal scan)

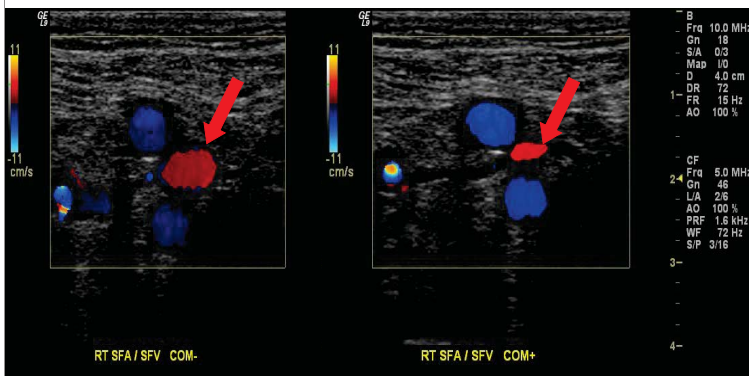


腹主動脈&下腔靜脈超音波

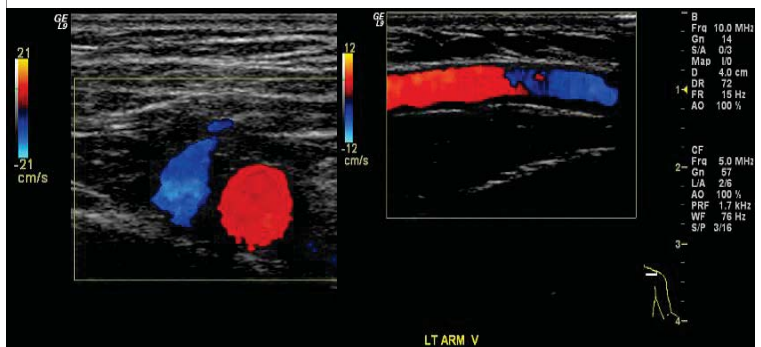
Color Doppler

- 如何分辨動脈、靜脈：
 - 壓看看、
 - 血流方向
 - 朝向探頭的血流為紅色；
 - 遠離探頭的血流為藍色。
 - 波形

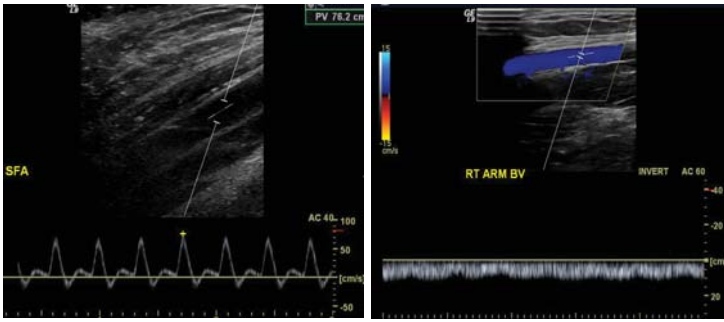
壓看看



血流方向



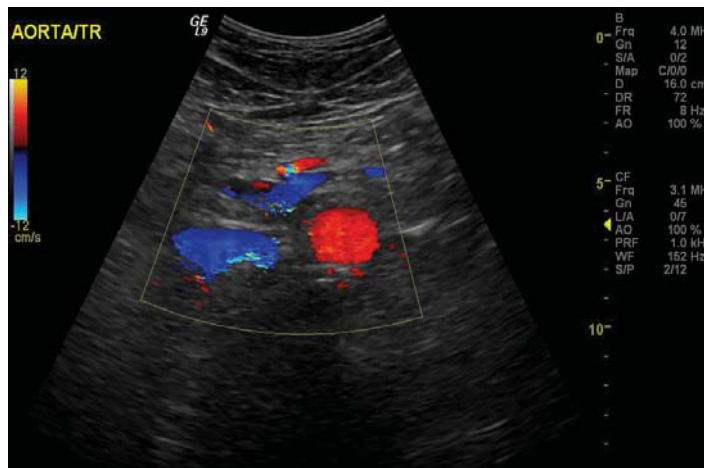
波形



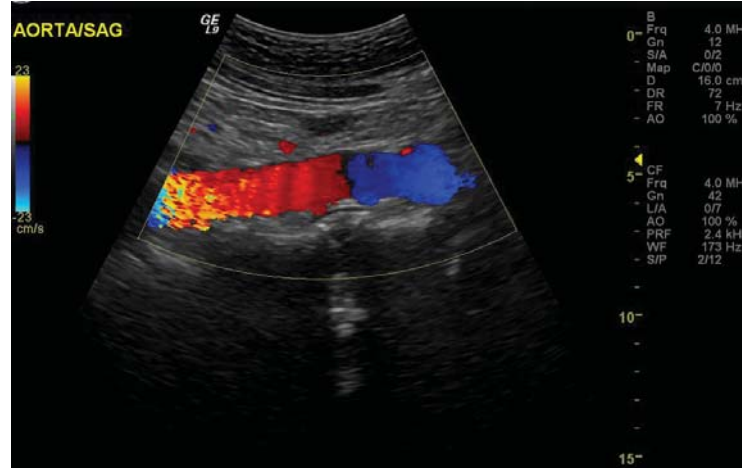
Aorta and IVC



Aorta and IVC



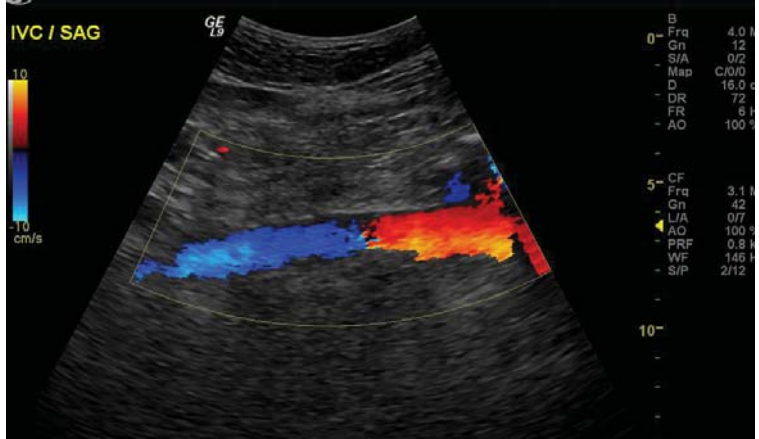
Aorta and IVC



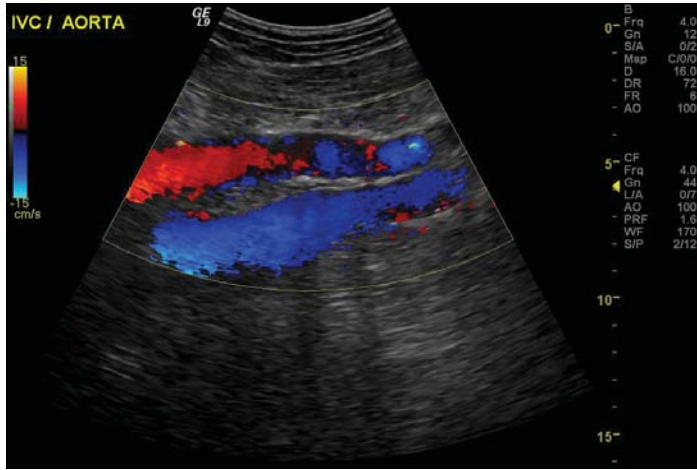
Aorta and IVC



Aorta and IVC



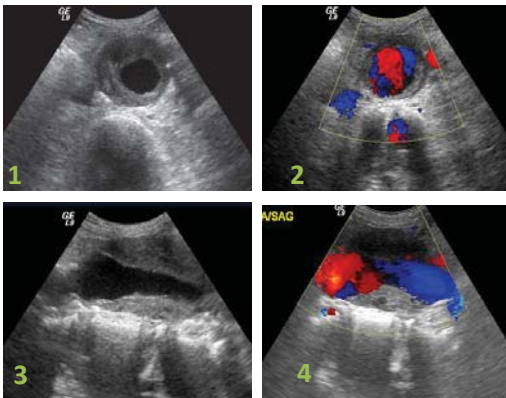
Aorta and IVC



Aorta and IVC

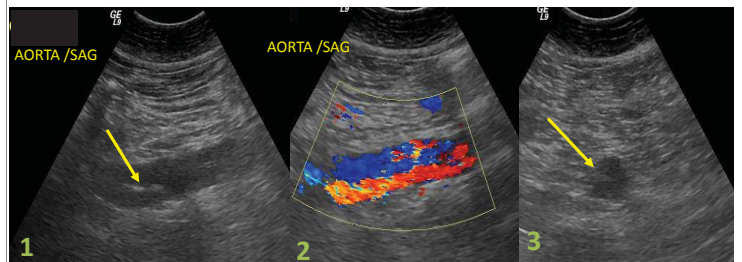


Aneurysm



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Aorta dissection



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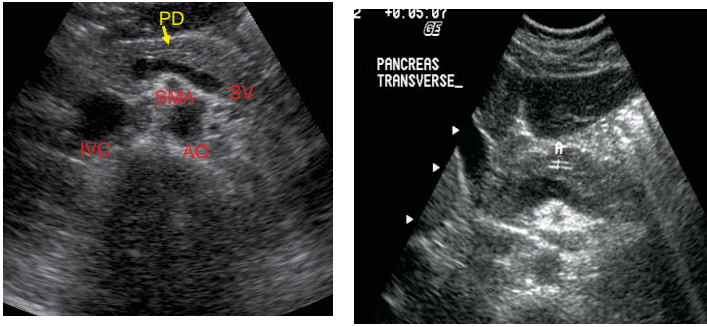
胰臟超音波

- 後腹腔、胃內氣體、腸氣
- 腸氣多肥胖可稍加壓迫、瘦輕壓
- pancreatic head 右側躺、pancreatic tail 左側躺
- 請病患坐起來
- 空腹、喝水(10-15分、500-700c.c)
- 成人正常回音比Liver略高
- Pancreatic duct < 2mm

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Pancreas



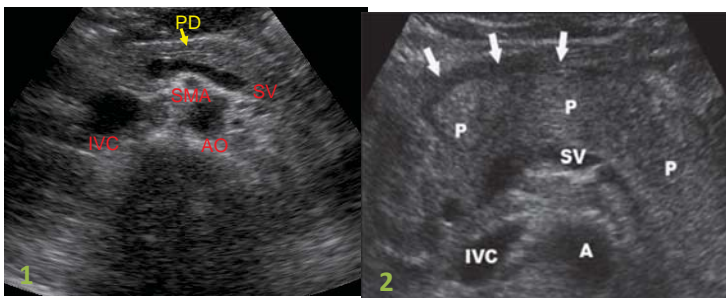
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Pancreas

- Acute Pancreatitis
- Chronic Pancreatitis
- Pseudocyst
- Cyst
- Pancreatic cancer-95% is adenocarcinoma (腺癌)

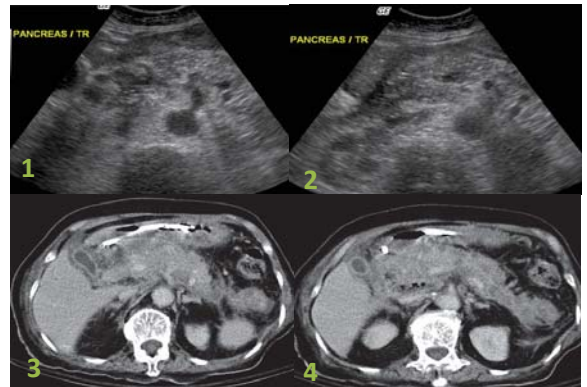
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Acute Pancreatitis



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Acute Pancreatitis



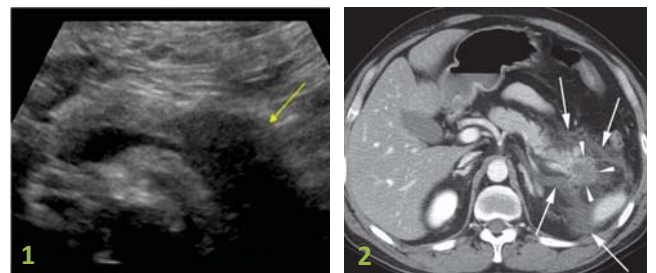
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Acute Pancreatitis



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Focal acute Pancreatitis



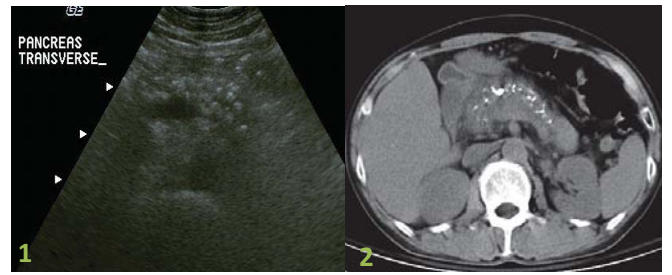
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Chronic Pancreatitis

- 酗酒、反覆急性胰臟炎
- 新陳代謝疾病--高血脂、高血鈣
- 先天胰膽管異常
- 回音變高、鈣化
- 胰管擴張

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Chronic Pancreatitis



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Chronic pancreatitis



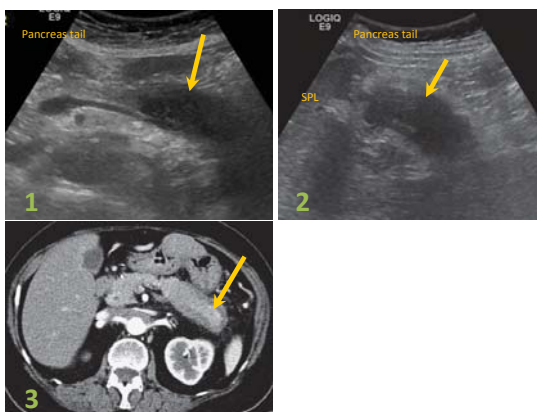
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Pancreatic Cyst



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Pancreatic tumor



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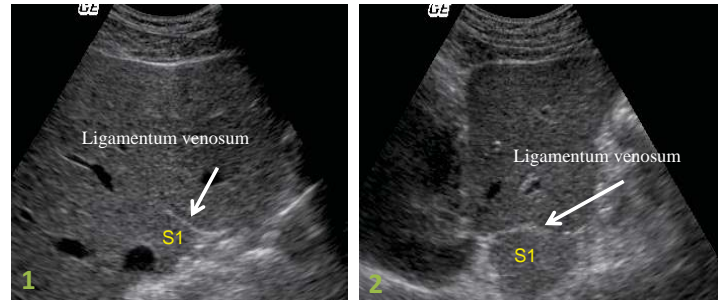
肝臟超音波

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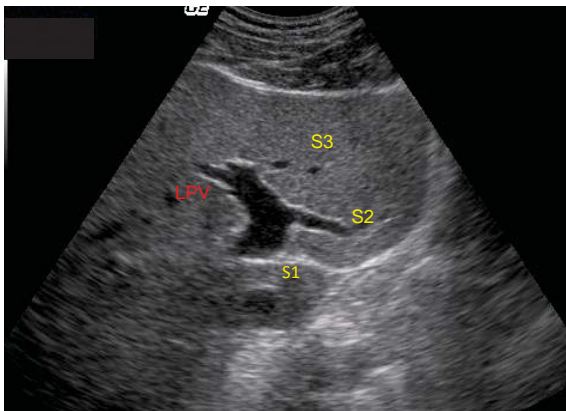
Liver

- ◆ Parenchymal--1954年由康諾(Couinand)學者提出分葉概念(S1-S8)
- ◆ Vessel
 - ◆ 肝門靜脈(portal vein)
 - ◆ 肝動脈(hepatic artery)
 - ◆ 肝靜脈(hepatic vein)
- ◆ Ligament
 - ◆ 鎌狀韌帶(falciform ligament)
 - ◆ 圓韌帶(ligamentum teres)
 - ◆ 靜脈韌帶(ligamentum venosum)

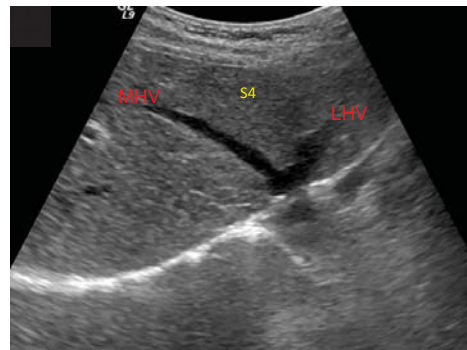
S1(Caudate lobe尾葉)



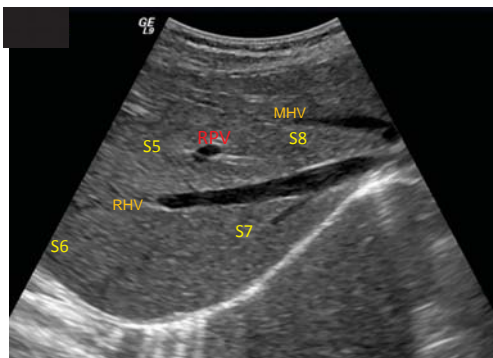
S2、S3(Lateral segment)



S4(Quadrangle lobe四方葉)

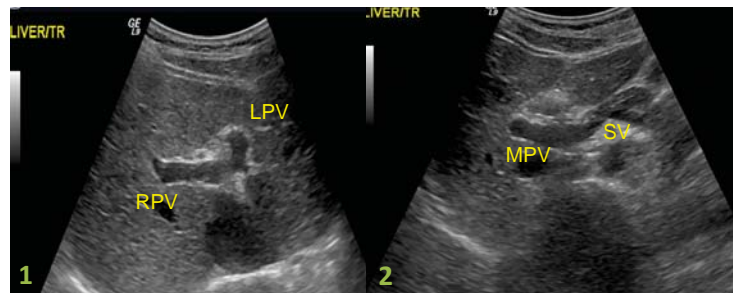


S5-S8

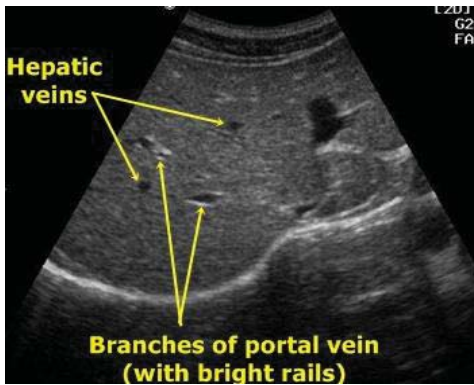


Portal vein

- 高回音的纖維壁
- Portal vein、hepatic artery、IHD

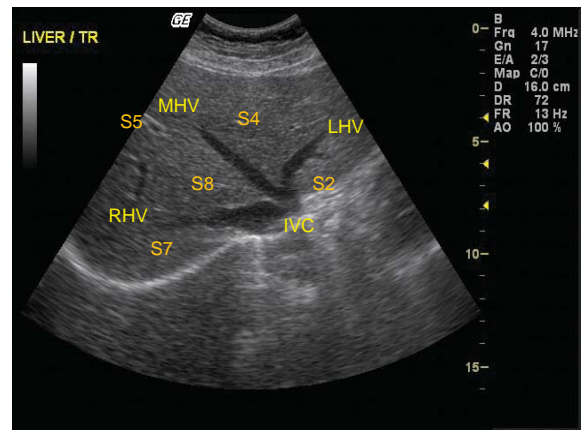


Portal vein



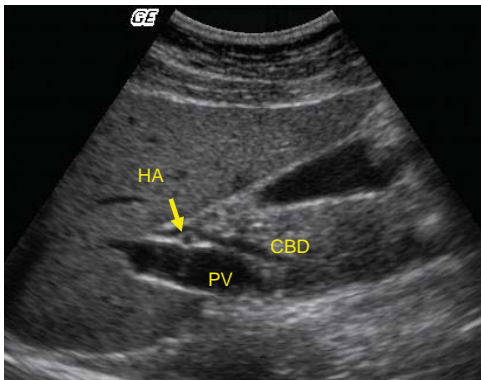
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Hepatic vein



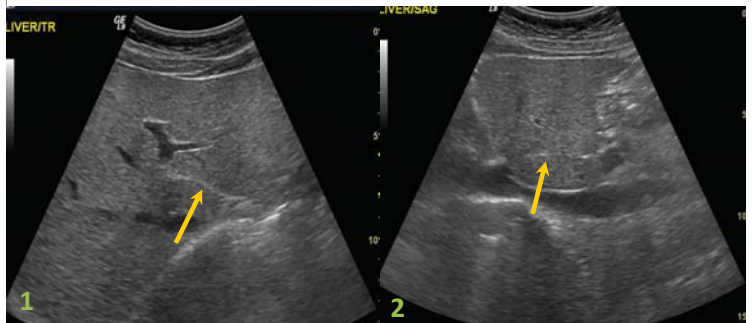
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Hepatic artery



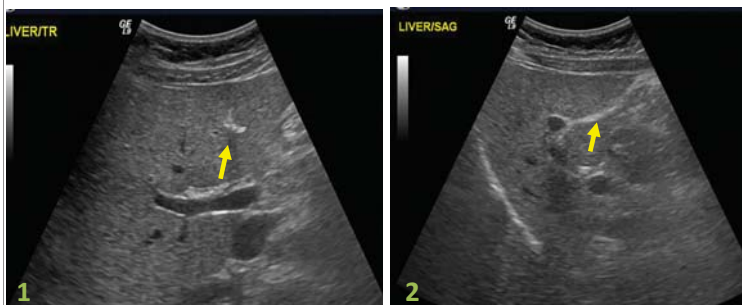
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Ligamentum venosum(靜脈韌帶)



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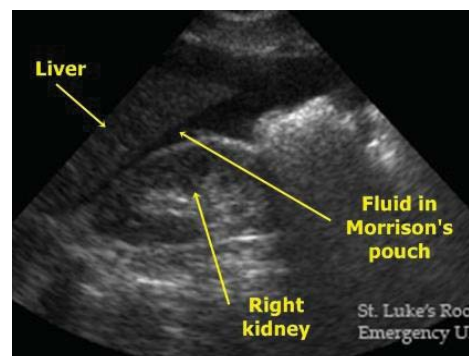
Ligamentum teres(圓韌帶)



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Morrison's pouch

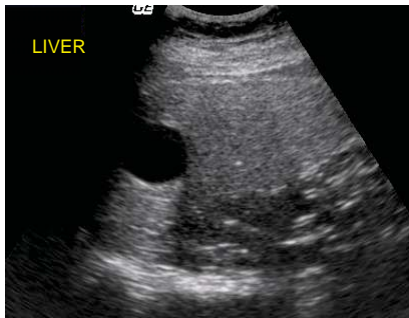
- 平躺時, 腹腔位置低



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Hepatic cyst

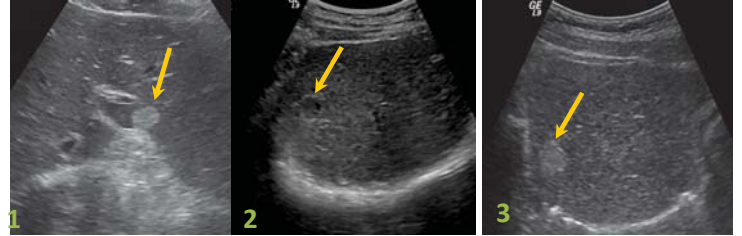
- 內無回音 (free echo)、邊緣界線明顯
- 後方回音增強 (posterior enhancement)



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Hemangioma(血管瘤)

- 影像表現多變 (高echo、邊緣高echo、混和echo...)
- 輕度的後方回音增強
- 與其他腫瘤難區分 (CT or MRI)
- 因流速慢 doppler 難測得訊號



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Hepatic calcification(鈣化)

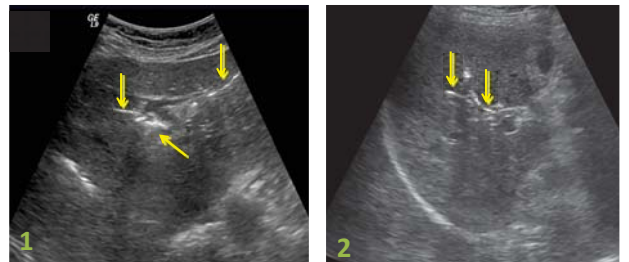
- Calcification
 - Granuloma(肉芽腫)



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Pneumobilia(膽道氣腫)

- 醫療行為 (cholecystectomy)、ERCP
- 少見於產氣性膽囊炎 (emphysematous cholecystitis)
- IDH 呈現線性高回音影像
- 改變姿勢會動



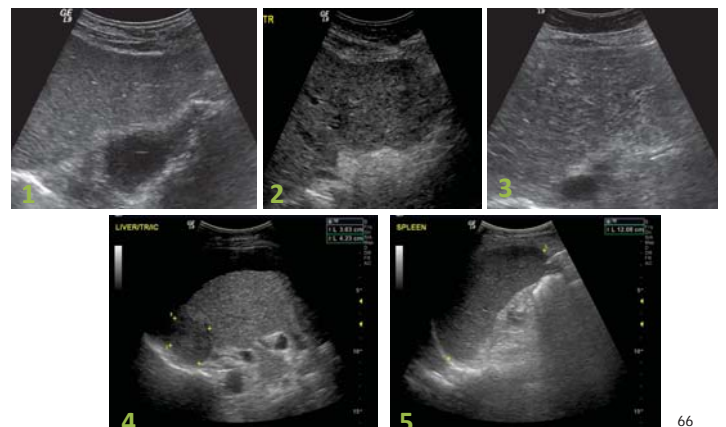
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Liver cirrhosis (肝硬化)

- coarse echo (粗糙)、
- left lobe obtuse-angled 鈍角
- Irregular margin(邊緣不規則)
- portal hypertension(門脈高壓)
- ascites(腹水)
- splenomegaly(脾腫大 >12 cm)

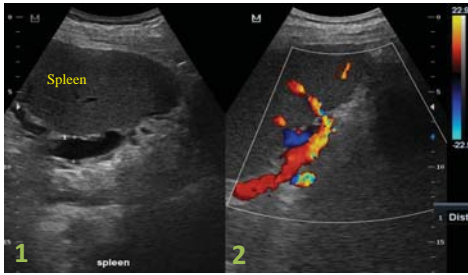
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Liver cirrhosis



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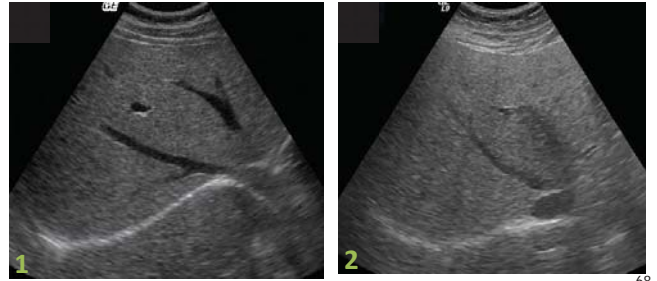
- Liver cirrhosis with splenomegaly



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Fatty liver(脂肪肝)

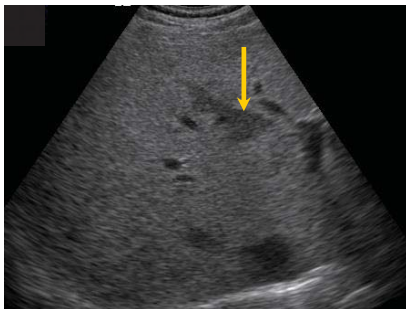
- 局部或廣泛性
- 較正常肝回音高
- 濫用酒精、肥胖、糖尿病...等有關



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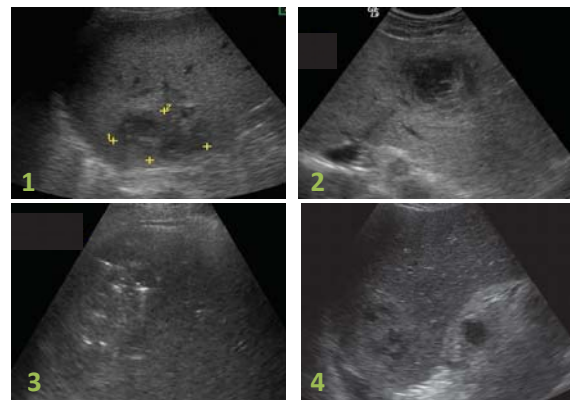
Focal fatty sparing/Focal fatty change

- 未受脂肪浸潤的正常區塊
- 形狀多變可多處(GB、大血管)
- 沒有腫瘤效應(mass effect)
- 血管走向正常



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Liver abscess(肝臟膿瘍)



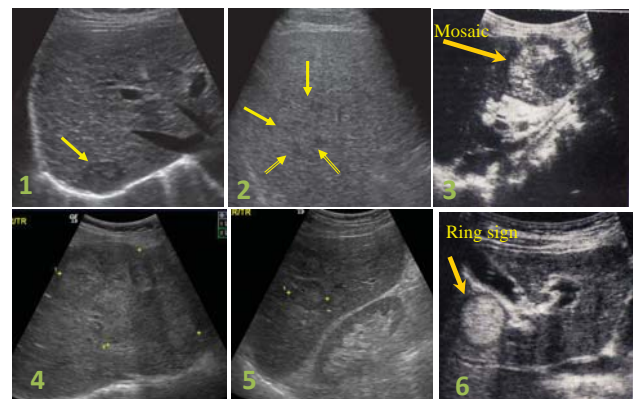
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Hepatocellular carcinoma(HCC、肝癌)

- Ring sign (指環像)
- Mosaic :nodule in nodule (馬賽克)
- Portal thrombus(門脈栓塞)
- B型肝炎、肝硬化篩檢
- 小的HCC與肝硬化的結節增生難區分

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Hepatocellular carcinoma(HCC、肝癌)

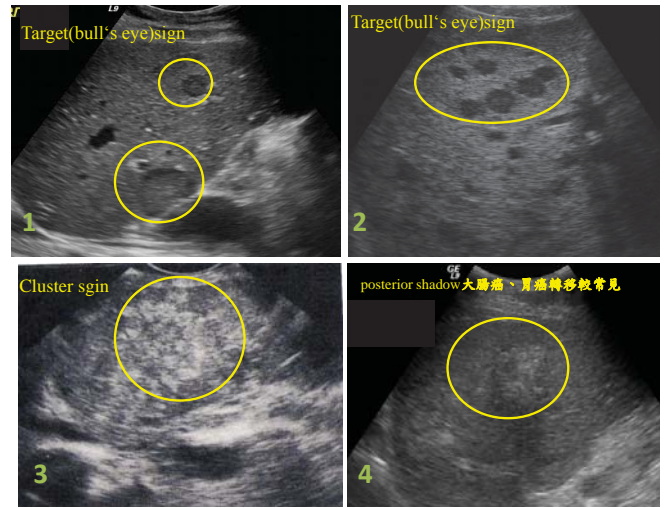


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Metastasis(肝轉移)

- 惡性腫瘤最常轉移的器官之一
- Target(bull's eye)sign、Cluster sign
- 中心無echo
- 後方有陰影
- mass effect (腫瘤效應)
- 影像表現難判定原發位置，肝臟影像表現是多變

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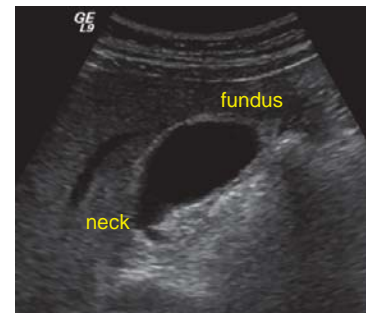
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膽道系統超音波

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Gallbladder

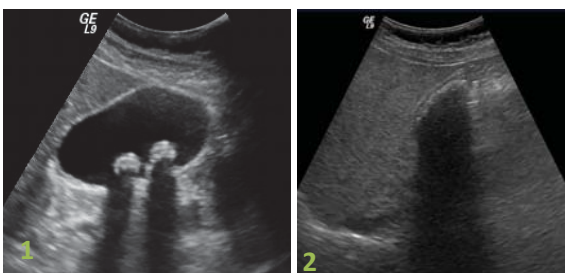
- NPO(禁食6小時)
- 膽囊壁<3mm、膽囊橫徑<4cm



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Gallbladder stone

- hyper echo (高回音)
- posterior shadow (後方有陰影)
- removable (可移動)



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Gallbladder polyps

- 後方無陰影
- 不會移動
- >1cm建議切除



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Gallbladder sludge

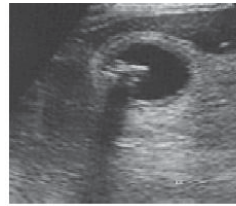
- Debris echo (膽泥、膽砂.....)
- removable (可移動)



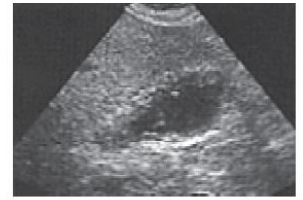
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Acute cholecystitis

- Thick gallbladder wall
- Halo around the gallbladder



Transverse scan



Longitudinal scan; a thick wall (7.8mm)

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Intrahepatic duct(IHD) stone

- IHD stone
 - IHD dilatation、
 - location (是否與portal vein 走一起)
 - stone 小posterior shadow不明顯(霧霧的)

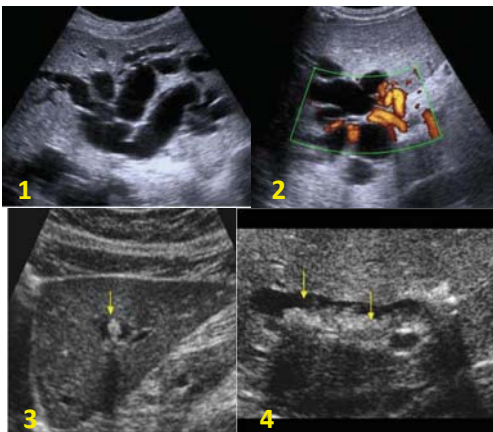
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CBD Dilatation



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IHD Dilatation & stone



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脾臟超音波

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Spleen

- 脾區(splenic flexure)和胃的後方
- 輕緩吸氣後閉氣(平躺、深吸氣肺臟底部會擋住脾臟)
- 回音和肝臟相似
- 脾臟也可以當作左腎和胰臟尾部的介質
- <12cm、Splenomegaly>12cm
- accessory spleen(副脾)

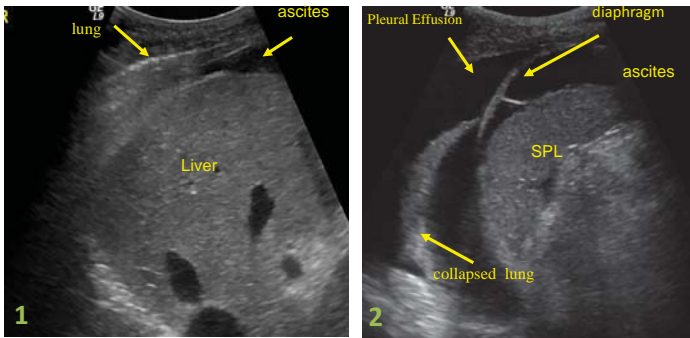
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Spleen

- Splenomegaly
- accessory spleen
- Lingulate lobe of liver(舌狀肝)

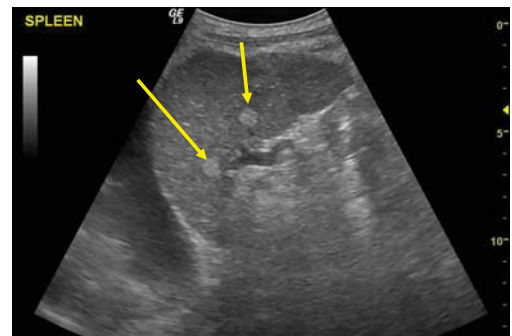


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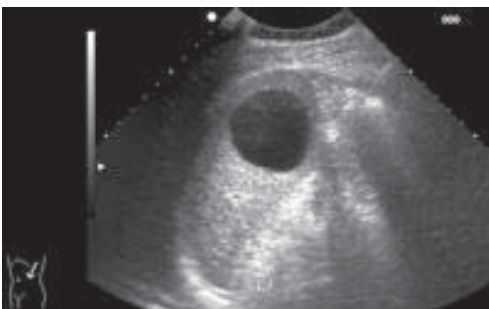
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Spleen



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Spleen

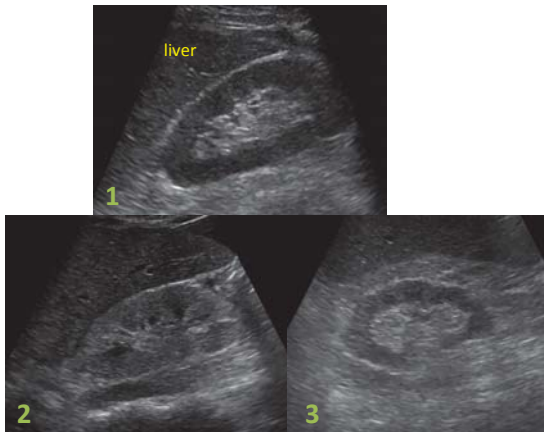


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泌尿道系統超音波

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kidney



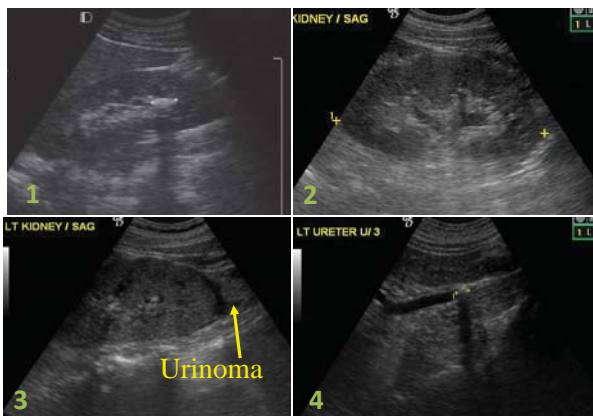
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Kidney hydronephrosis(腎水腫)

- Stone、tumor、stenosis(如發炎或手術後狹窄)
- Compression(狹窄壓迫ex:子宮頸癌、懷孕、前列腺癌、前列腺肥大)
- Urine reflux
- Cystitis
- 過度漲尿

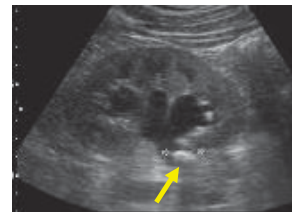
92

Kidney hydronephrosis



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Ureteropelvic Junction (UPJ) stone



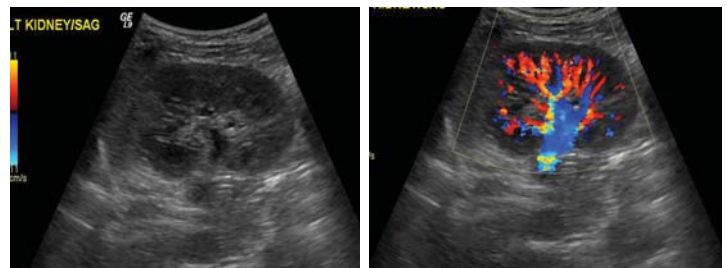
94

過度漲尿、Post-void



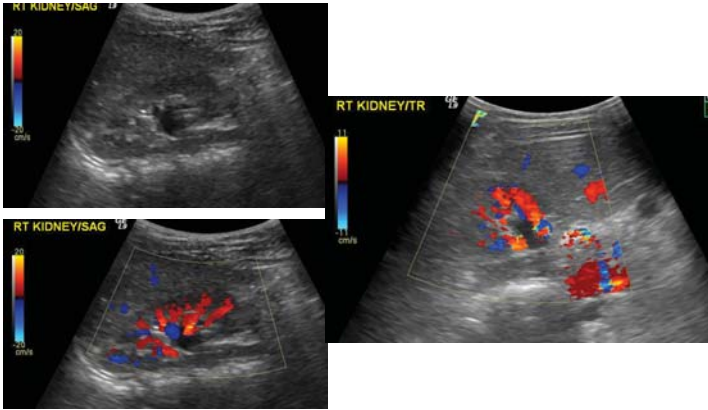
95

Kidney hydronephrosis ??



96

Kidney hydronephrosis



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Renal cyst

- 邊緣界線明顯
- 內部無回音(free echo)
- 後方回音增強(posterior enhancement)



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Renal cyst



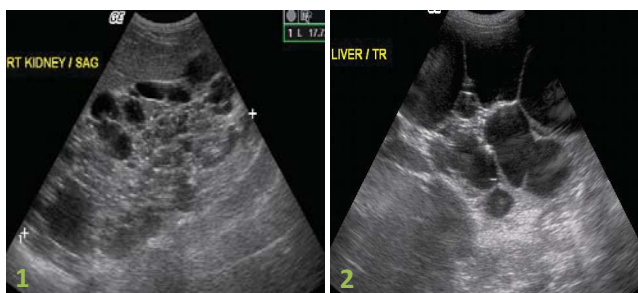
99

PCKD、PCLD

- Polycystic kidney disease (PCKD)
- 遺傳
- 雙側有大小不等的cyst
- 腎臟大小變大
- 腎實質變薄，腎的原形無法辨認
- 常合併肝臟囊腫 polycystic liver disease (PCLD)

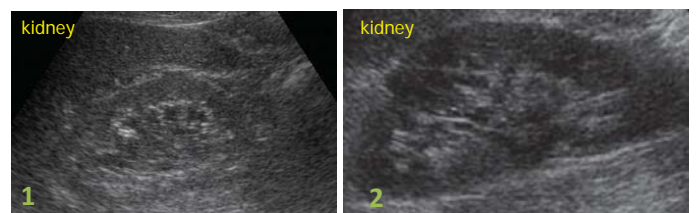
100

PCKD、PCLD



101

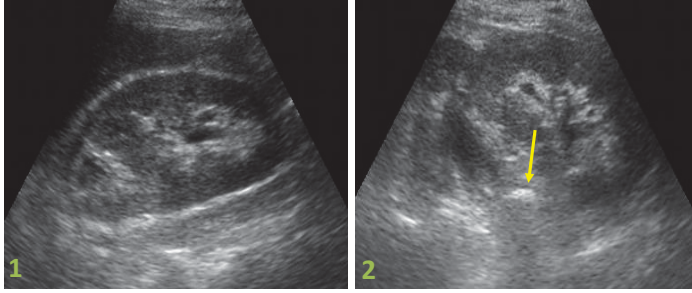
Lipomatosis(脂肪過多症)



102

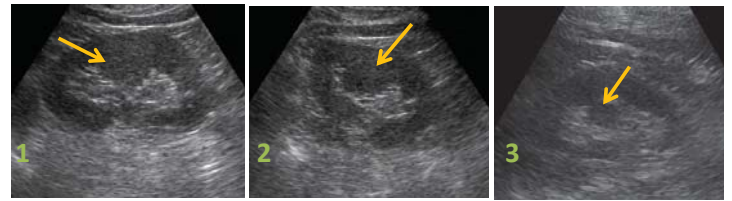
Duplication

Duplication 上支Hydro 有stone



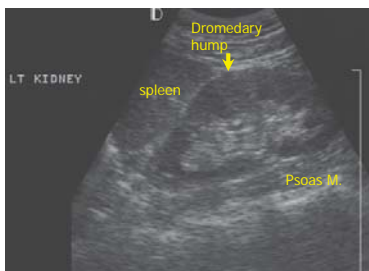
103

Column of Bertin



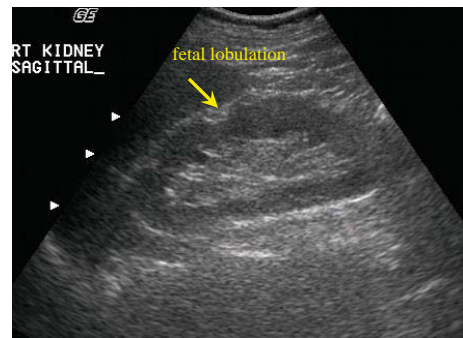
104

Dromedary hump



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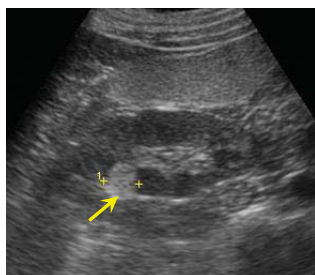
Junctional parenchymal defect



106

Angiomyolipoma(血管肌肉脂肪瘤)

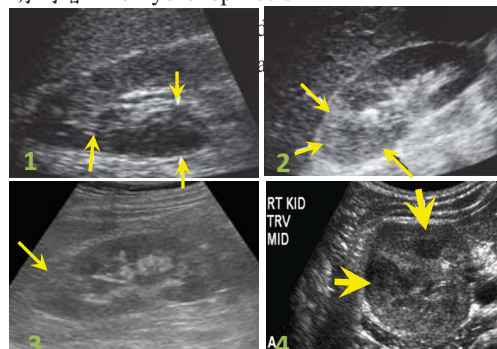
- 含脂肪肌肉和血管之良性腫瘤
- Hamartoma (過誤瘤)
- 有時合併結節性硬化症 (tuberous sclerosis)
- Hyper echo(高回音)
- 好發於女性



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APN (Acute pyelonephritis)

- Fever、敲痛(knocking tenderness)、頻尿、尿痛
- 有時會mild hydronephrosis



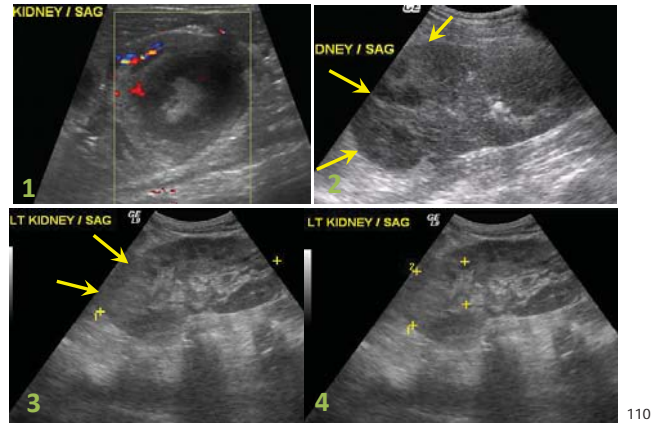
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Renal abscess 、carbuncle

- 邊緣界線不明顯
- 外形不規則
- 低回音性不均勻
- 腎膿瘍太小時,不易診斷
- 可為一混合性液體集合物或低回音腫塊的表現
- CT診斷的準確性高於SONO

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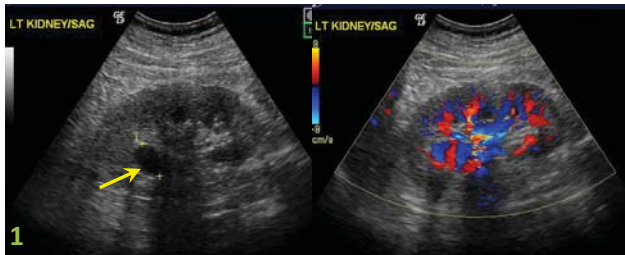
Renal abscess 、carbuncle



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Renal aneurysm

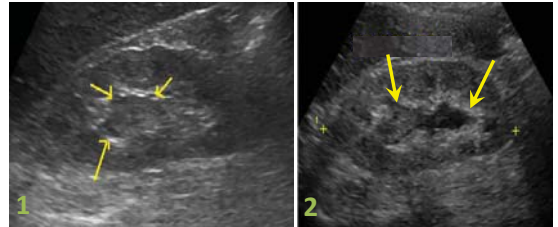
- 通常都是外在因素造成。ex: Biopsy



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Renal TCC

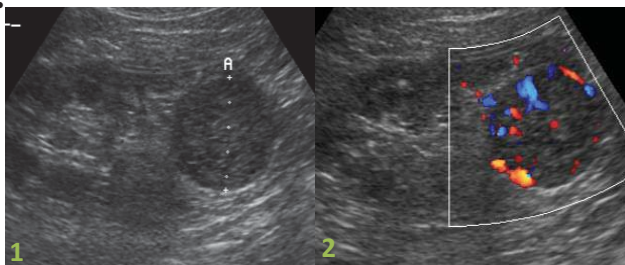
- Transitional cell carcinoma (TCC, also urothelial cell carcinoma or UCC)
- renal pelvis長出、血尿
- 腫瘤阻塞造成局部腎盂水腫



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RCC

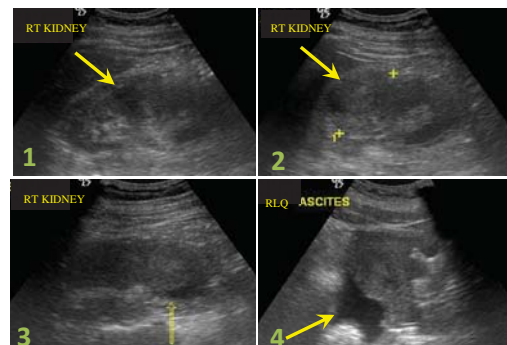
- Renal cell carcinoma (RCC)、常見之腎臟原發惡性腫瘤
- 由cortex長出、腎輪廓變形(邊緣突出)
- 腎實質內有充實性腫瘤、hypervascular



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Kidney Laceration 、hematoma

- 外傷或醫療行為造成
- 回音形式取決於血塊形成的時間、位置及血塊溶解的速度



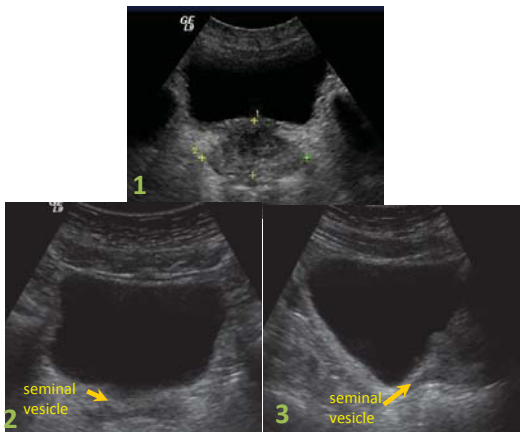
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膀胱超音波

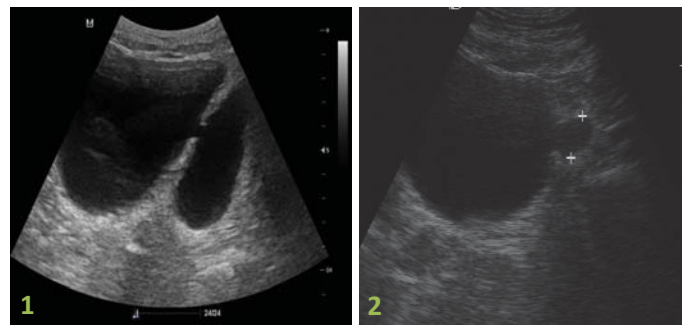
Urinary Bladder(膀胱)

- Cystitis
- UB stone
- TCC (Transitional cell carcinoma) , also urothelial cell carcinoma or UCC
- Diverticulum膀胱憩室

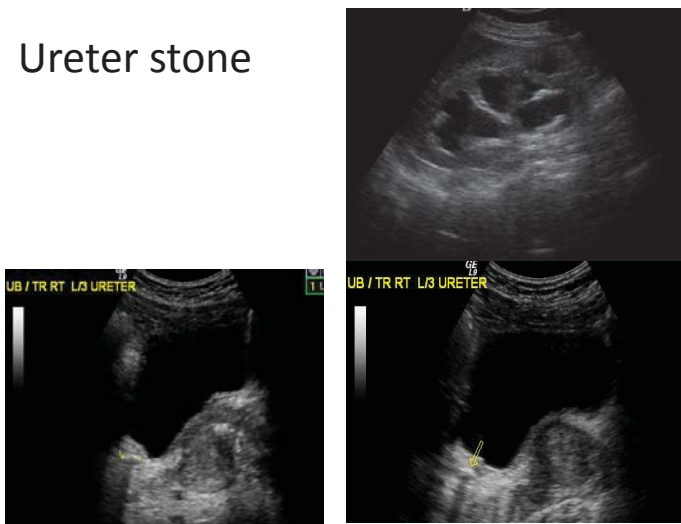
Urinary Bladder



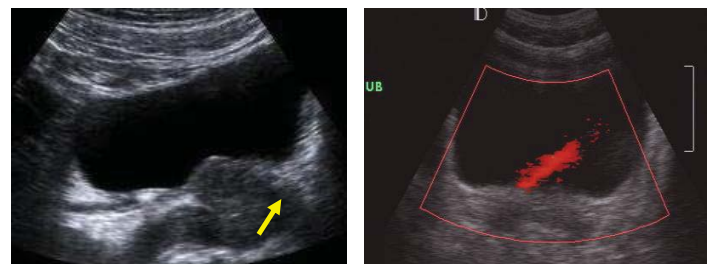
Urinary Bladder diverticulum



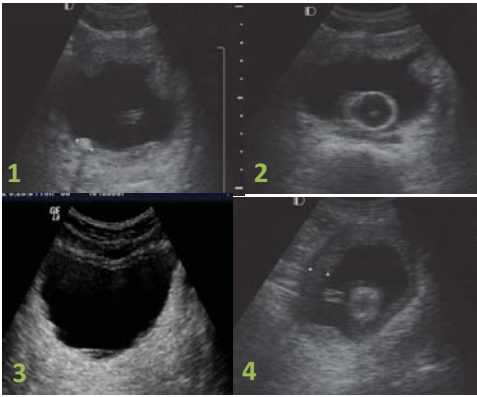
Ureter stone



Ureterovesical Junction (UVJ) stone



Chronic cystitis & Vesical stone



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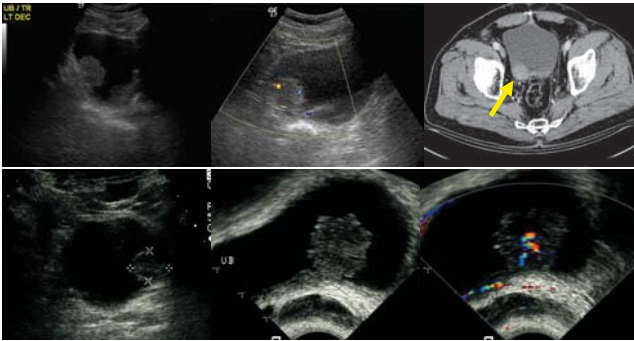
Cystitis



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TCC or UCC

- Transitional cell carcinoma or Urothelial cell carcinoma
 - 會不會動(blood clot) 、Color



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Thank you for your attention

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