Gallbladder Disease and Normal Variants

Common Clinical Findings

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Gallbladder Anatomy

Right lobe of Liver

Three sections: Fundus, Body, Neck

Cystic duct connects gallbladder to common bile duct

Hartmann’s Pouch…common place for Gallstones!
Gallbladder Anatomy
Gallbladder Function

Bile storage

Concentration of bile

Release into small intestine

Fat emulsification
Biliary Anatomy

- Hepatocytes ➔ canaliculi ➔ biliary ductules ➔ L & R hepatic ducts ➔ common hepatic duct

- Common hepatic ducts & Cystic Duct ➔ Common Bile Duct (CBD)
Anatomical Variants

Abnormal Positioning
Agenesis
Duplication
Phrygian Cap
Micro gallbladder
Multisepate
Abnormal Position

Very rare to be in left lobe. About 1 case per year in population imaged

Detached gallbladder or Ectopic positioning
Suprahepatic GB in right lobe of liver
Agenesis of Gallbladder

Very rare condition

Often asymptomatic if only anomaly

Sometimes seen with other internal malformations such as:
  genitourinary
  renal
  reproductive
Agenesis
Gallbladder duplication

No increased chance of malignancies or stones

Can be bilobed, incomplete gallbladder with common cystic duct

Complete duplication with separate cystic ducts that lead to hepatic duct

Complete duplication with common cystic duct entering to hepatic duct
Gallbladder duplication
Gallbladder Duplication
Phrygian Cap

Most common variant

Fold in the fundus

No pathological significance and asymptomatic
Phrygian Cap
Micro Gallbladder

Usually less than 2-3 cm long and .5-1.5 cm wide

Often thick walled

Due to Cystic Fibrosis
Micro Gallbladder due to Cystic Fibrosis
Multisepate

Common finding

3-10 communicating compartments of columnar epithelium

Can cause immobility of bile leading to sludge and stones
Multiseptate Gallbladder
Cholecystitis

Acute

Chronic

Porcelain Gallbladder
Acute Cholecystitis

Inflammation of the gallbladder

Primary complication of cholelithiasis

Most common cause of RUQ pain

Sonographic Murphy’s sign

Wall thickness >3mm

Pericholecystic fluid
Increased wall thickness in case of calculus cholecystitis
Pericholecystic fluid
Chronic Cholecystitis

Prolonged inflammatory condition

Seen with cholelithiasis

Wall thickening

Gallbladder contracted or distended

Pericholecystic inflammation is absent
Chronic Cholecystitis
Porcelain Gallbladder

Calcifying cholecystitis

Extensive calcium encrustation of wall of gallbladder

Asymptomatic
Porcelain Gallbladder
Non-tumor Gallbladder findings

Adenomyomatosis

Cholesterolosis

Cholelithiasis

Hydrops

Cholesterol deposits in Gallbladder wall
Adenomyomatosis

Hyperplastic cholecystosis-focal wall thickening. Also used to describe cholesterolosis

Cholesterol crystals form in the Rokitansky-Aschoff sinuses

Asymptomatic although associated with biliary stasis, gallstones and pancreatitis
Adenomyomatosis

GB

Adenomyomatosis
Cholesterolosis

Unrelated to atherosclerosis

Triglycerides and cholesterol esters are deposited in the lamina of the GB wall

Lipid deposits are visible

Strawberry Gallbladder
Strawberry Gallbladder
Cholelithiasis

Gallstones or cholelith

Can be asymptomatic for years

The 4 F’s  Fat, Forty, Fertile, and Female

Leading cause of Cholecystitis if stone blocks duct
Stones form when bile is saturated with cholesterol or bilirubin

Often managed by waiting for them to pass naturally

If thought to be causing RUQ pain, nausea, and vomiting then cholecystectomy can be performed
Gallstone with shadow!
Multiple stones
**WES Sign**

Wall-Echo-Shadow

Causes include one large stone or multiple stones taking up entire gallbladder

Triad-GB wall, echo from stones beneath wall, posterior shadow from stones
WES sign
Hydrops in Gallbladder

Accumulation of fluid (bile, water) from cystic duct blockage

Gallbladder tends to be very large greater than 9cm

Main causes are stones but tumors can also cause this
Hydrops
Benign Tumor Findings

Cholesterol Polyp

Inflammatory Polyp
Cholesterol Polyp

Lesions of mucosal surface of GB

Non-shadowing polyploidy growth

Majority are benign 95%

Malignant 5% (Adenocarcinoma 95%)
Greater than 50% are cholesterol polyps

Most are less than 10mm with majority less than 5mm
Size greater than 10mm increases malignancy rate 37-88%
Multiple Polyps

Figure 8: Ultrasound — small polyps (arrows) adherent to gall bladder wall.
So many polyps!
Inflammatory Polyps

Rare variant of benign polyp

Difficult to differentiate from carcinoma if over 10mm

Tend to be vascular in nature with stalk
Polyp with color flow
Malignant Gallbladder Tumor

Adenocarcinoma
Adenocarcinoma

Most common cancer of gallbladder (90%)

Can affect patients with chronic cholecystolithiasis

Often asymptomatic in early treatable stages

Patient will present with jaundice in late stage due to tumor involvement of bile ducts

Extension into liver and small bowel
Adenocarcinoma
Gangrenous Gallbladder

Can be caused by acute cholecystitis
rare 10% become gangrenous

A gallstone blocking duct leads to
inflammation of wall and thus cutting off
blood supply

Gangrene can look like septations in GB
Gangrenous cholecystitis with membrane
A Bit about the Bile Ducts!
Choledocholithiasis

One or more stones in the common bile duct.

Pain can be similar to cholecystitis

Can block passage of bile to duodenum

Cholecystectomy or ERCP to remove stone
Choledocholithiasis
Choledochal Cyst

Congenital dilation of biliary tree

Rare finding and 60% are found before age 10

Can cause abdominal pain and jaundice if bile is backed up into cyst

When scanning look for any blockage that might cause the cystic structure.
Choledochal Cyst
QUESTIONS???


