

Pathology Lectures

Gastro-esophageal reflux disease

Peptic Ulcer Disease

Pancreatitis

Diarrhea

Malabsorption

Inflammatory bowel disease-1

Inflammatory bowel disease-2

Colonic polyps and carcinoma-1

Colonic polyps and carcinoma-2

Cirrhosis

Cholecystitis

Cirrhosis

Tumors of liver and pancreas

PATHOLOGY AND PATHOGENESIS OF CHOLECYSTITIS

Objective

1. Recognize the predisposing factors of cholecystitis.
2. Describe the pathological features different types of cholecystitis.
3. Describe the clinical features different types of cholecystitis.
4. Understand the pathogenesis of acute and chronic cholecystitis

Bile content

1. Water: 97–98%
 2. Bile salts: 0.7%
 3. Bilirubin: 0.2%
 4. fats (cholesterol, fatty acids, and lecithin): 0.51%
 5. inorganic salts: 200 meq/l .
- The two main pigments of bile are
 1. **bilirubin**, which is **orange–yellow**,
 2. **Biliverdin** , which is **green**.
- When mixed, they are responsible for the brown color of feces.

Disorders of the Gallbladder

CHOLELITHIASIS (GALLSTONES)

- 80% are "silent," free of biliary pain
- Two main types
 - crystalline cholesterol monohydrate*
 - 1. cholesterol stones,80%. *bilirubin calcium salts*
 - 2. pigment stones.....20%

Risk Factors for Gallstones

cholesterol stones

Advancing age

Female sex hormones

Female gender

Oral contraceptives

Pregnancy

Obesity

Rapid weight reduction

Gallbladder stasis

Inborn disorders of bile acid metabolism

Hyperlipidemia



pigment stones

Asian

Chronic hemolytic syndromes

Biliary infection

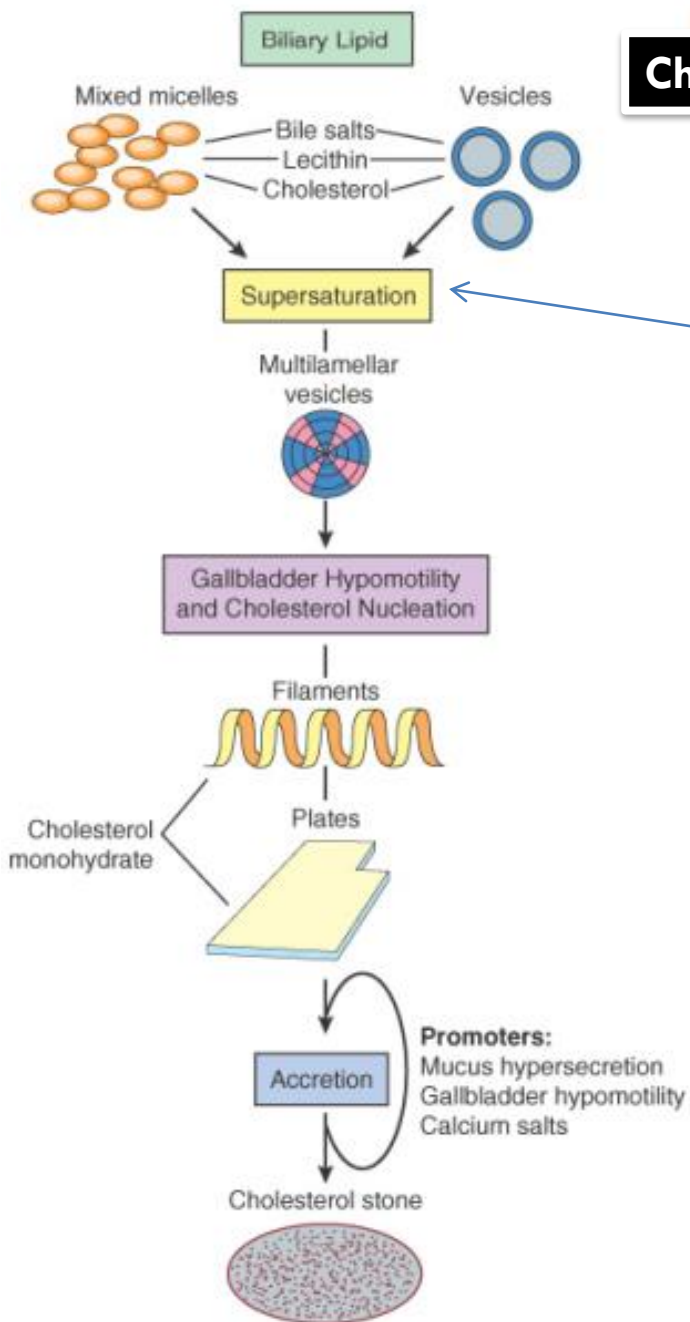
Gastrointestinal disorders

1. Ileal disease (e.g., Crohn disease), ileal resection or bypass,
2. cystic fibrosis with pancreatic insufficiency



Pathogenesis

Cholesterol Stones



hypersecretion of cholesterol.

cholesterol concentrations exceed the solubilizing capacity of bile



Pathogenesis

Pigment Stones

Based on

1. The presence of unconjugated bilirubin (poorly soluble in water)
2. precipitation of calcium bilirubin salts.



Infection of the biliary tract, as with

1. *Escherichia coli*
2. *Ascaris lumbricoides*
3. liver fluke *Opisthorchis sinensis*



Chronic hemolytic conditions



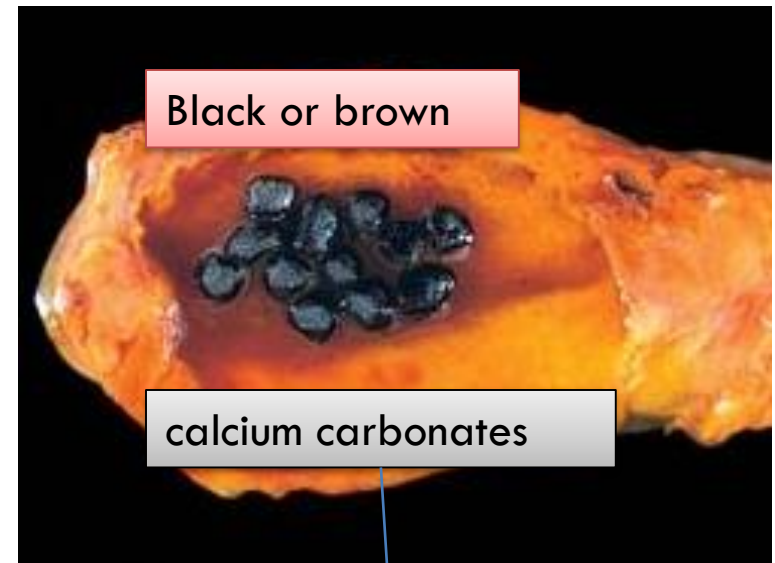
Gross and content

Cholesterol stone



Stones composed largely of cholesterol are radiolucent; sufficient calcium carbonate is found in 10% to 20% of cholesterol stones to render them radio-opaque.

Pigment Stones



50% to 75% of black stones are radio-opaque

Cholesterolosis

An incidental finding

Excessive accumulation of cholesterol esters within the lamina propria of the gallbladder.



strawberry gallbladder

Clinical Features

- 70% to 80%asymptomatic.
- Symptoms:Colicky upper quadrant pain,
- It is usually due to obstruction of bile ducts by passing stones.

Complications of gallstone

1. Empyema
2. Perforation
3. Fistulae
4. Inflammation of the biliary tree (cholangitis)
5. Obstructive cholestasis
6. Pancreatitis
7. Occasionally, a large stone may erode directly into an adjacent loop of small bowel, generating intestinal obstruction ("gallstone ileus").
8. Most notable is the increased risk for carcinoma of the gallbladder.
 - The larger the calculi, the less likely they are to enter the cystic or common ducts to produce obstruction; it is the very small stones, that are the more dangerous.

CHOLECYSTITIS

- Inflammation of the gallbladder may be acute, chronic, or acute superimposed on chronic. It almost always occurs in association with gallstones.

Acute Cholecystitis

Calculous

obstruction of the neck or cystic duct.

Acalculous

1. Postoperative
2. severe trauma
3. severe burns;
4. multisystem organ failure;
5. Sepsis
6. postpartum state.



Bright red to green-black

gangrenous

Fibrin ... Exudate.... hemorrhage

Empyema

Acute Cholecystitis :Clinical Features

- Progressive right upper quadrant or epigastric pain,
- Mild fever

- *May appear with remarkable suddenness and constitute an acute surgical emergency or may present with mild symptoms that resolve without medical intervention.*

Acute Cholecystitis :Clinical Features

Acute acalculous cholecystitis

- More **insidious**, since symptoms are obscured by the underlying conditions precipitating the attacks.
- A higher proportion of patients have **no symptoms referable to the gallbladder**.
- The incidence of **gangrene and perforation** is much higher than in calculous cholecystitis.

Chronic cholecystitis

- Chronic cholecystitis may be a sequel to repeated bouts of mild to severe acute cholecystitis, but in many instances, it develops in the apparent absence of antecedent attacks.
- It is associated with cholelithiasis in over 90% of cases.

Chronic cholecystitis

- The symptoms of calculous chronic cholecystitis are similar to those of the acute form and range from biliary colic to indolent right upper quadrant pain and epigastric distress.
- Patients often have intolerance to fatty food, belching and postprandial epigastric distress, sometimes include nausea and vomiting.

Morphology

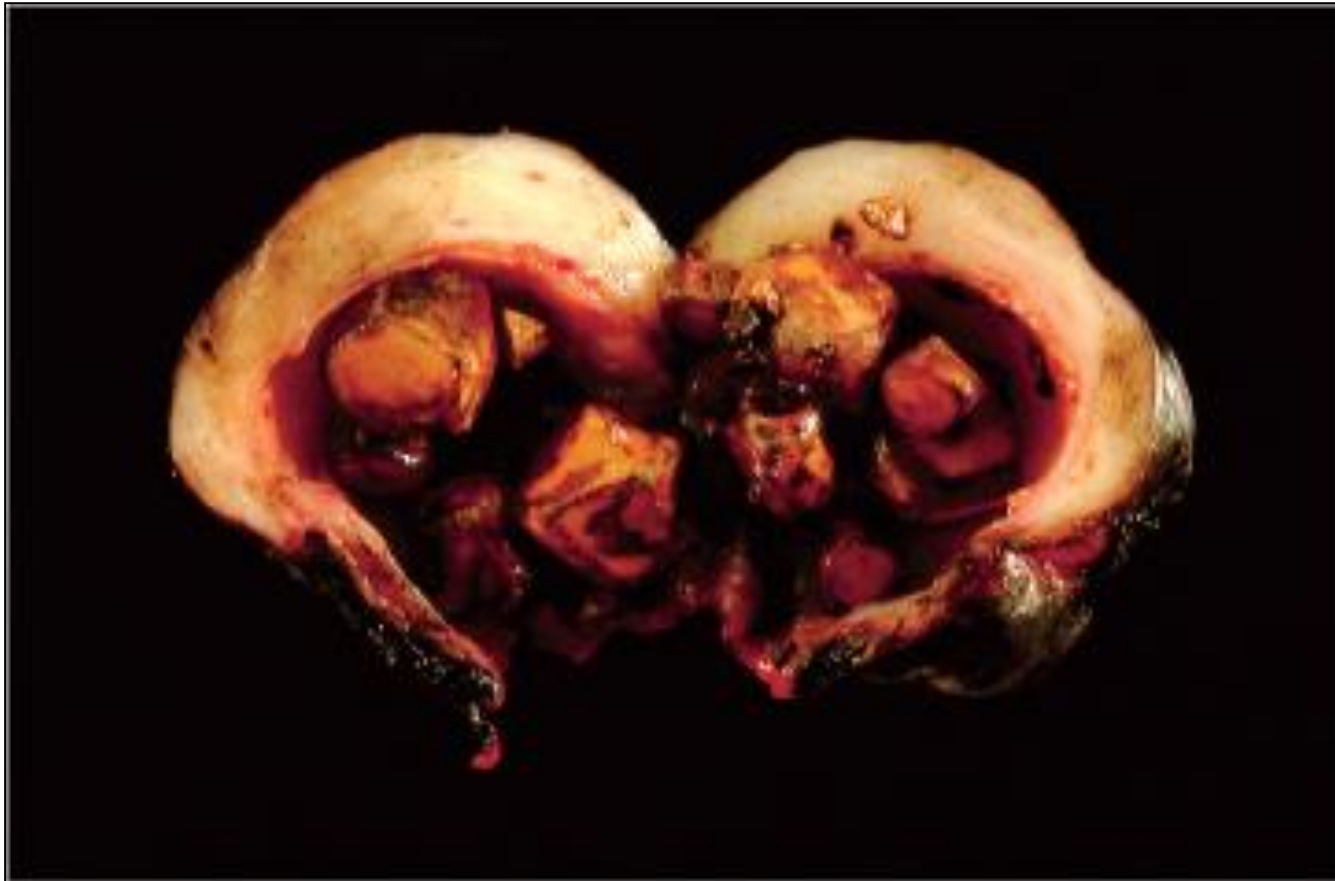
- The morphologic changes in chronic cholecystitis are extremely variable and sometimes minimal. Gall bladder may be
 1. Contracted (fibrosis),
 2. normal in size
 3. enlarged (from obstruction).
- The wall is variably thickened. Stones are frequent.



Rokitansky-Aschoff sinuses

Outpouchings of the mucosal epithelium
through the wall

Xanthogranulomatous cholecystitis abundant
lipid filled macrophages



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Complications: acute and chronic cholecystitis

1. Bacterial superinfection with cholangitis or sepsis
2. GB perforation & local abscess formation
3. GB rupture with diffuse peritonitis
4. Biliary enteric fistula with drainage of bile into adjacent organs, and potentially gallstone-induced intestinal obstruction (ileus)

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