HEPATIC NEOPLASMS.

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- Hepatic masses come to attention for a variety of reasons:

❑ They may generate epigastric fullness and discomfort .

❑ can detected by routine physical examination.

❑ Abnormal radiographic studies for other indications.

- Hepatic masses include:

❑ nodular hyperplasia's .

❑ true neoplasms
  - Benign Neoplasms
  - Malignant Neoplasms

FOCAL NODULAR HYPERPLASIA

- Solitary or multiple hyperplastic hepatocellular nodules that may develop in the noncirrhotic liver.
- They arise from local alterations in hepatic parenchymal blood supply, such as :

❖ arteriovenous malformations.

❖ inflammatory or posttraumatic obliteration of portal vein radicles.

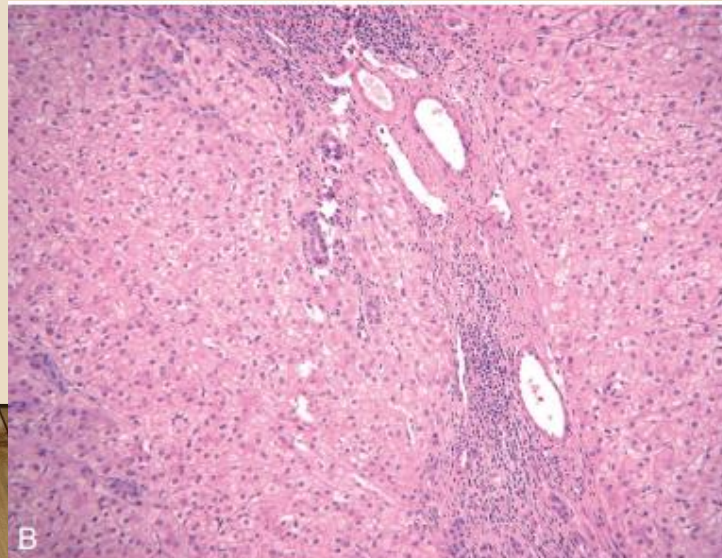
❖ compensatory augmentation of arterial blood supply.

FOCAL NODULAR HYPERPLASIA: GROSS.

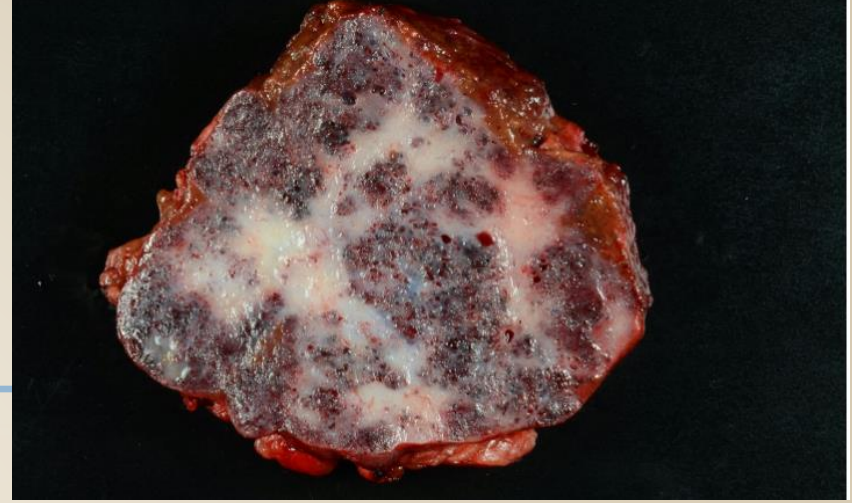
- well-demarcated, poorly encapsulated nodule in an otherwise normal liver.
- there is a central gray-white, depressed stellate scar from which fibrous septa radiate to the periphery.

FOCAL NODULAR HYPERPLASIA: MICROSCOPICALLY.

- the central scar contains large abnormal vessels and ductular reactions along the spokes of scar.
- The hyperplastic regions are composed of normal hepatocytes separated by thickened sinusoidal plates

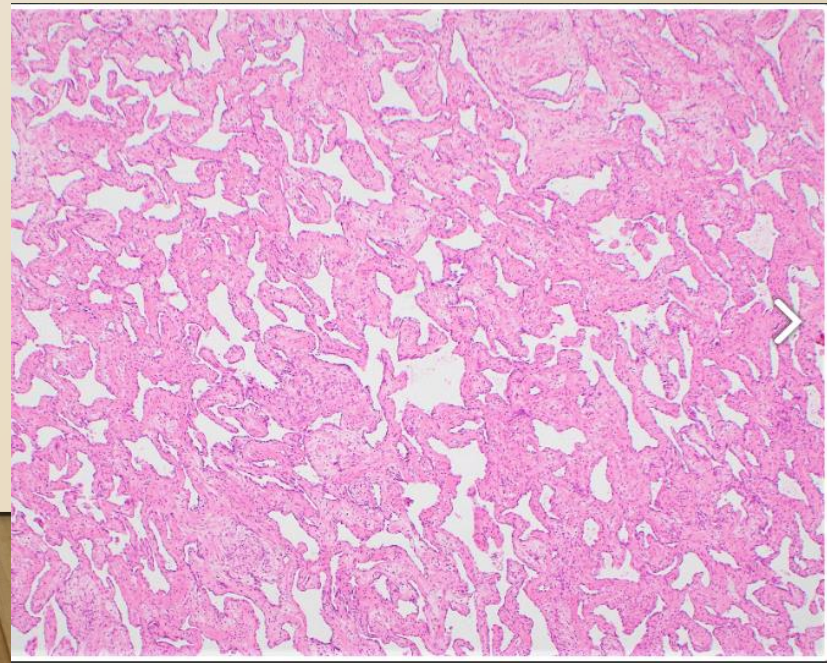


BENIGN NEOPLASMS



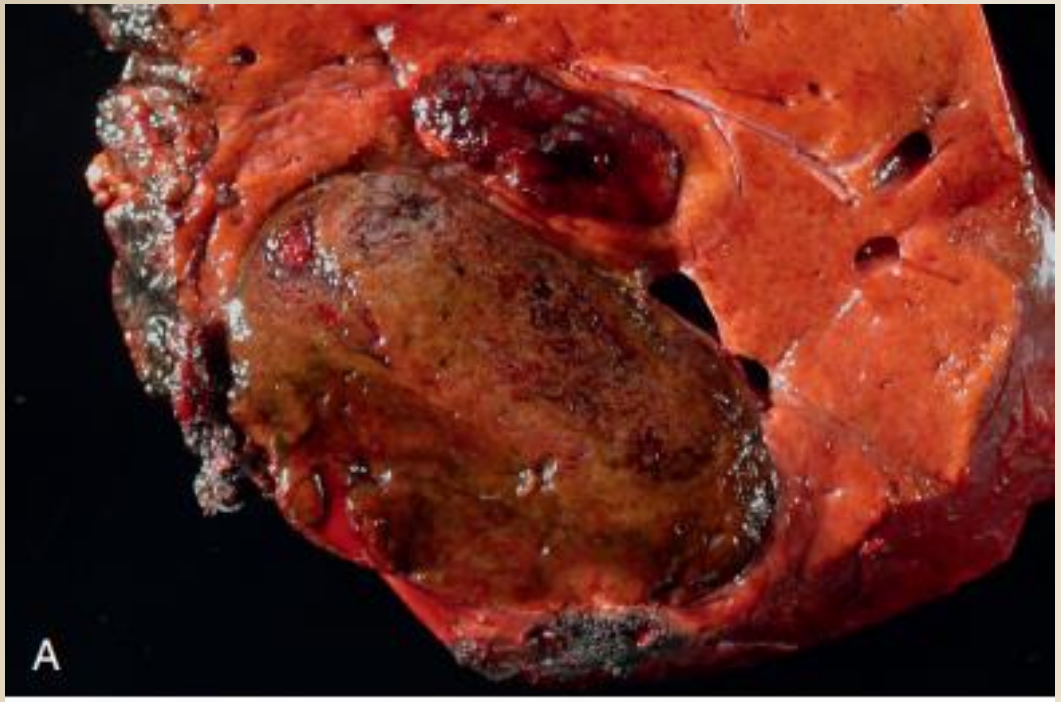
❖ **1. Cavernous hemangiomas:**

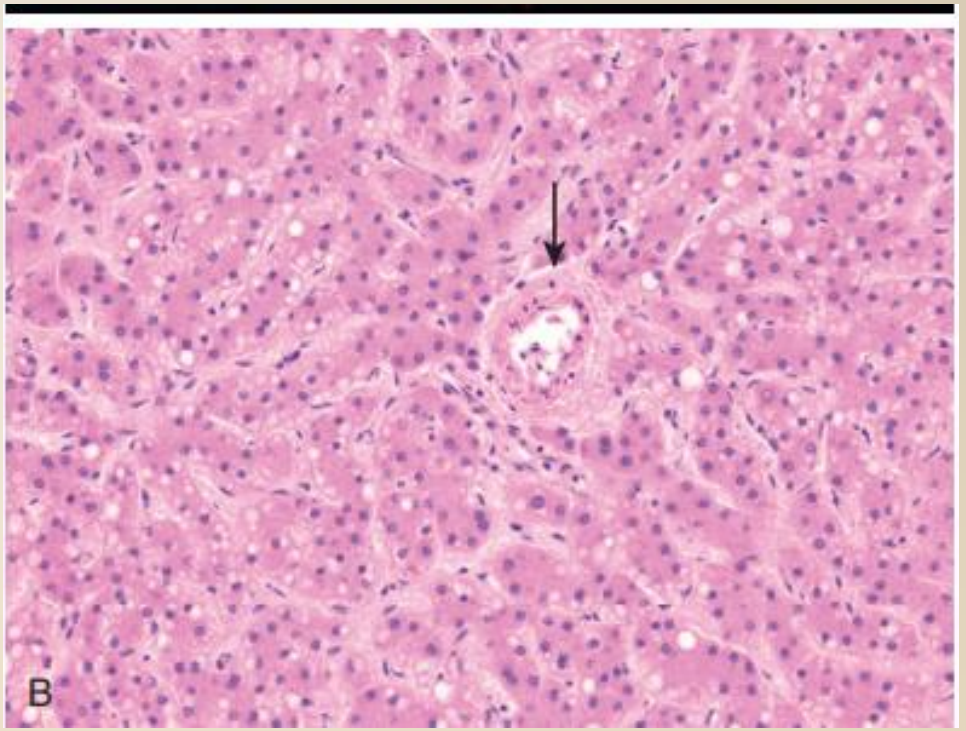
- the most common benign tumor of the liver.
- Vast majority of hemangiomas are asymptomatic and require no intervention.
- **Gross description:**
- Well circumscribed with red-brown, spongy / honeycombed cut surface
- **Microscopic:**
- Circumscribed proliferation of variably sized, dilated and thin walled vessels



2. HEPATOCELLULAR ADENOMAS

- Benign neoplasms developing from hepatocytes.
- may be detected incidentally or cause symptoms (pain, which may be caused by pressure placed on the liver capsule by the expanding mass or hemorrhagic necrosis of the tumor as it outstrips its blood supply).
- Hepatocellular adenomas occasionally rupture, an event that may lead to life-threatening intraabdominal bleeding.
- Sex hormone exposure (e.g., oral contraceptive pills) markedly increases the frequency of hepatic adenoma.





Microscopic view showing cords of hepatocytes, with an arterial vascular supply (arrow) and no portal tracts.

MALIGNANT NEOPLASMS

- Malignant tumors occurring in the liver can be:
- primary.
  - arise from hepatocytes (hepatocellular carcinoma (HCC).
  - Arise from bile duct origin, cholangiocarcinomas
- metastatic.

HEPATOCELLULAR CARCINOMA (HCC)

- Primary malignancy of liver with hepatocellular differentiation.
- 80% of hepatocellular carcinoma cases arise in cirrhosis.
- Risk factors:
- Chronic liver disease leading to cirrhosis; most common etiologies leading to this include:

✓ chronic viral hepatits (HBV and HCV).

✓ heavy alcohol consumption.

✓ Metabolic syndrome: obesity, diabetes mellitus, and NAFLD .

✓ toxic injuries (aflatoxin, it synergizes with HBV (and perhaps also with HCV) to increase risk further.)..

✓ Inherited disorders, particularly hereditary hemochromatosis and α1AT deficiency, and to a lesser degree Wilson disease

PATHOGENESIS

- HCC is induced by acquired driver mutations in :

➢ Oncogenes: Gain of function mutations in beta-catenin , identified in up to 40% of HCCs.

➢ tumor suppressor genes: loss of function mutation in TP53, present in up to 60% of HCCs.

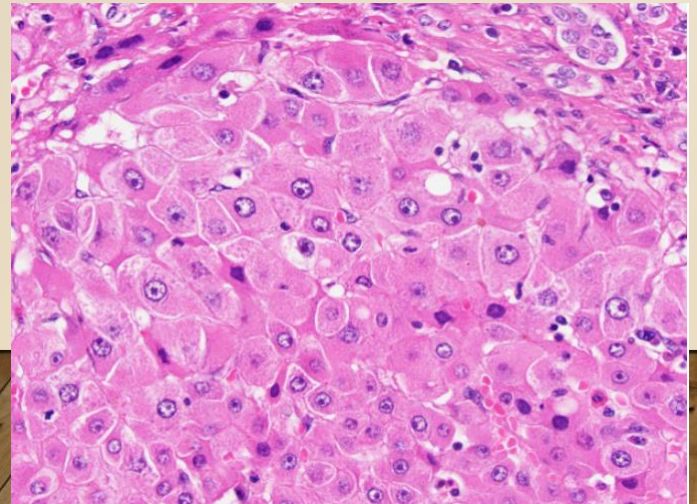
- HCC often appears to arise from premalignant precursors lesions:
- Hepatic adenoma.
- Chronic liver disease associated with cellular dysplasias :

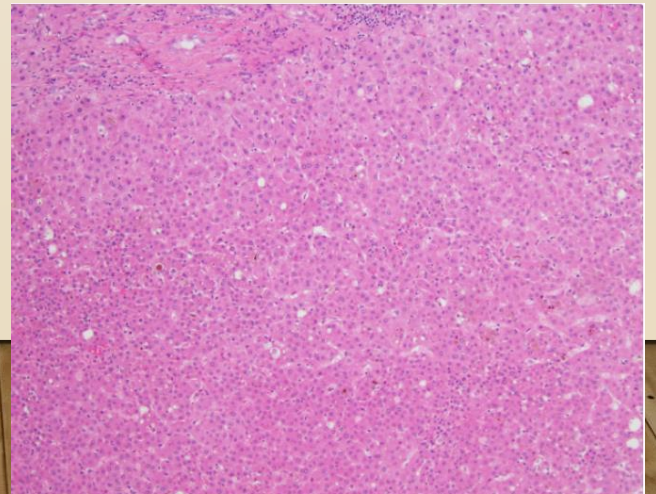
➢ large-cell change.:

❖ increase in both nuclear and cytoplasmic size, preserving nuclear to cytoplasmic ratio; nuclei are hyperchromatic, pleomorphic and frequently multinucleated.

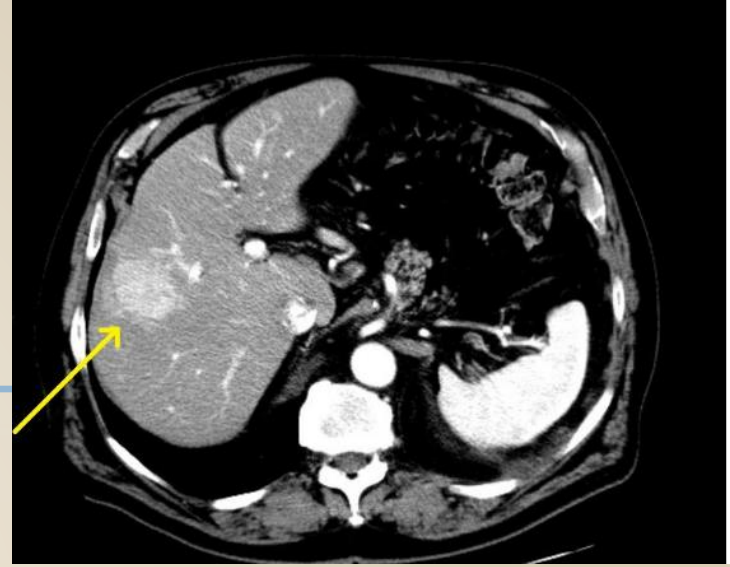
➢ small-cell change:

❖ decreased cell volume, increased nuclear to cytoplasmic ratio, mild nuclear pleomorphism, hyperchromasia and cytoplasmic basophilia, giving the impression of nuclear crowding





CLINICAL FEATURES



- ill-defined upper-abdominal pain, malaise, fatigue, weight loss.
- abdominal mass or abdominal fullness.
- Jaundice, fever, and gastrointestinal or esophageal variceal bleeding.
- Metastatic : most commonly to the lungs.

❖ Laboratory studies: Elevated serum levels of α-fetoprotein.

❖ imaging studies: Increasing arterialization during the development and progression of HCC .

❖ Death usually occurs from:

❖ (1) cachexia,

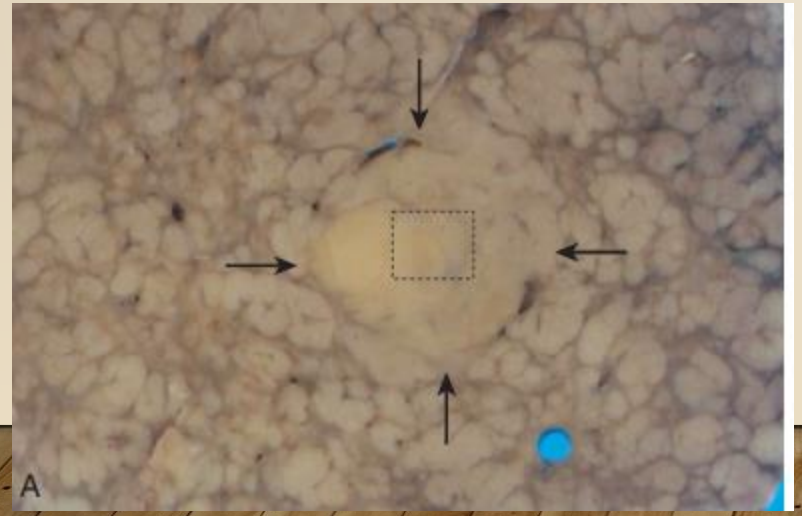
❖ (2) gastrointestinal or esophageal variceal bleeding

❖ (3) liver failure with hepatic coma.

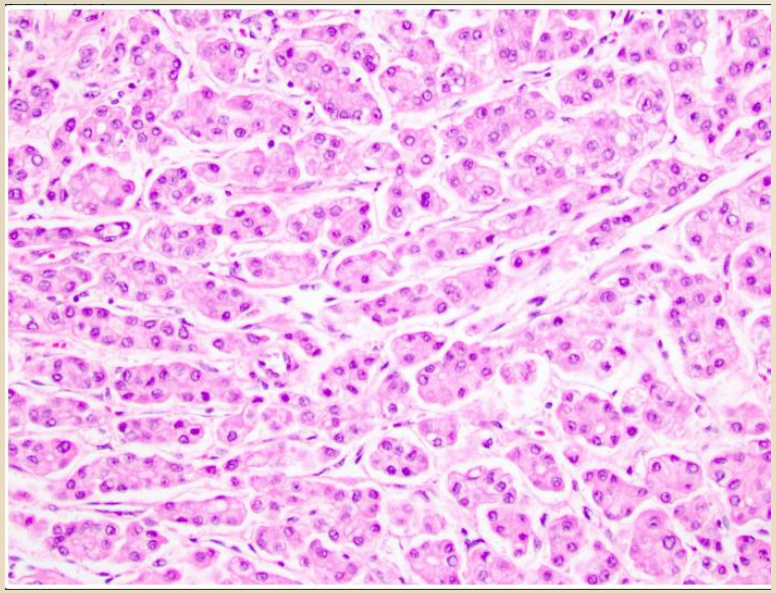
❖ (4) rupture of the tumor with fatal hemorrhage

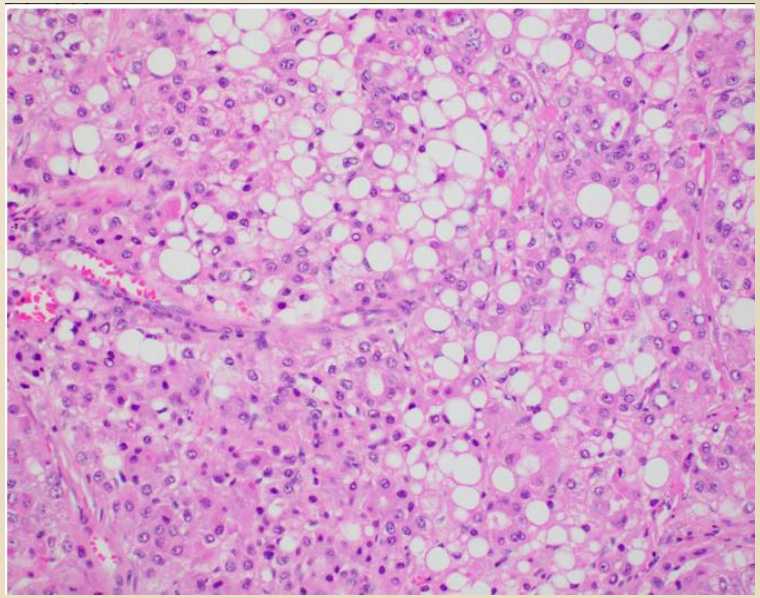
MORPHOLOGY

- HCC may appear grossly as:
- (1) a unifocal (usually large) mass.
- (2) multifocal, widely distributed nodules of variable size.
- (3) a diffusely infiltrative cancer,



- HCCs range from :
- well differentiated to highly anaplastic lesions.





Well-differentiated HCCs are composed of cells that look like normal hepatocytes and grow as thick trabeculae

tumor cells appear malignant on H&E and often cannot be distinguished from other poorly differentiated neoplasms;

CHOLANGIOCARCINOMA

- the second most common primary malignant tumor of the liver after HCC.
- arises from intrahepatic and extrahepatic bile ducts.
- All risk factors for cholangiocarcinoma cause chronic inflammation and cholestasis, which presumably promote occurrence of somatic mutations or epigenetic alterations in cholangiocytes.

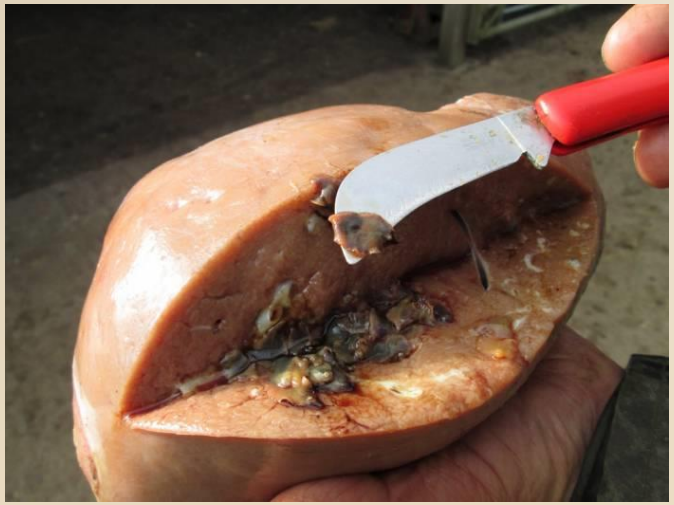
- The risk factors include :

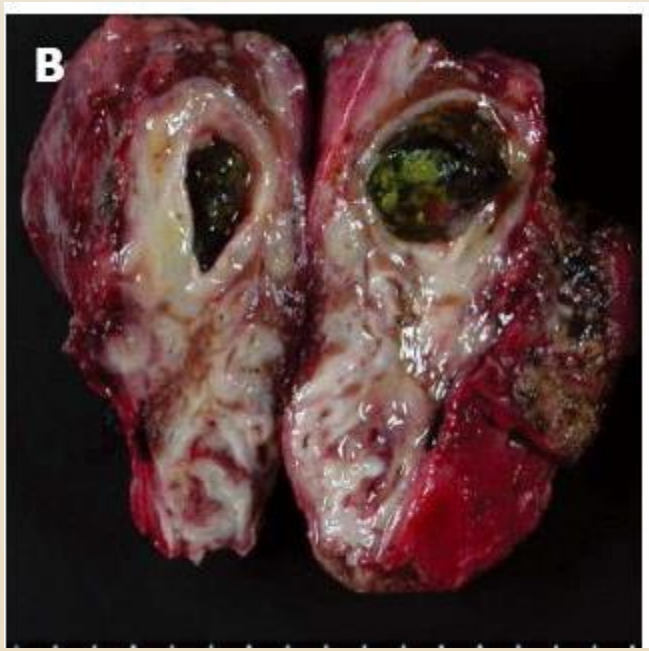
✓ infestation by liver flukes .

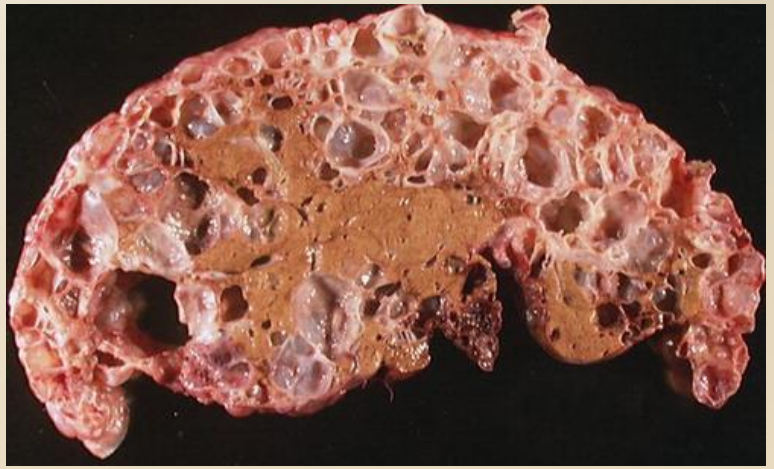
✓ chronic inflammatory disease of the large bile ducts (such as primary sclerosing cholangitis),

✓ hepatolithiasis.

✓ fibropolycystic liver disease.

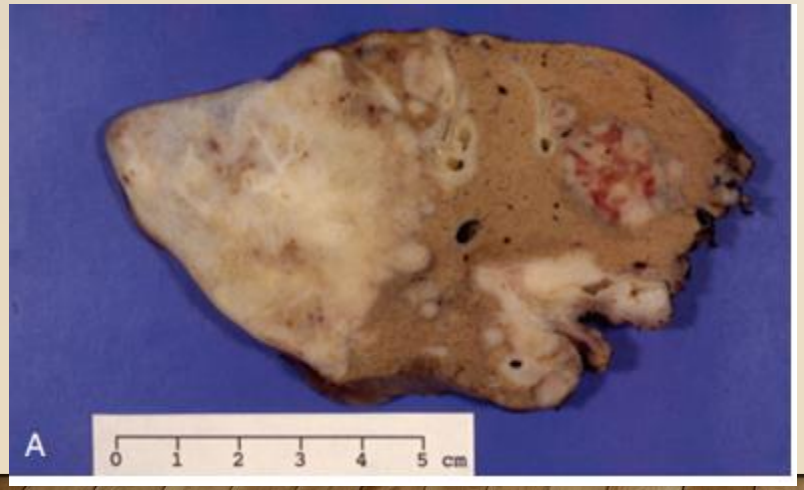


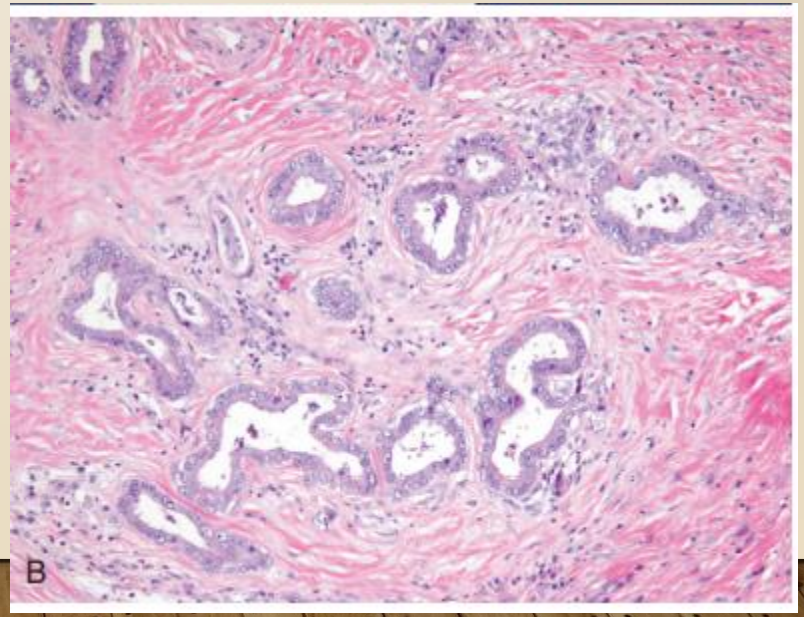




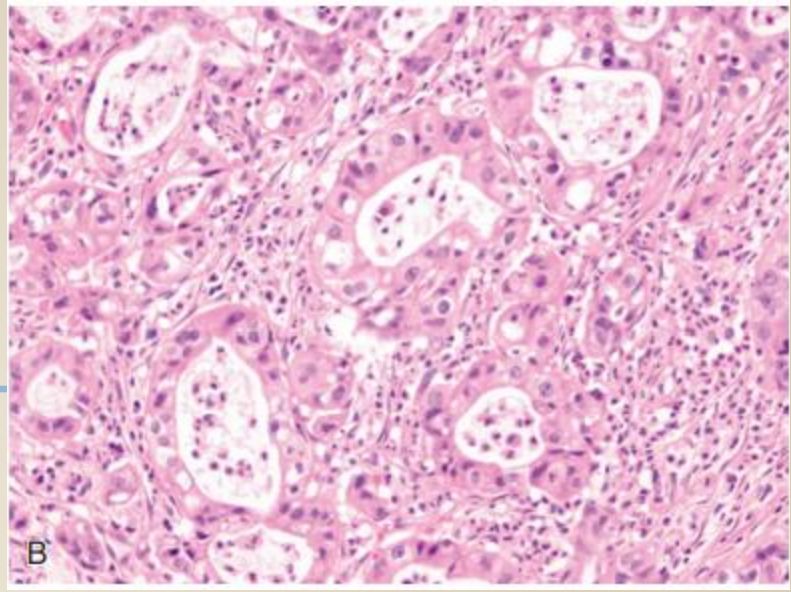
MORPHOLOGY

- Most tumors appear as firm, gray nodules within the bile duct wall.
- Cholangiocarcinomas are typical mucin-producing adenocarcinomas. Most are well to moderately differentiated, growing as glandular/tubular structures lined by malignant epithelial cells.





GALLBLADDER



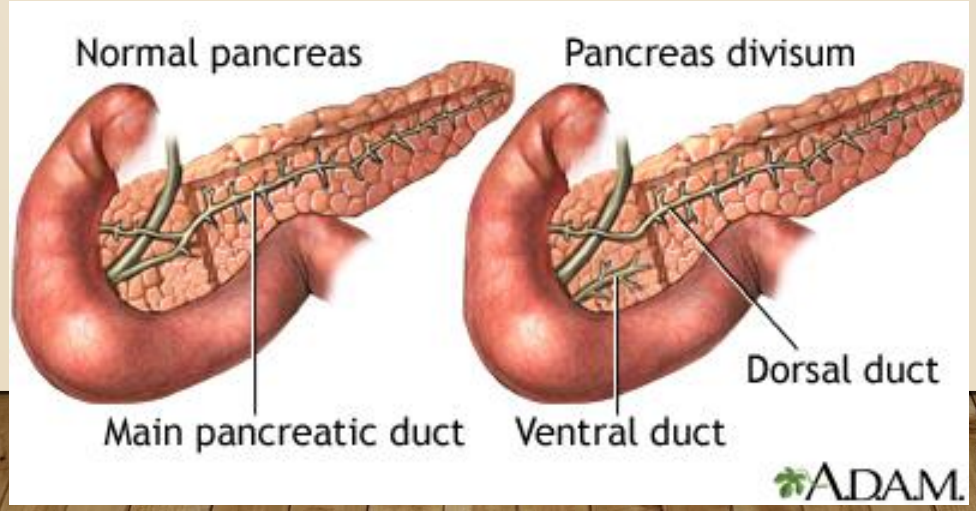
- GALLSTONE DISEASE.
- CHOLECYSTITIS:
  - Acute Calculous Cholecystitis: Acute inflammation of a gallbladder that contains stones.
  - Chronic Cholecystitis: occur due to repeated bouts of acute cholecystitis or de novo.
- CARCINOMA OF THE GALLBLADDER:
- more common in women and occurs most frequently in the seventh decade of life.
- Presenting symptoms : abdominal pain, jaundice, anorexia, nausea and vomiting.
- Most carcinomas of the gallbladder are adenocarcinomas.

PANCREAS

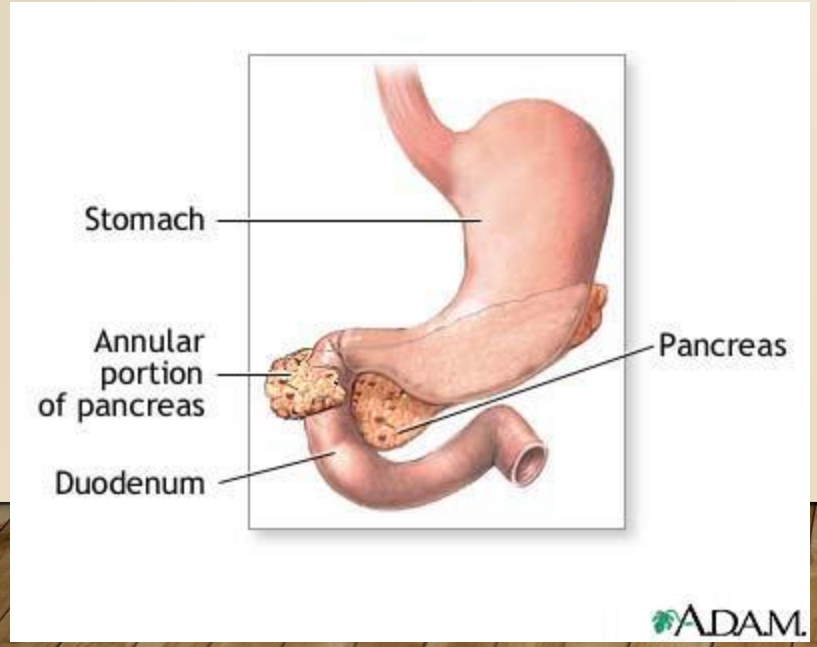
- Congenital Anomalies.
- Pancreatitis.
- Pancreatic Neoplasms:
  - Cystic Neoplasms.
  - Pancreatic Carcinoma

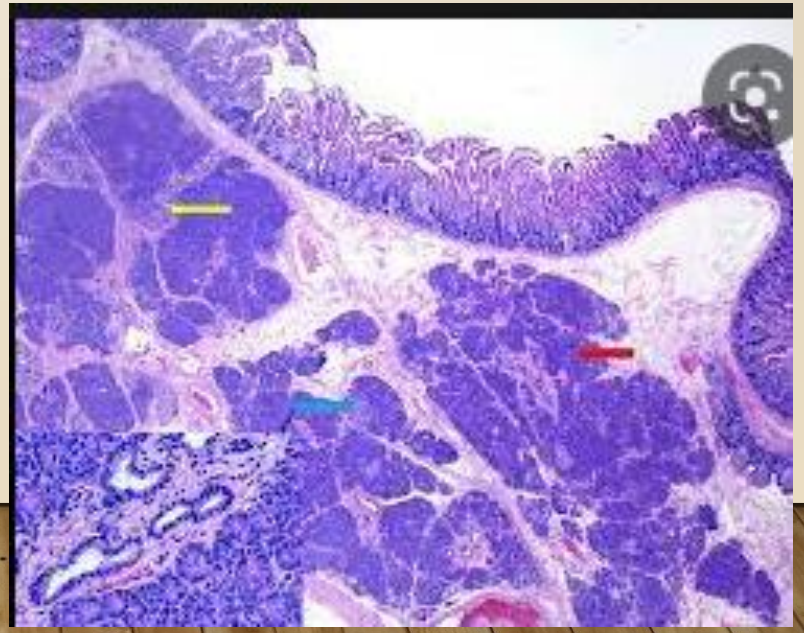
CONGENITAL ANOMALIES

- 1. Agenesis: the pancreas is totally absent.
- 2. Pancreas Divisum:
- most common congenital anomaly of the pancreas.
- caused by a failure of fusion of the fetal duct systems of the dorsal and ventral pancreatic primordia.



- 3. Annular Pancreas: ring of pancreatic tissue completely encircles the duodenum.
- 4. Ectopic Pancreas: favored sites are the stomach and duodenum, followed by the jejunum, Meckel diverticulum, and ileum.





PANCREATITIS:ACUTE PANCREATITIS

- Acute pancreatitis is a reversible inflammatory disorder that varies in severity, from focal edema and fat necrosis to widespread hemorrhagic necrosis.
- Etiology:

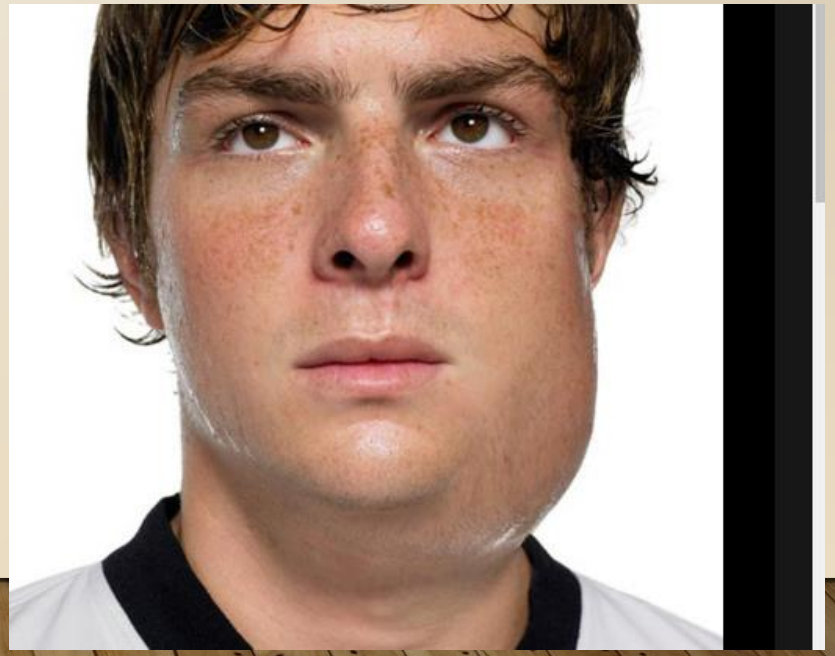
➢ Gallstones.

➢ Non–gallstone-related obstruction.

➢ Medications.

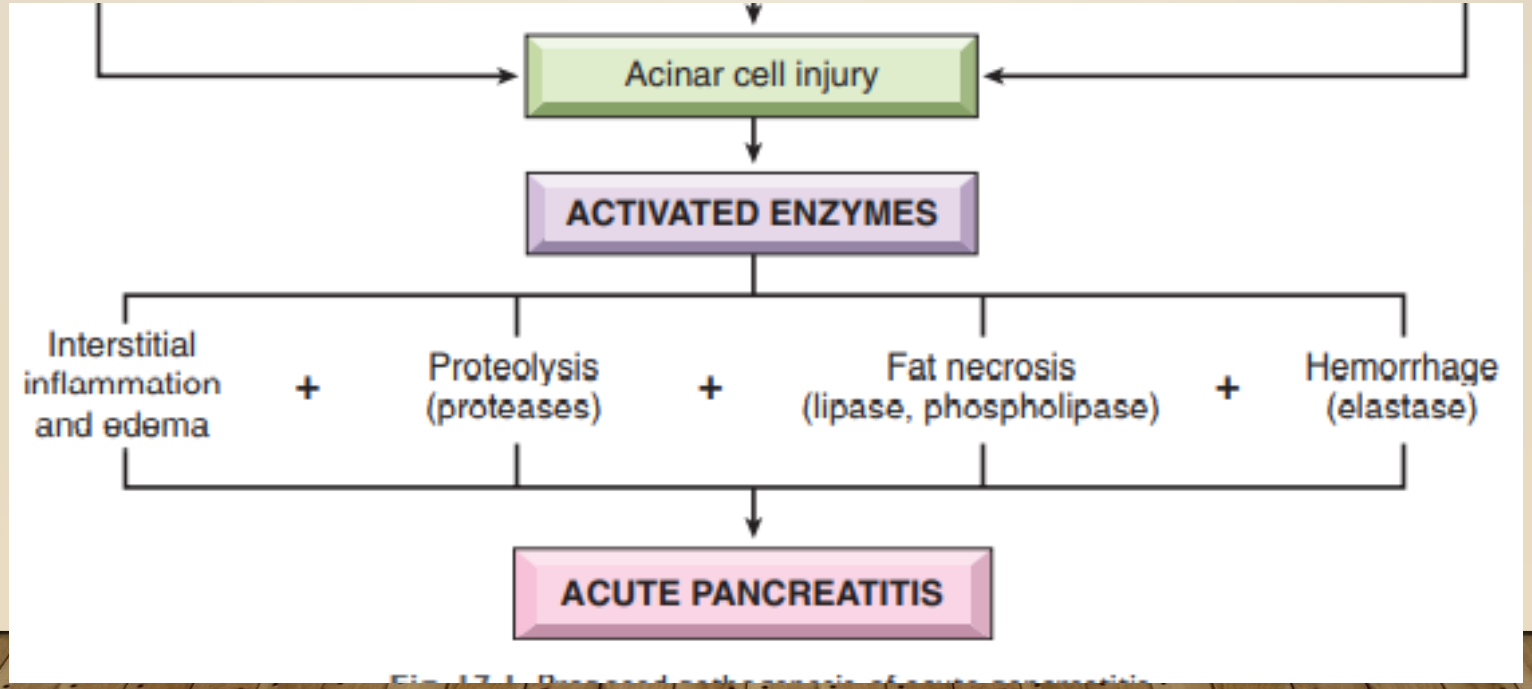
➢ Infections.

➢ Metabolic disorders



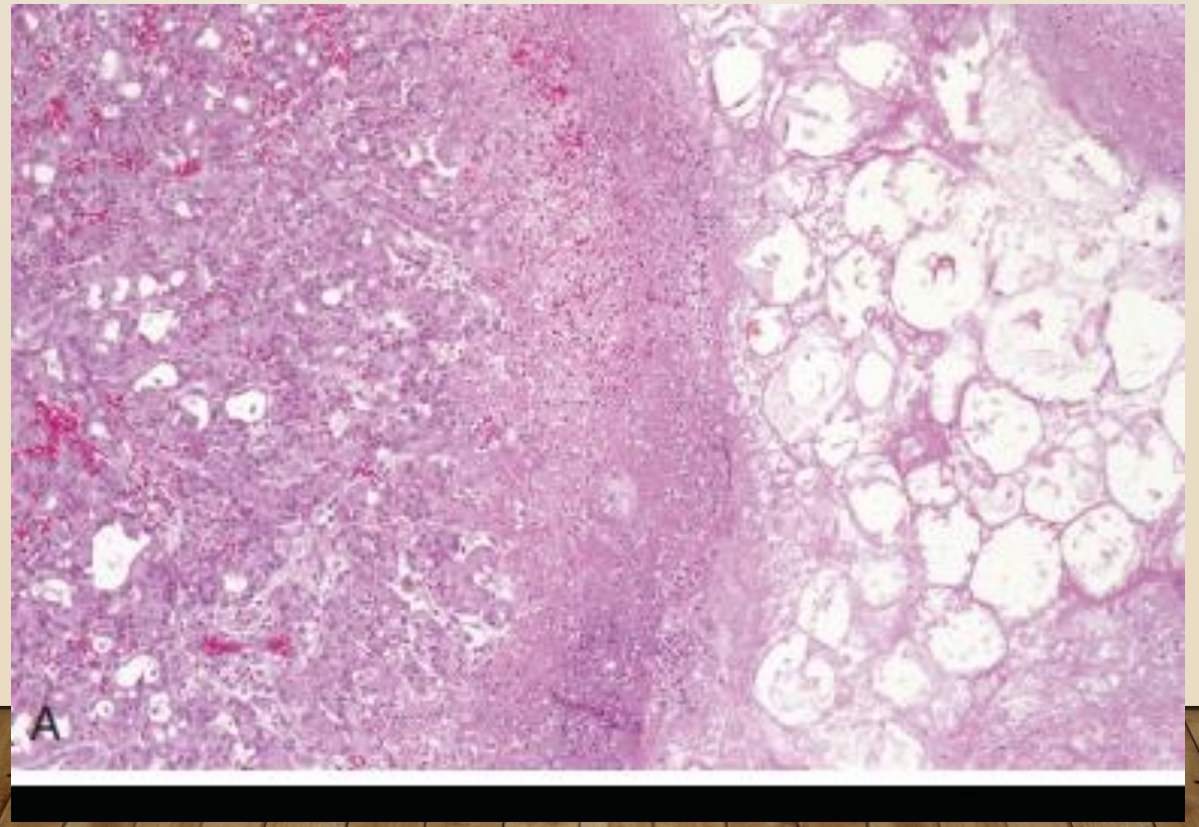
PATHOGENESIS

- Acute pancreatitis appears to be caused by autodigestion of the pancreas by inappropriately activated pancreatic enzymes.



MORPHOLOGY

- acute inflammatory cell infiltrate admixed with edema and fibrinous exudate.
- patchy necrosis.



CHRONIC PANCREATITIS

- Chronic pancreatitis is characterized by long-standing inflammation that leads to irreversible destruction of the exocrine pancreas, followed eventually by loss of the islets of Langerhans.
- Etiology:

➢ long-term alcohol abuse.

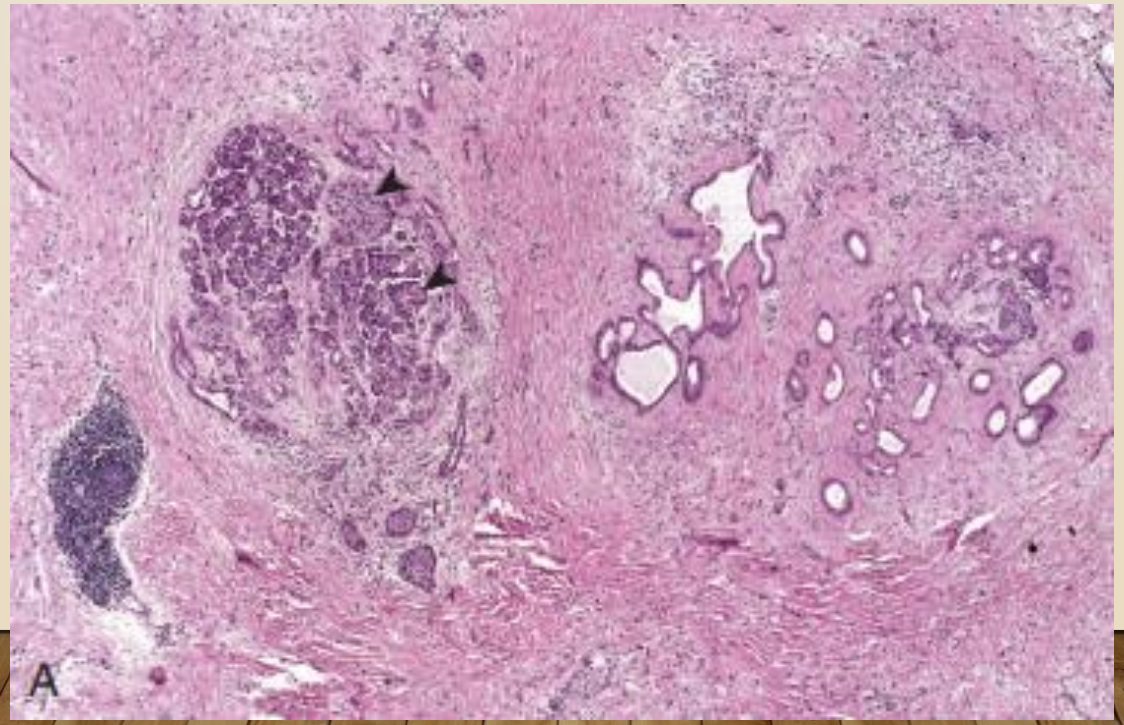
➢ Duct Obstruction

➢ Hereditary pancreatitis

➢ Autoimmune pancreatitis.

MORPHOLOGY

- Chronic pancreatitis is characterized by parenchymal fibrosis, reduced number and size of acini, and variable dilation of the pancreatic ducts



PANCREATIC NEOPLASMS: CYSTIC NEOPLASMS

- 1. Serous cystadenomas : composed of glycogen-rich cuboidal cells surrounding small cysts containing clear, straw colored fluid.
- 2. mucinous cystic neoplasm: the cysts are lined by a columnar mucinous epithelium with an associated densely cellular stroma resembling that of the ovary.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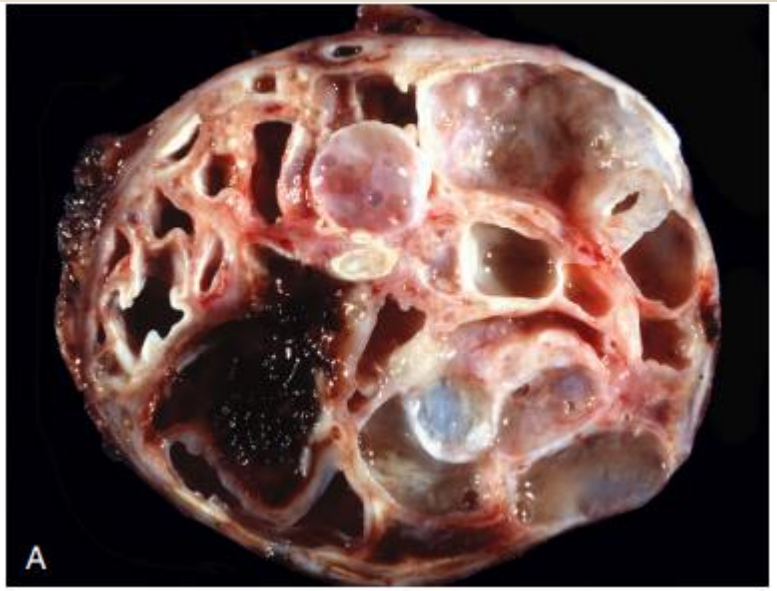
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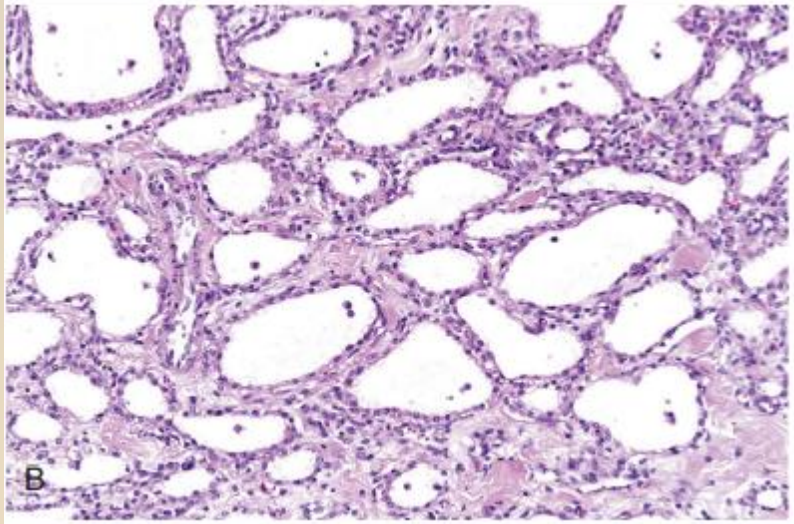
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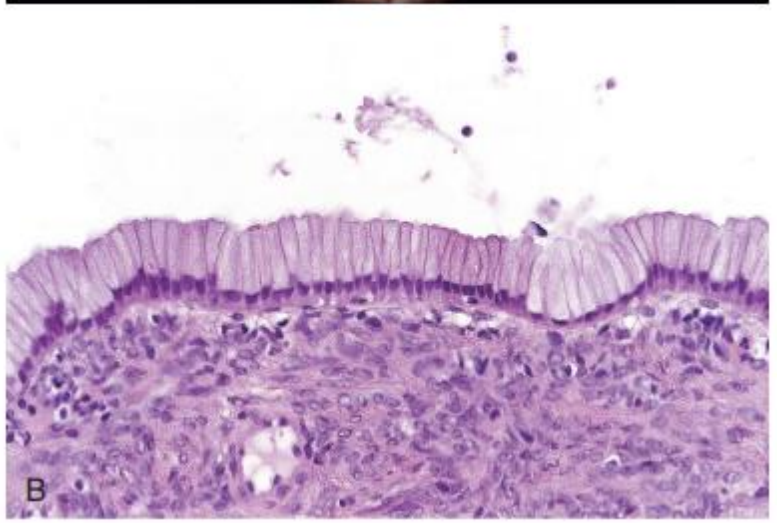
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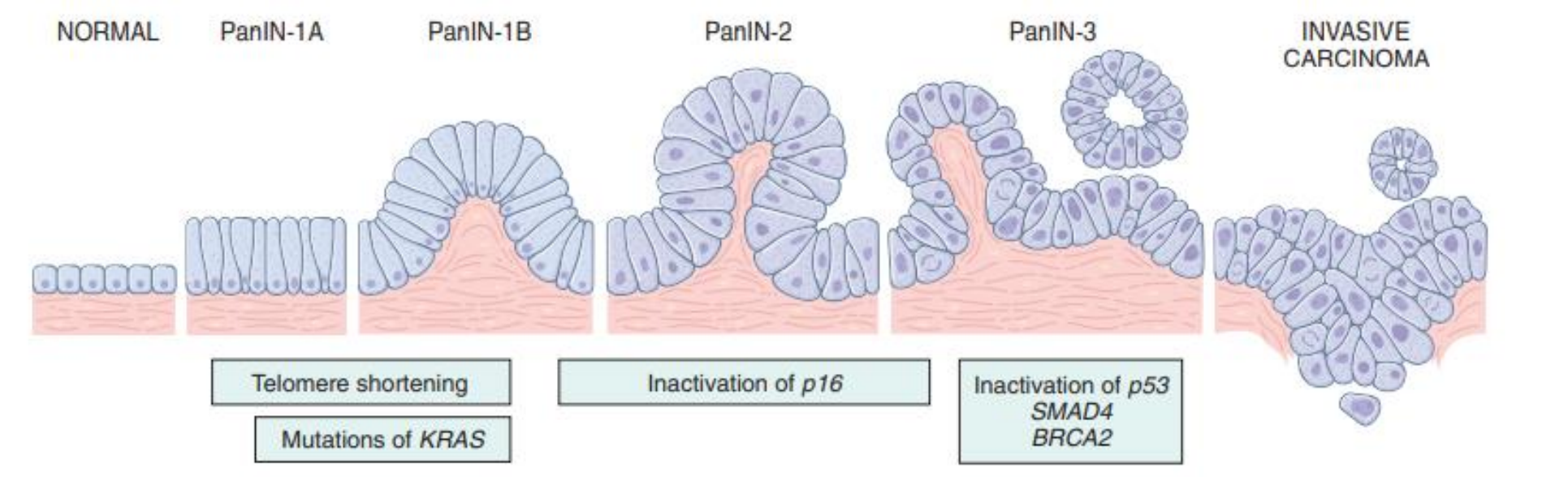
PANCREATIC CARCINOMA

- pancreatic cancer arises as a consequence of inherited and acquired mutations in cancer-associated genes.



MORPHOLOGY

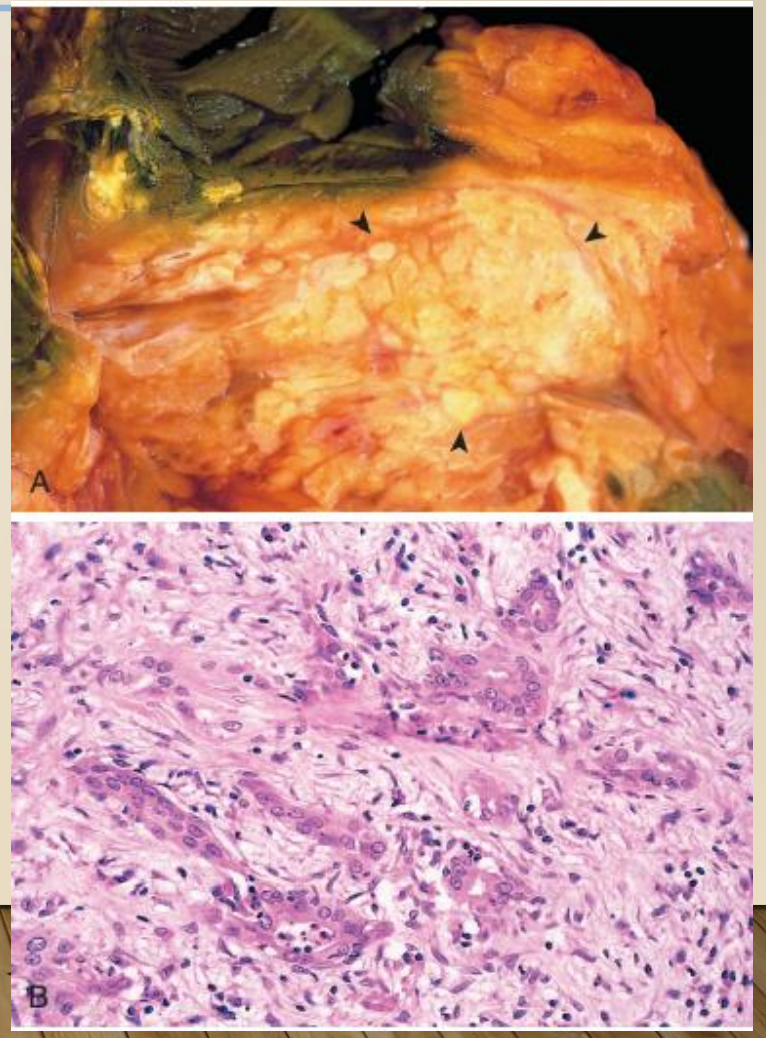
- Carcinomas of the pancreas usually are hard, gray-white, stellate, poorly defined masses.
- On microscopic examination,:
- pancreatic carcinoma usually

is a moderately to poorly differentiated adenocarcinoma

forming abortive glands with mucin secretion

or cell clusters and exhibiting an aggressive,

deeply infiltrative growth pattern



CLINICAL FEATURES

- Carcinomas of the pancreas typically remain silent until their extension impinges on some other structure.
- Pain.
- Obstructive jaundice.
- Weight loss, anorexia, and generalized malaise and weakness are manifestations of advanced disease