PANCREAS

DUODENUM

AMPULLA

ACCES. DUCT

MAIN DUCT

PLICAE

IMA

AORTA

B
OBJECTIVES

• Understand the etiology/risk factors, pathogenesis, morphology, clinical features and outcome of pancreatic inflammations and neoplasms
Posterior view of duodenum/pancreas

- Left gastric artery and vein
- Pancreatic magna artery
- Splenic vein and artery
- Celiac trunk
- Hepatic artery
- Portal vein
- Bile duct
- Superior duodenum
- Descending duodenum
- Ascending duodenum
- Horizontal duodenum
- Jejunum
- Common stem of posterior inferior and anterior inferior pancreaticoduodenal arteries
- Lymph node
Arterial supply and venous drainage of the pancreas and spleen
Lymphatic drainage of the distal pancreas and spleen
Hepaticopancreatic ampulla (Ampulla of Vater)
Pancreatic Enzymes

- Amylase
- Lipase
- DNA-ase
- RNA-ase
- Zymogens: Trypsinogen, Chymotrypsinogen, Procarboxypeptidase A, B
PANCREAS DISEASES

• Congenital

• Inflammatory
  – Acute
  – Chronic

• Cysts

• Neoplasms
Congenital

• Agenesis (very rare)

• Pancreas Divisum (failure of 2 ducts to fuse) (common)

• Annular Pancreas (pancreas encircles duodenum) (rare)

• Ectopic Pancreas (very common)
PANCREATITIS

• ACUTE (VERY SERIOUS)

• CHRONIC (Calcifications, Pseudocyst)
CONSEQUENCES of ACUTE and CHRONIC pancreatitis

ACUTE PANCREATITIS
- Systemic organ failure
  - Shock
  - ARDS
  - Acute renal failure
- Disseminated intravascular coagulation
- Pancreatic abscess
- Pancreatic pseudocyst
- Duodenal obstruction

CHRONIC PANCREATITIS
- Pseudocyst
- Duct obstruction
- Malabsorption, steatorrhea
- Secondary diabetes
ACUTE PANCREATITIS

- ALCOHOLISM
- Bile reflux
- Medications (thiazides)
- Hypertriglyceridemia, hypercalcaemia
- Acute ischemia
- Trauma, blunt, iatrogenic
- Genes: PRSS1, SPINK1
- Idiopathic, 10-20%
CLINICAL FEATURES

• ABDOMINAL PAIN
• EXTREME emergency situation
• HIGH mortality

• …but MOST important lab test is..........???????
AMYLASE

!!!!!!!!!
MORPHOLOGY

• EDEMA
• FAT NECROSIS
• ACUTE INFLAMMATORY INFILTRATE
• PANCREAS AUTODIGESTION
• BLOOD VESSEL DESTRUCTION
• “SAPONIFICATION”
CHRONIC PANCREATITIS

• Pancreatic duct obstruction, LONGSTANDING
• Tropical
• Hereditary (PRSS1, SPINK1 mutations)
• IDIOPATHIC (40%)
CHRONIC PANCREATITIS
CLINICAL FEATURES

• Abdominal Pain
• Vague abdominal symptoms
• Nothing

• CT calcifications (why?), amylase elevated, chronic diarrhea if chronic pancreatic insufficiency develops, high likelihood of pseudocysts
PDEUDOCYSTS

• Why “pseudo”?
• STRONGLY linked with pancreatitis
• Can be as big as a football and often are.
• Can cause obstruction
• Can get infected
• Do NOT become malignant
Pancreas Neoplasms

- Serous
- Mucinous
- Cystic
- Microcystic
- Papillary
- Benign
- Malignant (dense sclerosis is the rule)
SEROUS CYSTADENOMA
MUCINOUS CYSTADENOMA
INTRADUCTAL PAPILLARY MUCINOUS "NEOPLASM"
Carcinogenesis of Pancreatic Adenocarcinoma

- Normal
- PanIN-1A
- PanIN-1B
- PanIN-2
- PanIN-3
- Invasive Carcinoma

Key Events:
- Telomere shortening
- Inactivation of p53
- Mutations of K-Ras
- Inactivation of SMAD4
- BRCA2
Pancreatic CA
Pancreatic Adenocarcinoma
FATE:

- Regional lymph nodes
- Liver
- Often L-2 spine
- Lungs

Grading (WMP), Staging, TNM
Final TIP of the day

- Painless jaundice in an elderly person is CARCINOMA of the head of the pancreas until proven otherwise.