---PANCREAS---

Basics

Crosses L2
Neck overlies SMA/SMV
Main pancreatic duct (of Wirsung) drains thru major papilla (ampulla of Vater) in 90%
Pancreas divisum: dorsal & ventral ducts do not fuse; minor amp drains Santorini duct
Annular pancreas: ring of panc tiss around 2nd part of duod; czs obstruction in infants
Pancreatic head shares arterial supply with duodenum (resect both w/ panc head tumor)
Splenic artery gives off mult sup pancreatic branches (veins superficial to arteries)
Exocrine pancreas secretes 1-2L of isotonic, alkaline fluid / day
Duod acid→ ↑secretin→ ↑panc secretion (HCO3)
Duod fat + protein→ ↑CCK→ ↑trypsin, chymotrypsin
Islets of Langerhans (1% panc wt) more abundant in tail

Acute pancreatitis

40% d/t EtOH, 40% d/t gallstones
Other czs: steroids, diuretics, hyperCa, hyperlipid, viral infxn
    Post-op: gastric / biliary surgery, ERCP
S/Sx: noncrampy abd pain, ↑when supine; significant n/v; Grey-Turner / Cullen's sign
Labs: ↑amylase (non quantitative), ↑lipase (more specific)
Dx: CXR: pleural effusion (L), r/o free air
    AXR: local ileus, pancreatic calcifications (if chronic dz)
    U/S: gallstones, CBD stones
    CT: if suspect complicated pancreatitis
Px: 20% develop cxs
Ranson's criteria (3 or more = severe)
    Admission: WBC>16K, Age>55, Glucose>200, AST>250, LDH>350
    48 hours: Base excess>4, BUN↑>5, fluid sequest>6L, Ca<8, Hct↓>10, PaO2<60
Rx: Mild w/o cx: NPO, IVF (several liters)
    Pancreatitis = retroper "burn" → aggressive hydration needed
    Resp fail may occur d/t hypoCa, effusion, inflam'n: intubate if needed
    NGT if ileus or n/v
    ABX only if gallstone or necrotizing pancreatitis
    TPN if NPO >7 days
    Ex lap if unclear dx
    CCY in same admission (if cz of pancreatitis)
Cxs: #1cxs: local ileus, peripanc sterile fluid collection d/t ductal block (most resolve)
    Splenic v thrombosis → portal HTN
    Hyperglycemia, hypoCa, ARF
    Panc necrosis: if<30%, usu resolves; if infected >40% mortality
        Infxn risk related to amt of necrosis
        2-3 weeks after attack
        Dx: CT has retrop free air
        Rx: surg debridement + ABX (perc drainage usu fails)
    Panc abscess: less common than necrosis; Rx = drain

Pseudocysts

#1 cx of pancreatitis
Persistent fluid collection, with no epithelial lining
Communicating (open to panc duct) vs non-comm
Wall (fibrotic scar) forms w/in 4-6 weeks
S/Sx: persistent pain > 1wk, n/v, early satiety, palp abd mass, persistent ↑amy/lip
Dx: daily palpation, U/S (preferred test for monitoring Δ), CT
Rx: NPO, TPN
At 4-6 weeks, suture cyst to stomach/jej for internal drainage if >6cm
External drainage results in panc fistula, reqs 2nd operation
If non-comm, may attempt IR drainage, but high recurrence
Bx cyst wall to r/o cancer
Cx: If sudden onset abd pain or hypotension: IVF + angio to r/o erosion into vessel
If sudden onset fever, may have cyst infxn: ABX + drain

Chronic pancreatitis

#1 cz = continued EtOH
permanent ductal damage
malnutrition when <10% enzyme secretion, diabetes
Sx: severe pain, jaundice, steatorrhea, B12/fat sol vit deficiency
Dx: CT if new sxs; U/S for pseudocyst, jaundice
Rx: conservative, but medical Rx rarely resolves pain; low fat diet, enzymes, insulin
Surgery for incapacitating pain; preop CT/MRCP/ERCP to map ductal anatomy
ERCP best but may exacerbate dz
Ductal decompression (panc-jej) if dilated ducts
Panc segmental resection if no ductal dilation
Cx: Biliary stricture w/ ↑ LFTs: need decompression
Pseudocysts (do not resolve as in acute pancr): drain if sxs or >5cm

Pancreatic neoplasms

#4 cancer cz of death
Male:Female = 2:1
Risk: age, cigarettes(2x ↑ risk)
2/3 in panc head
#1 type = adenocarc
Lymphoma = rare cz, but Rx = chemo/RT, no surg
Sx: Painless jaundice = classic
Wt loss, pain (constant, posterior, radiating)
Courvoisier's sign
Dx: U/S, CT; unresectable if liver mets, ascites, vascular invasion
Rx: Correct coagulopathy & malnutrition
If unresectable: endoscopic biliary drainage
Body/Tail lesions: distal pancreatectomy
Head: Whipple (antrectomy, duodenectomy, pancreatectomy, CCY, CBD resxn)
Continuity restored w/: gastrojej, pancreaticojej, choledochojej
Cx: <5% mortality; leak (amylase rich), leak from gastric/biliary anast

Panc fistula (20%): Rx: drain, control output, nutrition, most close spont

Px: Most pts p/w unresectable dz
Most pts w/ resxn die from recurrence (median surv 19 mos; 6 mos w/o resxn)
If LNs neg, 5 yr surv = 20%

Cystadenoma/Cystadenocarcinoma

Serous = microcystic: 60 yo females (serous=small)
Mucinous = macrocystic: more common, 40 yo females; resect (mucin=mucho com, big)
Px for cystadenocarcinoma 5 yr surv = 50%
Hamoudi neoplasms: solid & cystic papillary ca: 20 yo females; resect; good px

Islet cell tumors

#1 = insulinoma (B cells) and gastrinoma (delta cells)
Usu nonfunctional/nonsecreting
Insulinoma
- 90% benign (other mostly malignant: glucagonoma, somatostatinoma, VIPoma)
- Sx: Whipple's triad (r/o factitious hypoglycemia, check C peptide)
- Dx: CT only detects 50%; best dx = palpation during surgery
- Rx: early resxn

Zollinger Ellison syndrome
- Gastrin secreting tumor
- Usu in gastrinoma triangle (jxn of cystic duct/CBD, $2^{nd}/3^{rd}$ part duod, SMA)
- May also be located outside panc/biliary system, thus full body scan needed
- S/Sx: ulcers in unusual location, recurrent duod ulcers, profuse watery diarrhea, large gastric rugal folds
- Dx: secretin stimulation test, r/o MEN synd
- Rx: resxn