Acute Pancreatitis – 16/09/03

PANCREATITIS

There are three basic types: acute, acute relapsing& chronic.

Aetiology & Epidemiology

Gall stones + alcoholism account for about 80% of all pancreatitis. Alcohol may have direct toxic effect on exocrine cells, cause gastritis or duodenitis by obstructing the pancreatic outflow tract (i.e.: acidic environment), or spasms of the sphincter of ODDI.

Other causes of pancreatitis include (10-15%): Infective (mumps), Drugs (thiazide diuretics, steroids), metabolic (hypercalcaemia, hyperlipidaemia), trauma (any blow to vertebral column will affect pancreas), idiopathic.

Females are more commonly affected than males, although males have greater chance of recurrent attacks. There is peak incidence among 50-60 yr olds.

PATHOPHYSIOLOGY

Gallstones & Alcoholism cause diffuse inflammation of the pancreas (auto digestion) → inappropriate activation of zymogen granules within the pancreas (i.e.: trypsin activates) → **interstitial oedematous pancreatitis** (mild form of inflammation and is self limiting) → pancreas becomes swollen and there is fat saponification in greater omentum → as the severity progresses, trypsin and other pancreatic enzymes cause even more damage.

As inflammation progresses it causes SIRS → ARDS. This occurs due to release of vasoactive amines (bradykinin) that cause leaky capillaries → fluid pours into the extravascular space within the respiratory system → **interstitial oedema** → eventually fluid enters the alveoli → **pulmonary oedema (ARDS).**

Now acute peri-pancreatitic fluid collection is detectable with CT scan → If inflammation persists, you get **necrosis** of pancreas → develop **infected necrotising pancreatitis** (Gram –ve organisms from bowel) within 2 weeks of onset, greatly increases mortality (can progress to **pancreatic abscess formation** – this has a better prognosis) → patients die of this, peritoneal cavity filled with dark blood stained inflammation exudates with lipid → called **acute haemorrhagic pancreatitis**.

CLINICAL FEATURES OF ACUTE PANCREATITIS

- Pain – poorly localised in epigastrium, radiates to the back (pancreas is a retroperitoneal organ)
- Inflammation spreads to peritoneum → peritonitis → general somatic pain all over abdomen
- Diaphragmatic peritoneum inflamed → irritation causes shoulder tip pain
- Pain is often relieved by leaning forward = **"pancreatic position"**
- Nausea + vomiting – early feature
- Other features: abdominal distension, guarding, absent bowel sounds, dehydrated, BP down, tachycardia. If inflammation is severe → toxic shock

CLASSIFICATION OF PANCREATITIS
The classification is based as either: mild or severe. This is based on Ranson or Glasgow criteria.

DIFFERENTIAL DIAGNOSIS FOR MILD ACUTE PANCREATITIS
- Biliary colic (mildly jaundiced)
- Acute cholecystitis (mildly jaundiced)
- Peptic ulcer → maybe perforated

INVESTIGATIONS FOR PANCREATITIS
Do the following tests, keeping in mind the usual aetiology of pancreatitis:
- Full blood count: Hb is elevated due to loss of blood (so relative [] of Hb is increased), WBC count increased → infection, platelets is decreased → due to haemostasis if bleeding occurs.
- Calcium test: lipase attacks peripancreatic fat → mops up the Ca^{2+} → therefore Ca^{2+} drops.
- Liver function tests: this shows whether patient has gallstones or not. If ALT is elevated 3 times normal = Dx = gallstone pancreatitis
- Plasma amylase > 1200iu/ml – diagnostic for pancreatitis. The level is not an indicator for severity of disease. Sometimes you may not get always get increase in plasma amylase, because if you have recurrent attacks – then you are losing exocrine cells hence amylase secreting ability is reduced.
- Serum lipase – may be useful in late presenting case

IMAGING STUDIES
Imaging studies are performed if pancreatitis is caused by gallstones, of which a large % are. Abdominal X Ray may show radiooaque gallstones, and free gas visible under the diaphragm; also peritoneal exudates may be visible (ground glass appearance). Ultrasound scan will reveal any gallstones. Endoscopy: ERCP → detects an obstruction of flow of pancreas. Peritoneal tap (abdominal paracentesis) → take a sample of peritoneal fluid out, if clear = mild pancreatitis, dark fluid = severe necrotising pancreatitis, foul smelling = intestinal perforation. ``

COMPLICATIONS OF PANCREATITIS
Already we have discussed the possibility of ARDS, peritonitis, SIRS and septic shock. Apart from this, you will get massive fluid loss in pancreatitis → therefore your kidneys become very sensitive as your GFR plummets. Therefore, you will get tubular cell necrosis as a result of acute renal failure and there will be epithelial cell 'sluff off' which will block the nephron. This will cause decrease in urine production (oliguria) or no urine production (anuria).