Acute Pancreatitis

Sudden Inflammation and Haemorrhaging of the pancreas due to the destruction by its own digestive enzymes (Autodigestion)

Causes

Common (90%.
- Idiopathic
Gallstones
Ethanol abuse, ERCP Post

Rare - Trauma
Steroid.
Mumps, Coxsakie virus.
~~Metabolic~~ Autoimmune.
& scorpion stings.
Hypercalcemia & Hypertriglyceridemia.
Exposure to chemicals.
Drugs.
Cystic Fibrosis.

I
GET
SMASHED

Pathophysiology

Pancreatic enzymes are produced as zymogens which has to be activated in intestine by proteases in Intestine

↓

Zymogen are stored in vesicles called zymogen granules with Protease inhibitor

↓

If zymogen is activated early it is called Acute Pancreatitis

due to injury to acinar cells.

Impaired secretion of proenzymes.

Alcohol → Stimulates the release of reactive oxygen species as a result of oxidative metabolism & also Releases cytokines.

↓

↑ zymogen secretion from acinar cells &
↓ Bicarbonate & fluid secretion from ducts.

↓

Pancreatic juice becomes thicken.

↓

Blocks ducts

↓

Increased pressure & distension

↓

Zymogen fuses with lysosomes

↓

Activation of enzymes.

Gallstones → lodge at the sphincter of oddi and cause blockage of Pancreatic duct.

↓

Pancreatic tissue destruction by inflammation and Proteases

↓

Blood Vessel leaks and ruptures causes swelling

↓

Lipases destroy Peripancreatic fat.

↓

Liquefy the tissue called as Liquefactive Hemorrhagic necrosis

Complication ① Pancreas

① Necrosis → Liquefactive Necrotic tissue
↓
surrounded by Fibrous tissue
↓
② Pseudocyst · containing digestive enzymes
↓
Rupture or Infection
③ Pancreatic abscess
↓
Rupture and cause massive inflammation
↓
④ Pancreatic Ascites and pleural effusion

② Systemic

① Hypovolumeic shock · → Due to hemorrhage
② Systemic Inflammatory response Syndrome (SIRS) → Increased vascular permiability
③ Acute Respiratory distress Syndrome (ARDS) → massive inflammation
Leaky blood vessels
④ Hyperglycemia · → Destruction of β islets of Langerhans
⑤ Hypocalcemia → Due to accumulation of calcium in Fat necrosis
⑥ ↓ Serum albumin - Increased capillary permiability

③ Gastrointestinal

① UGI Bleeding → Erosion
② Variceal hemorrhage → Splenic or portal vein thrombosis
③ Erosion into colon → Erosion
④ Duodenal obstruction by compression
⑤ obstruction Jaundice

Clinical Features

- Severe Epigastric pain radiating to the Back.
- Nausea and vomiting.
- Tenderness in epigastrium.

Signs

① Cullen's Sign → Ecchymotic Discoloration along the periumbilical region.

② Grey Turner's Sign → Ecchymotic Discoloration along the flank.

Both due to retroperitoneal bleeding due to Pancreatic Necrosis

③ Hepatomegaly → Alcoholic pancreatitis.

④ Xanthomas → Hyperlypidemic pancreatitis

⑤ Swollen Parotid gland - Mumps.

Investigations

① Serum lipase → Most sensitive Test. ↑ with 8 hrs, Normal after 14 days.

② Serum Amylase → also in perforated peptic ulcer, Ruptured ovarian cyst, Intestinal ischemia ↑ within 12 hrs, Normal after 48 hrs.

③ ↑ Peritoneal amylase. ↑ Salivary amylase in Parotitis

Blood → ↑ Hematocrit, → Hemorrhage.

↑ CRP ∧ ↑ LDH → Hemorrhage & Inflammation.

- BUN & Creatinine
- ALT & AST, Bilirubin.
- ↓ Albumin levels.

Electrolyte → ↓ Hypocalcemia.

- Hyperglycemia.
- ABG shows PO_2 < 60mm of Hg

Ultrasound

→ Pancreatitis.
- Gallstones.

CT → Necrosis. Presence of abscess.

Chest Xray. ERCP, MRCP

Management

- Fluid resuscitation.
- Pain control.
- Provide Nutrition
- Treatment to underlying cause.