Management of acute pancreatitis: practical and effective tip

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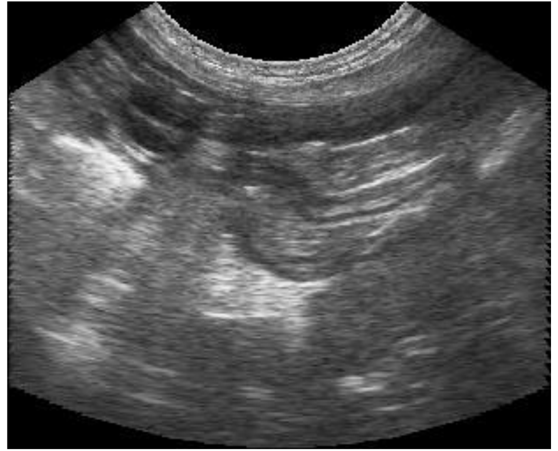
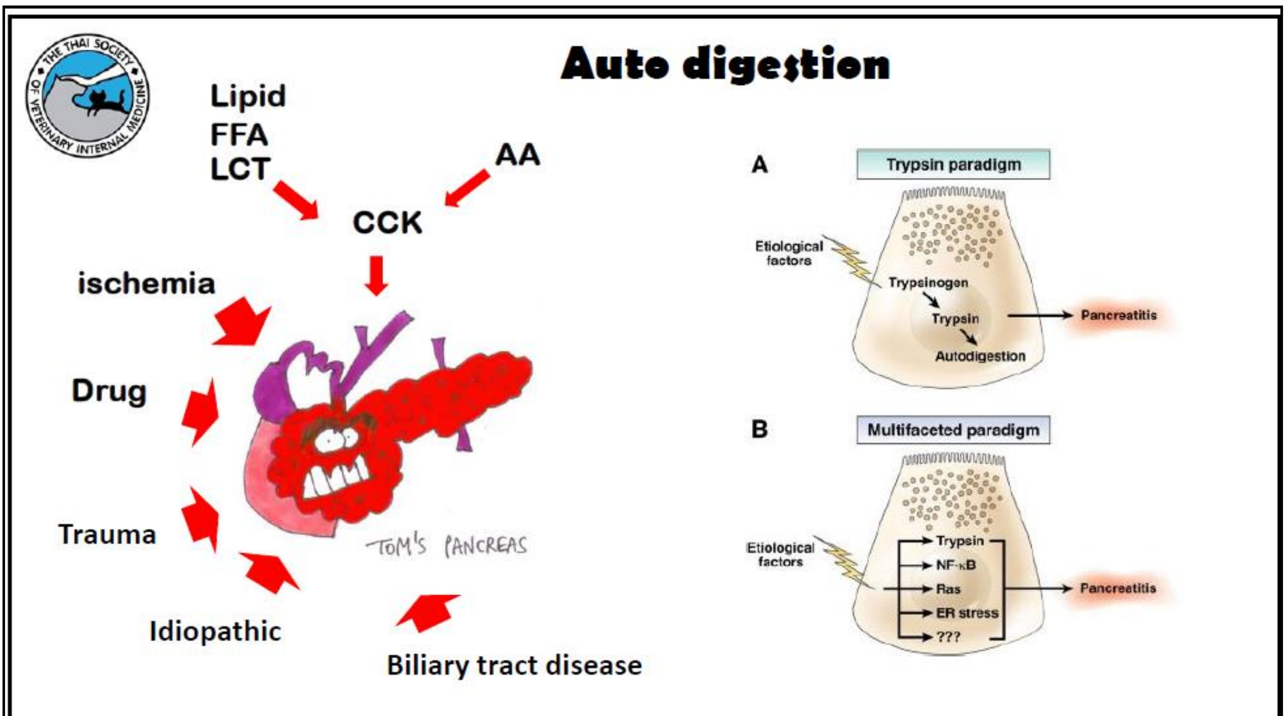
When should we think of acute pancreatitis?

- **Characterized by the abrupt onset of vomiting**
  - **Only secondary GI with meal related vomiting,**
  - **Sometimes is still non meal related vomiting**
- **Severe pain in the abdomen**
  - **Focusing only cranial abdomen**
- **Diarrhea, dehydration, weakness, and shock may ensue**
  - **Stool character is likely to be small bowel diarrhea**

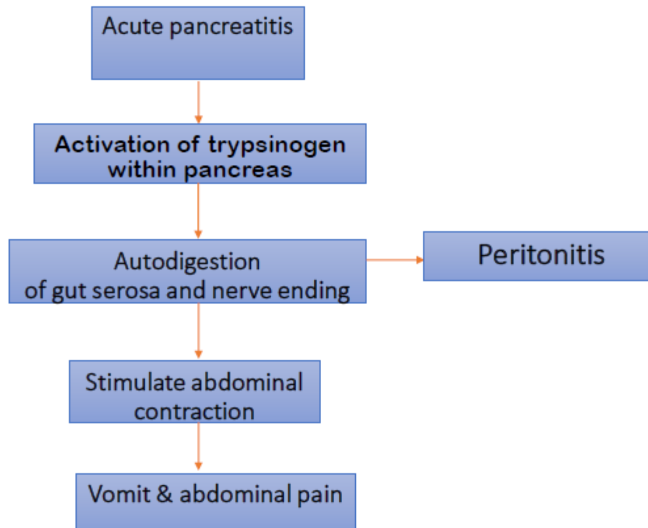
How can we diagnose this condition?

- Imaging
  - X-ray, CT-scan, Ultrasound
- •Laboratory
  - Serum
    - Amylase, lipase, TLI,
    - pancreatic lipase, Elastase
  - Fecal and other fluids
    - Urine Trypsin activation peptides
    - Fecal Elastase
    - Peritoneal amylase

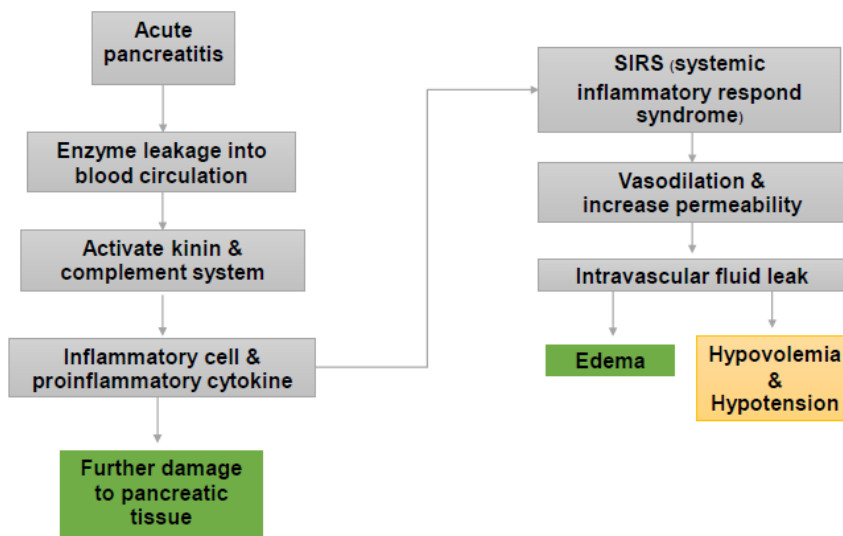


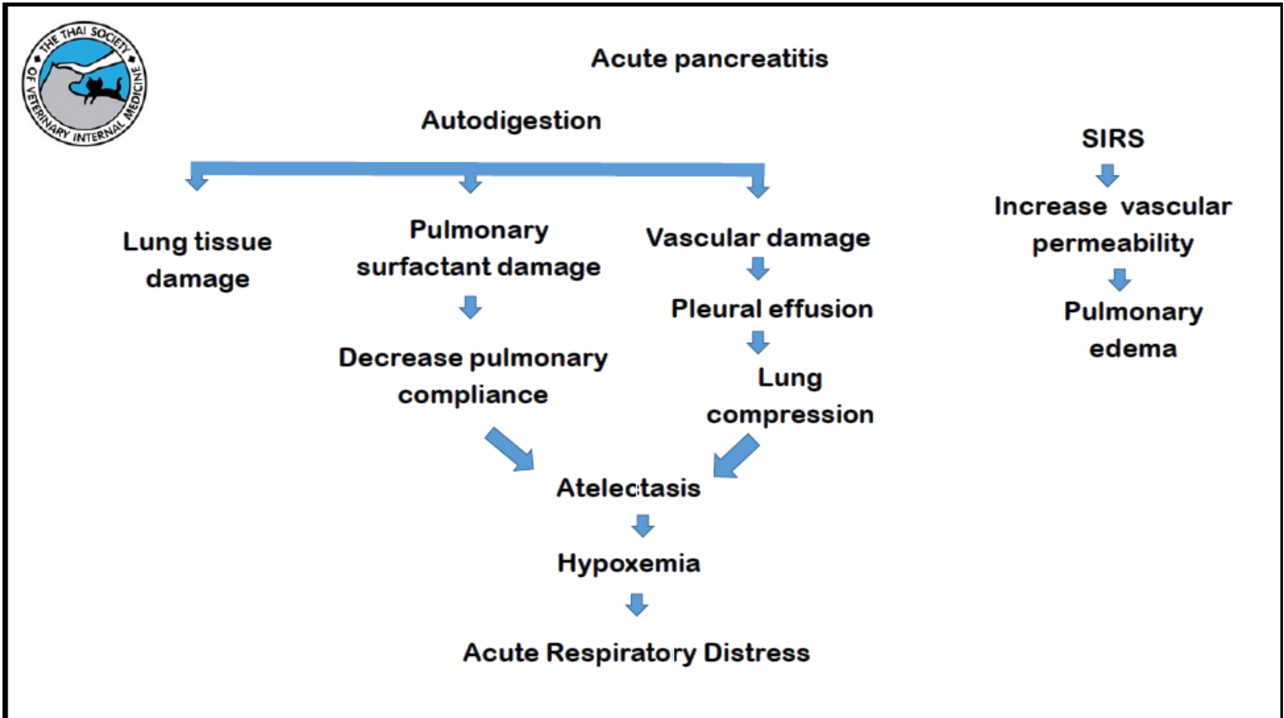


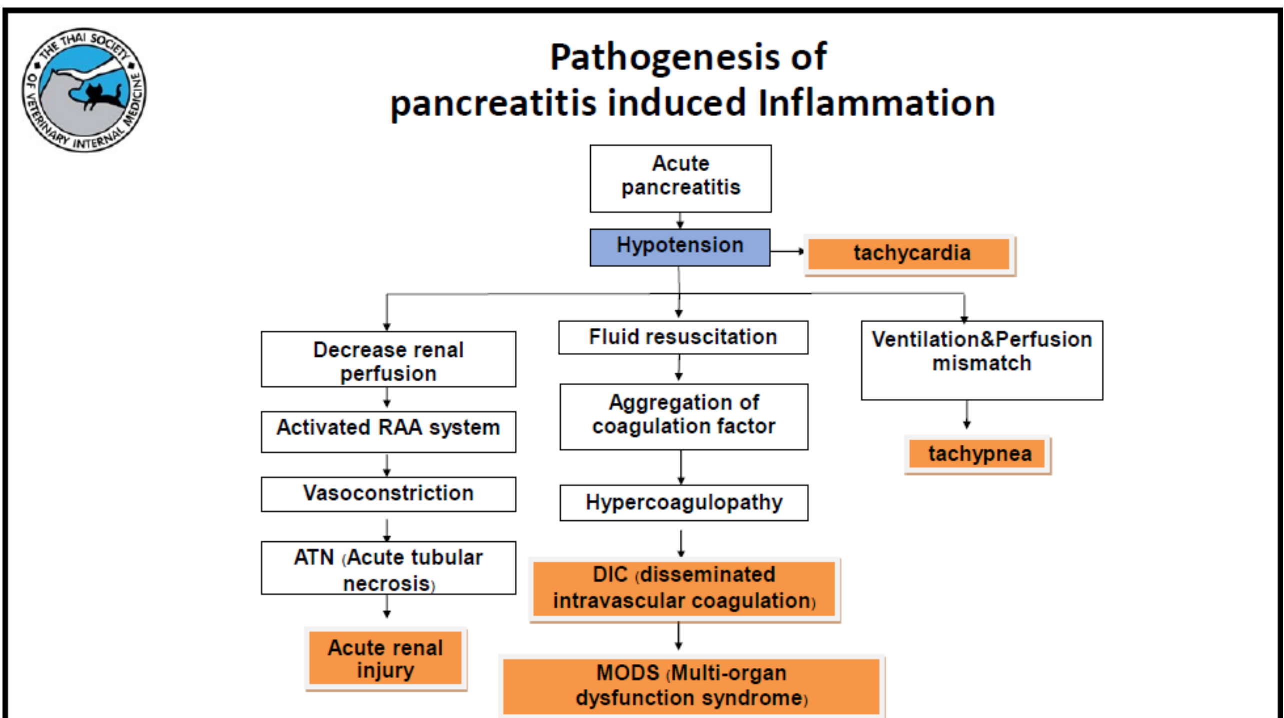
Pathophysiology of acute pancreatitis

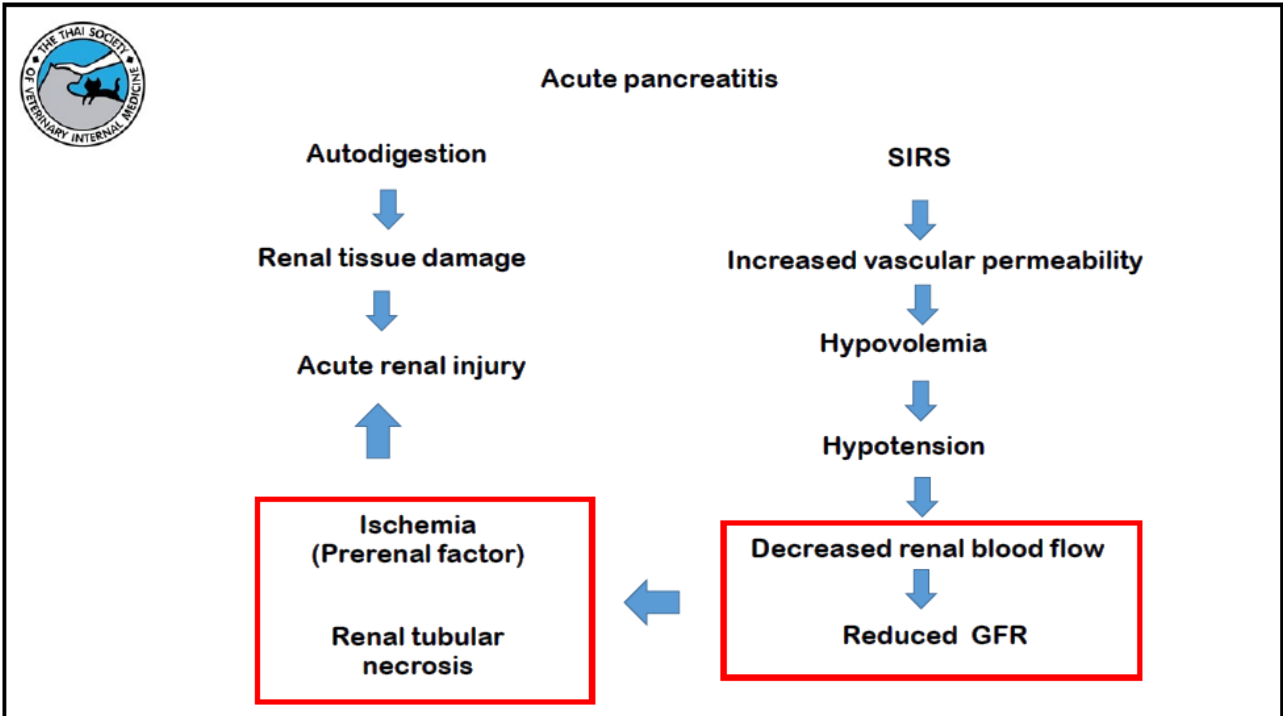


Pathogenesis of acute pancreatitis




Acute pancreatitis
Autodigestion
SIRS
Lung tissue damage
Pulmonary surfactant damage
Vascular damage
Increase vascular permeability
Pleural effusion
Pulmonary edema
Decrease pulmonary compliance
Lung compression
Atelectasis
Hypoxemia
Acute Respiratory Distress


Pathogenesis of pancreatitis induced Inflammation
Acute pancreatitis
Hypotension
tachycardia
Decrease renal perfusion
Fluid resuscitation
Ventilation&Perfusion mismatch
Activated RAA system
Aggregation of coagulation factor
tachypnea
Vasoconstriction
Hypercoagulopathy
ATN (Acute tubular necrosis)
DIC (disseminated intravascular coagulation)
Acute renal injury
MODS (Multi-organ dysfunction syndrome)



Acute Pancreatic management

- **Control vomit**
  - **metoclopramide: 0.2-0.5 mg/kg IM ScPO q 8 hr or CRI**
  - **ondansetron 0.1-0.2 mg/kg q 6-12 h slow IV or 0.5-1.0 mg/kg PO sid, bid**
  - **maropitant: 1mg/kg Scq 24 hr**

Acute Pancreatic management

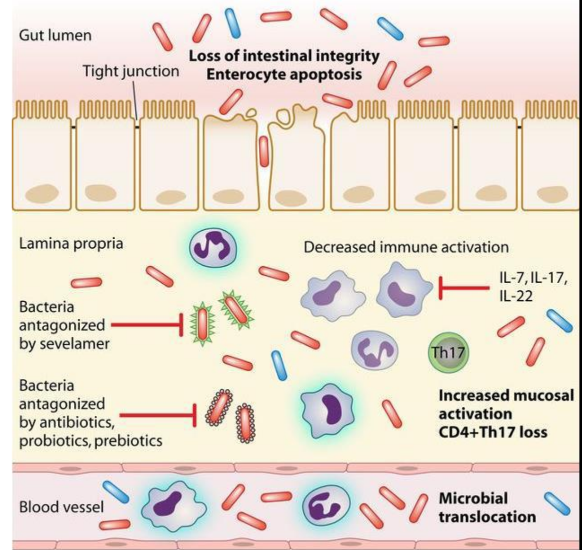
- Control pain
  - steroids??
  - NSAIDs ??
  - Tramadol ??
  - Fentanyl
  - Morphine
  - Epidurol

Acute Pancreatic management

- Pain control (multimodal approach)
  - Fentanyl : CRI, patch
  - Tramadol injection
  - FLK (fentanyl-lidocaine-ketamine) (Macintire 2012)
    - Fentanyl load Dog: 3 ug/kg/hr, Cat: 1-2.5 ug/kg/he
    - Lidocaine dog 25-80 ug/kg/min, Cat 10-40 ug/kg/min
    - Ketamine 0.3-0.5 mg/kgIV then 0.3-1.2 mg/kg/hr

Acute Pancreatic management

- Control diarrhea
  - Metronidazole:
    - Dog 15-20 mg/kg PO q 12 hr,
    - Cat 10-15 mg/kg q 12 hr



Acute Pancreatic management

- Control peritonitis
  - Reduce albumin loss
    - FFP??
      - 40 cc/kg to increase 1 g % of protein
      - Alpha-2-macroglobulin or other protease inhibitor
    - Colloids
  - Reduce bacterial infection
  - Antibiotics
  - Control pain
  - Morphine??
  - lavage??

Acute Pancreatic management

- **Renal management**
  - **Fluid supplement:**
  - **Crystalloids**
  - **Correct Electrolyte imbalance**
  - **Control vomit (if needed)**
  - **Prevent uremic GI irritation**

Acute Pancreatic management

- **Monitoring**
  - **Urine output and urinalysis**
  - **Glucose**
  - **Hypotension**
  - **Pulmonary edema**
  - **DIC**
  - **Liver profile : both leakage and dysfunction**

Acute Pancreatic management

- **Reduce further complication**
  - **Novel concept:**
    - **Pancreatic extract:**
      - **To reduce CCK thereby reduce autodigestion**
      - **Better in chronic pancreatitis , however, it is still unclear**
    - **Pancreatic secretion inhibition**
      - **Synthetic somatostatin: Octreotide**
      - **Aim to inhibit pancreatic secretion therefore, reduce autodigestion**
      - **However, it would reduce other hormones TSH, insulin, GH, gut hormones and gastric secretion**
      - **Induce exocrine pancreatic necrosis (EPI induced) and hepatic failure**

Acute Pancreatic management

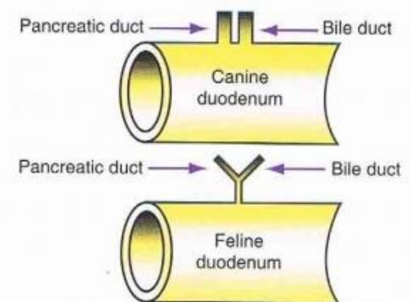
- **Surgical treatment**
  - Pancreatic abscess
  - Pancreatic cancer??
  - Pseudocyst
  - Bile duct obstruction

Acute Pancreatic management

- **Long term management:**
  - **Following an attack of pancreatitis, the pancreas may be permanently damaged.**
    - **the dog may develop diabetes mellitus**
    - **or may develop exocrine pancreatic insufficiency**
    - **Consistent chronic pancreatitis with relapsing sometimes**

Chronic Pancreatitis

- **Continuous chronic pancreatitis**
- **Mostly feline pancreatitis characteristics**
- **Feline pancreatitis is likely come with hepatobiliary disease (triaditis)**
- **Concurrent with EPI or DM was concerned**
- **Dietary management is concerned**
- **Acute on chronic pancreatitis**



Acute Pancreatic management

- Dietary management
  - Early feeding was recommended
  - Prevent enterocyte atrophy
  - Slowly increase amount to avoid refeeding syndrome (Dog:every other day, Cat: every other week)
  - Several small (4-6 meals a day is preferred)
  - Tubing placement
  - Food aversion

Acute Pancreatic management

- Dietary management
  - Early feeding was recommended
  - Tubing placement
    - J-tube is recommended
      - Homogenous blendable or liquid diet
      - Rate of feeding need to be calculated
    - E tube
      - More practical (if vomit can be controlled)
      - Mostly recommended in cat
  - Food aversion

Acute Pancreatic management

- Dietary management
  - Early feeding was recommended
  - Tubing placement
  - Food aversion
    - Tube placement is recommended
    - More palatability is preferred

Acute Pancreatic management

- Dietary recommendation
  - LOW FAT (dog) not cat
    - Simple carbohydrate
    - Highly digestible protein
    - Low fiber
  - Several small meals
  - 1.0 RER (anorexic patients) to 1.2-1.4 RER (fully recovered)
  - Weight management (if needed) after recovery