CREATING CLARITY

The small but mighty pancreas

diagnosing and managing feline pancreatic disease

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IDEXX

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Conflicts of Interest & Disclaimer

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The information contained herein is intended to provide general guidance only. As with any diagnosis or treatment you should use clinical discretion with each patient based on a complete evaluation of the patient, including history, physical exam and presentation, and laboratory data. With respect to any drug therapy or monitoring program, you should refer to applicable product insert(s) for complete description of dosage, indications, interactions, and cautions. Diagnosis, treatment, and monitoring should be patient specific and is the responsibility of the veterinarian providing primary care.

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Agenda

Pancreas

- Why cats are not small dogs!

Pancreatitis

- Pathophysiology
- Classification
- Risk factors
- Diagnostic approach
- Treatment
- Monitoring and Prognosis

Exocrine Pancreatic Insufficiency

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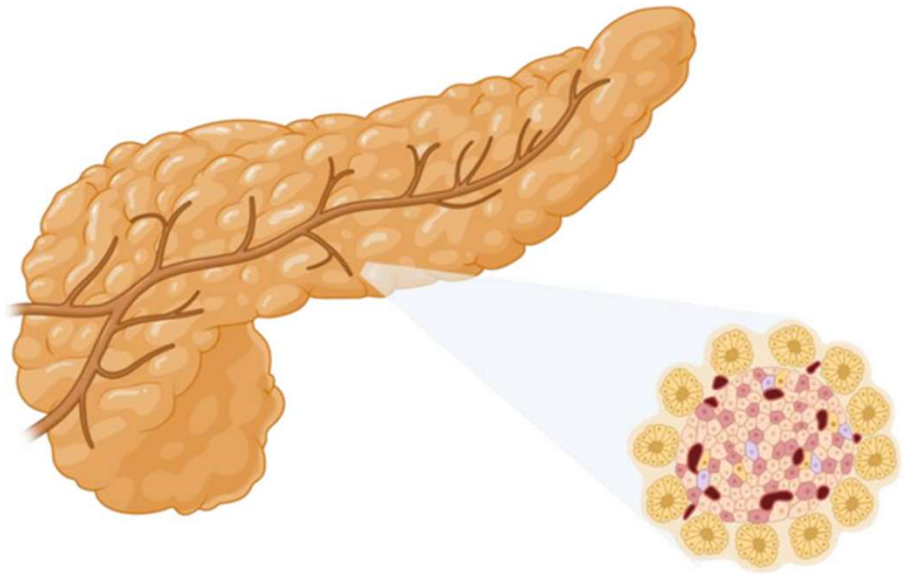
Pancreas

- Exocrine
- Acinar cells produce digestive enzymes
- Ductal cells produce bicarbonate
- Cat’s intrinsic factor is produced by the exocrine pancreas

- Endocrine
- Islets of Langerhans
  - Insulin (β cells)
  - Glucagon (α cells)
  - Somatostatin (delta cells)



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Cats are not small dogs!

- Anorexia can result in essential aa deficiency and protein malnutrition
- Limited capacity to synthesize LCPUFA
- Low concentrations of UDP-glucuronosyltransferases (UGTs)

- Cytochrome P450 metabolism different to dogs
- RBC very sensitive to oxidative damage

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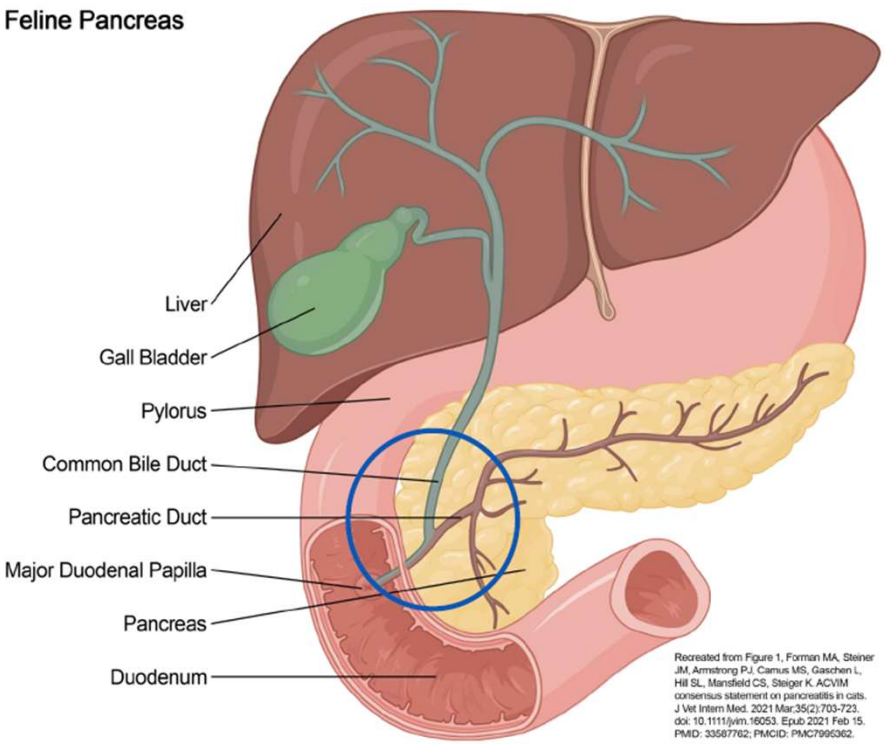
Cats are not small dogs!



+ Common bile duct joins pancreatic duct before entering duodenal papilla
+ Shorter GIT
+ High bacterial load

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Safety mechanisms

Enzymes are stored in vesicles as an inactive form (**zymogen granules**)

Enterokinase necessary to activate trypsinogen.

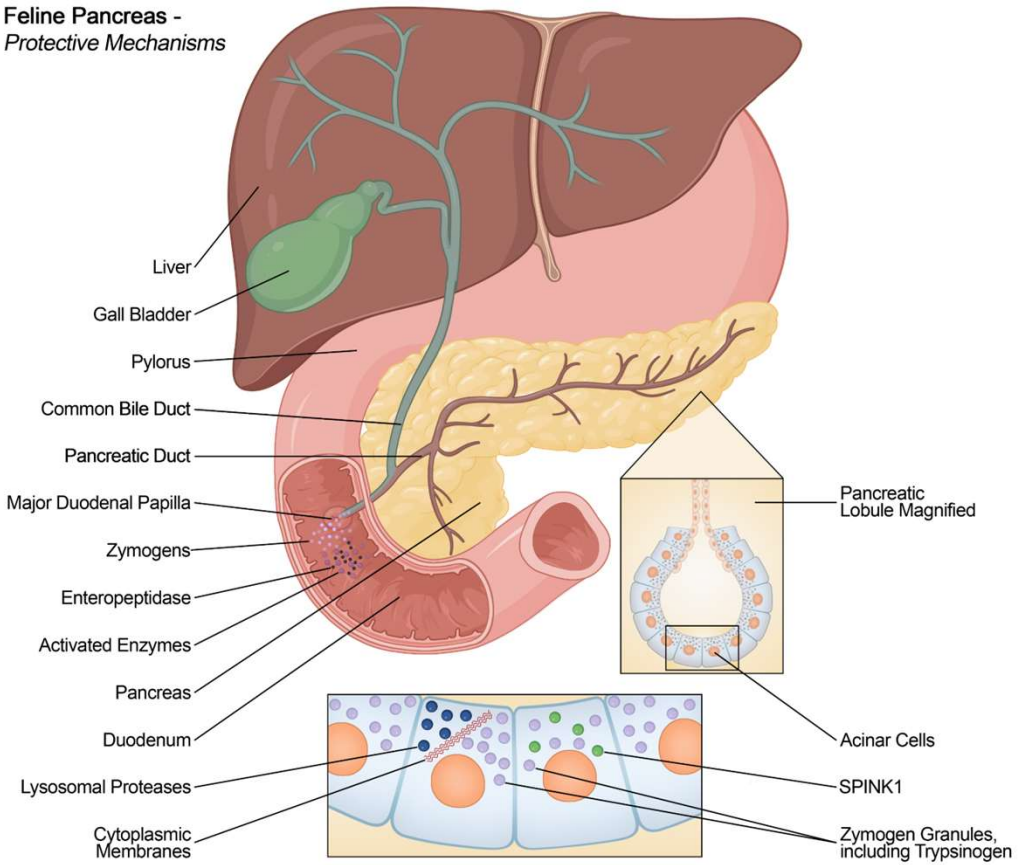
Bile flows in one direction

SPINK1 in pancreatic acinar cells

pH higher in pancreatic ducts (bicarbonate)

Protease inhibitors

α1-antitrypsin and α-macroglobulin



Recreated from Figure 1, Forman MA, Steiner JM, Armstrong PJ, Camus MS, Gaschen L, Hill SL, Mansfield CS, Steiger K. ACVIM consensus statement on pancreatitis in cats. J Vet Intern Med. 2021 Mar;35(2):703-723. doi: 10.1111/jvim.16053. Epub 2021 Feb 15. PMID: 33587762; PMCID: PMC7995362.

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Acute Pancreatitis

Premature activation of proteases within acinar cells

Trypsinogen conversion to trypsin is particularly important
→ Activation of other enzymes

↓

Pancreatic inflammation
Peri-pancreatic fat necrosis

Nearby intestine… bacterial translocation risk

Pro-inflammatory cytokines → Oedema
Hypotension
Coagulation activation → DIC
Generalised vascular lesion

Pancreatic duct obstruction
zymogen and lysosomal granules colocation and fusion
Oxidative stress
Hypotension

Lungs
Kidneys
Liver

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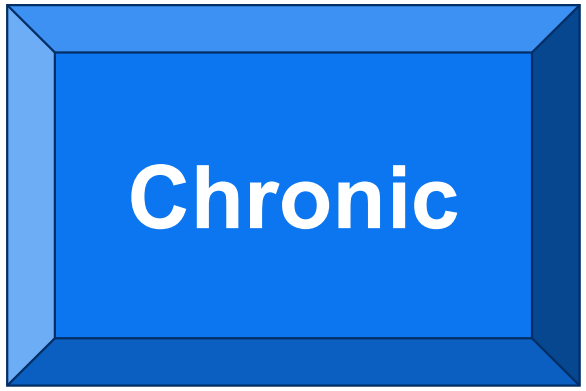
Necrosis, oedema, haemorrhage
Peripancreatic fat saponification
Neutrophilic infiltration
Reversible



Fibrosis
Acinar atrophy
Mononuclear or mixed cellular infiltration
Irreversible

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Acute	Often severe
Chronic	Frequently mild to moderate

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Acute

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Chronic

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Risk Factors

Hypotension associated with anaesthesia

RTA and “high-rise syndrome”

Hypercalcemia

Neoplasia

Immune-mediated

Infectious diseases

Toxoplasma gondii, pancreatic and liver flukes

FIP

Calicivirus

Idiopathic

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High Fat Diets???

Diagnostic Approach

Clinical Presentation

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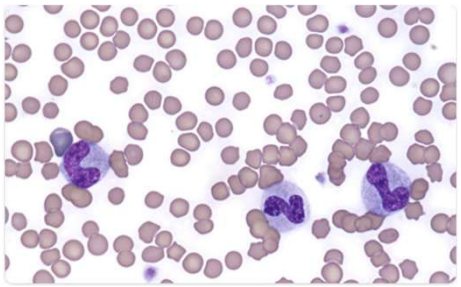
Clinical Pathology



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Imaging

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Pancreatic Lipase

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Signalment

+ No age, sex or breed predisposition

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Clinical presentation

+ Lethargy and anorexia are the most common clinical signs
+ Weight loss
+ Vomiting much less common than in dogs
+ Diarrhoea
+ Dyspnoea

+ Icterus
+ Hypothermia more common than pyrexia
+ Abdominal pain described in minority of cases (unrecognized?)

+ Clinical signs associated with comorbidities

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Haematology

- Increased RBC indices due to dehydration
- Non regenerative anaemia

- Inflammatory leukogram
  - Neutrophilia
  - Neutropaenia
  - Left shift

- Thrombocytopaenia (DIC?)

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Serum Biochemistry

+ Electrolyte imbalances (e.g. hypokalaemia, hypocalcaemia, etc)
+ Azotaemia, increased SDMA
+ Hyperlipidaemia (increased triglycerides and/or increased cholesterol)
+ Hypoalbuminaemia
+ Increased hepatic enzymes
+ Increased bilirubin
+ Hyperglycaemia / Hypoglycaemia

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Other blood tests

+ Evaluating concurrent disease

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Parameter	Value	Reference Range
Folic Acid (Folate)	>24	9.5 – 20.2 ng/ml
Vitamin B12 (Cyanocobalamin)	267	270 – 1000 ng/L

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Urinalysis

Parameter	Result	Reference
Urine Color	Yellow	Yellow
Turbidity	Clear	Clear
Specific Gravity	1.013	
pH	5	4.5 – 8.5
Urine Glucose	Normal	Normal
Ketones	Negative	Negative
Urine Bilirubin	Negative	Negative
Blood (RBC/Hb/Myoglobin)	Negative	Negative
Urine Protein	25 mg/dl	Negative or <25 mg/dl

Parameter	Result	Reference
Casts	Not observed	Hyaline 0-1 Granular 0-2
Epithelial Cells	Few squamous cells observed	Some
Crystals	Not observed	Variable
RBC (urine)	1–2 /hpf	0–8 /hpf
WBC (urine)	1–2 /hpf	0–8 /hpf
Bacteria	Not observed	Negative
Protein:Creatinine ratio	0.77	<0.2 0.2-0.4 borderline

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Lipase and Amylase

Lipase

+ Pancreatic
+ Lipoprotein
+ Endothelial
+ Hepatic
+ Renal
+ Gastrointestinal

Amylase

+ Pancreatic
+ Intestinal
+ Ovaries and testes
+ Salivary Glands

In the diagnosis of pancreatitis
Low sensitivity
Low specificity

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Lipase Tests

Activity Assays

+ Chemical reagent that mimics fat
+ Measures reagent breakdown over time
+ Different substrates
+ Variable specificity
+ Units U/L

Examples include

+ *Catalyst® Pancreatic Lipase*

Immunoassays

+ Antibody based
+ Species specific
+ Quantifies antibody binding to pancreatic lipase
+ Highly specific for pancreatic lipase
+ Units µg/L

Examples include

+ *Spec fPL®*
+ *SNAP® fPL Test*

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Spec fPL®

+ High specificity and sensitivity, especially for acute/severe disease
+ Less sensitive and specific for chronic disease
+ Icterus, haemolysis or lipaemia does not affect its results

≤ 4.4 µg/l	Normal range
4.5–8.8 µg/l	The Spec fPL concentration in this sample is increased (4.5–8.8 µg/l). The cat may have pancreatitis, and serum Spec fPL concentration should be re-evaluated in 2 weeks if clinical signs persist. Investigate for other diseases that could cause observed clinical signs.
> 8.8 µg/l	The Spec fPL concentration in this sample is high (> 8.8 µg/l). If clinical signs of pancreatitis are present, treat appropriately and consider investigating for risk factors and concurrent diseases (e.g. IBD, hepatitis, diabetes mellitus). Periodic monitoring of the Spec fPL concentration may help assess response to therapy. If clinical signs are not present, monitor the patient and, if indicated, consider additional diagnostics and rechecking the Spec fPL concentration in 2–3 weeks.

In https://www.idexx.com/files/service-update-spec-fpl-reference-intervals-en.pdf Access 10.05.26

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Catalyst® Pancreatic Lipase = DGGR Lipase

+ More specific for pancreas than general lipase
+ Substrate hydrolysed by pancreatic lipase
+ One test for dogs and cats

+ Serum, lithium heparin plasma, and whole blood using the Catalyst lithium heparin whole blood separator
+ Not affected by icterus or lipaemia
+ Moderate to severe haemolysis may impact results

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Catalyst® Pancreatic Lipase correlates well with Spec fPL®

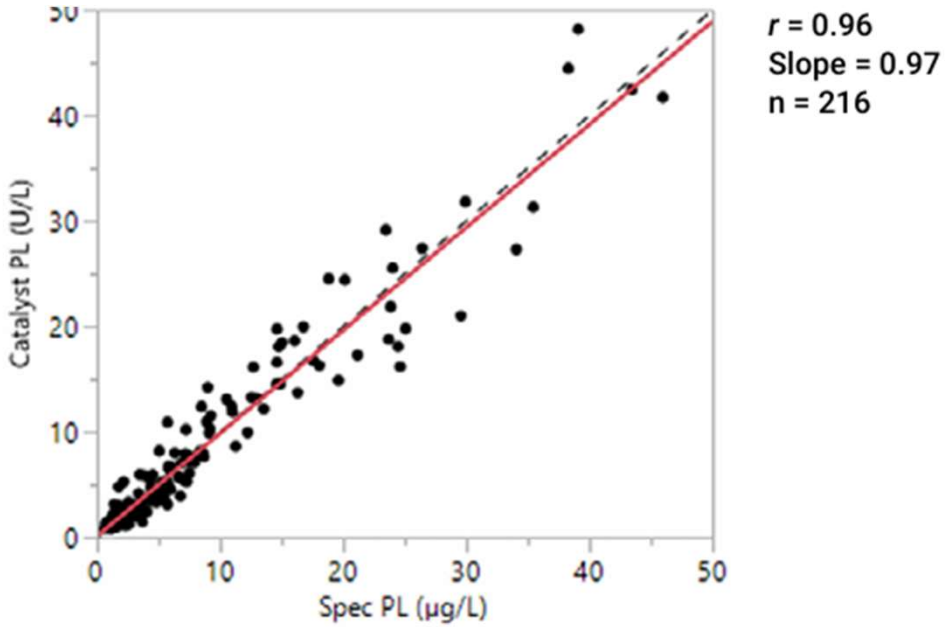

Figure 2: Correlation graph of pairwise comparisons of the Catalyst Pancreatic Lipase (PL) and Spec fPL concentrations in feline samples. The line of best fit (linear regression) for the data is shown on the graph (solid line) with the slope and *r*-value. The x = y is shown as the dashed line in the graph

In Catalyst Pancreatic Lipase Test: an in-house quantitative pancreatic lipase test for dogs and cats., 2024. https://www.idexx.com/files/catalyst-pancreatic-lipase-whitepaper-en.pdf.

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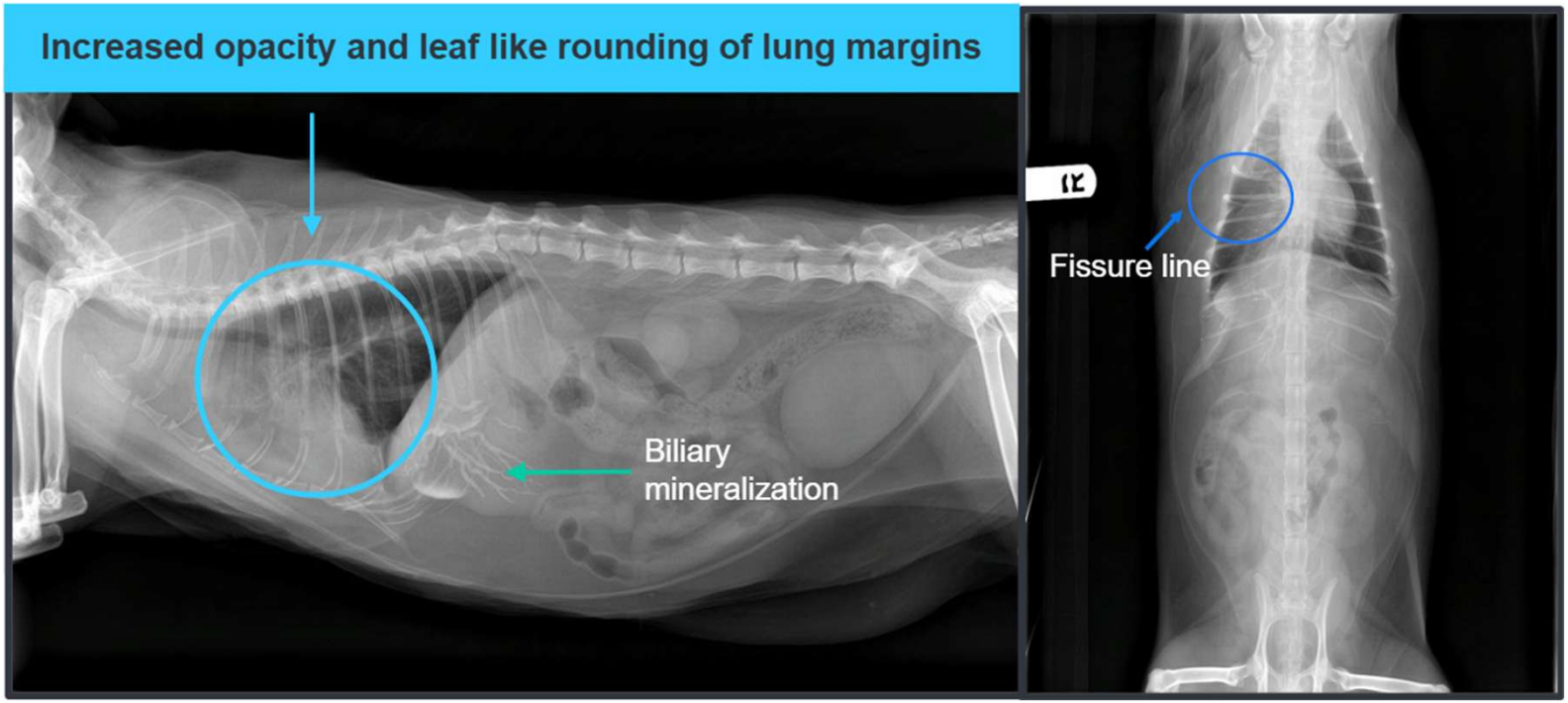
Diagnostic Imaging

Radiography

Low sensitivity

Exclusion of other diagnosis



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Diagnostic Imaging

Ultrasonography

Overlap between normal pancreas, acute and chronic pancreatitis, hyperplasia and neoplasia

Careful with assessing pancreatic nodules or masses!

Pancreatic enlargement
Altered parenchymal echogenicity
Hyperechoic mesentery
Abdominal effusion
Corrugated duodenum
Dilation of pancreatic duct
Extra pancreatic disease evaluation

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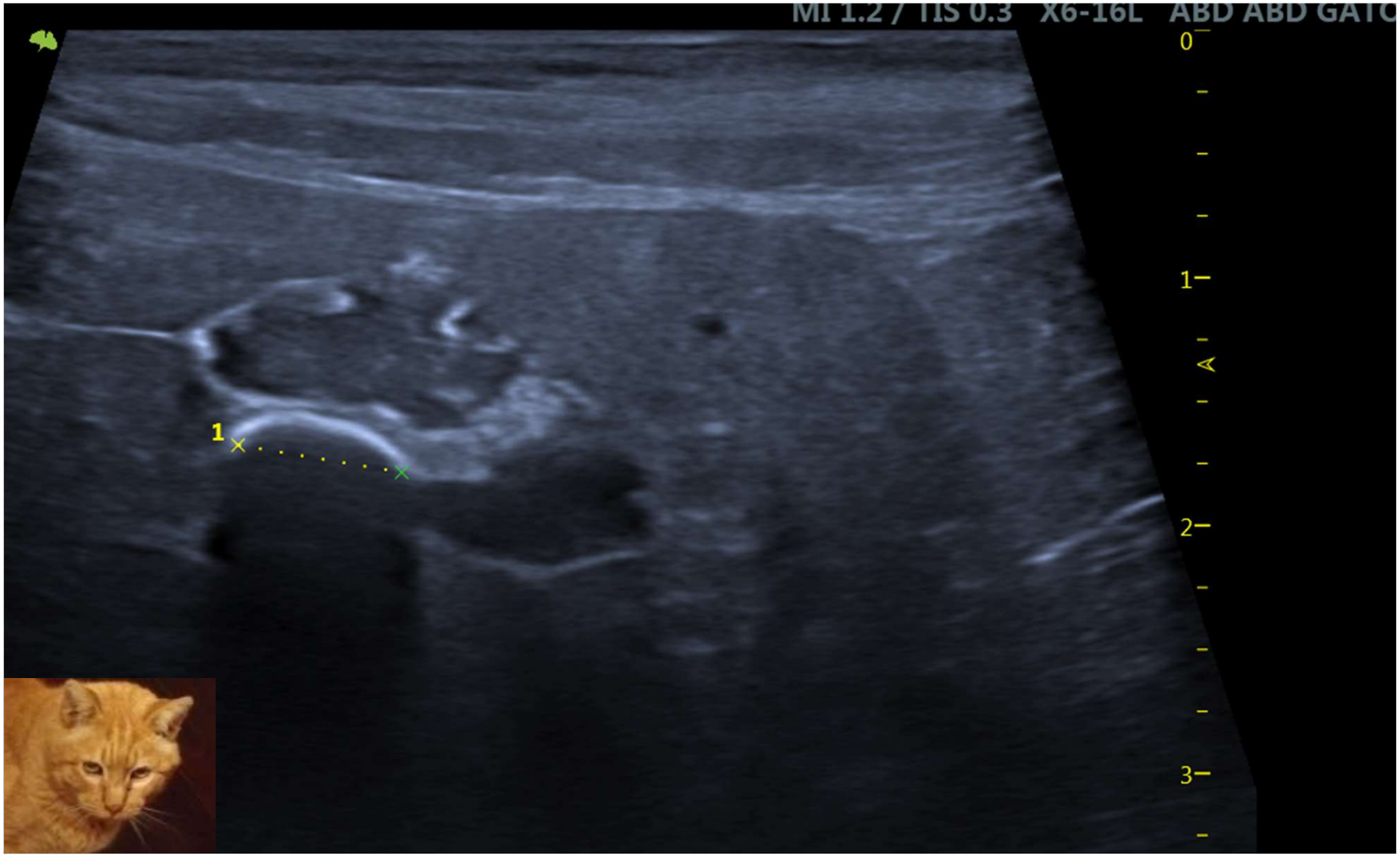

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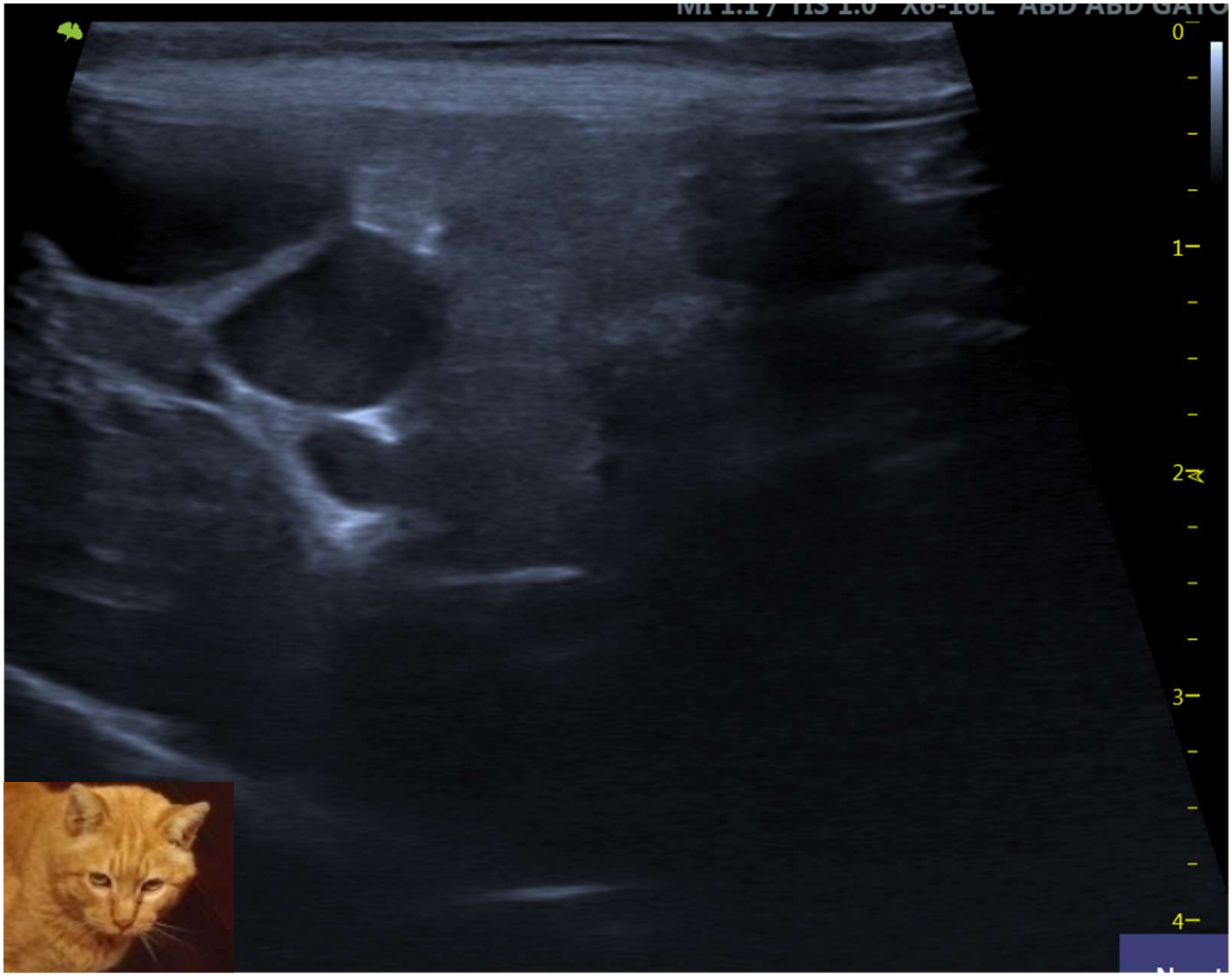

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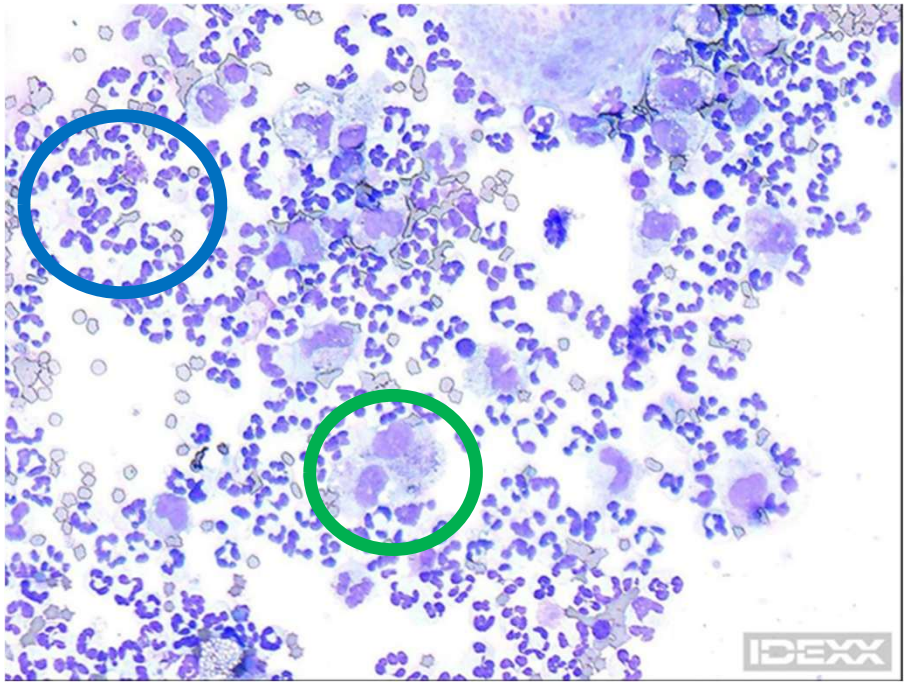
Pancreatic Cytology

- Normal: pancreatic acinar cells predominate
- Inflammation: neutrophils and degenerated acinar cells
- Chronic pancreatitis: fibrosis, low cellularity, small number of lymphocytes and neutrophils
- Necrotizing pancreatitis: large amount of debris, inconclusive results possible

Peritoneal Fluid Cytology

- Fluid: neutrophilic inflammation



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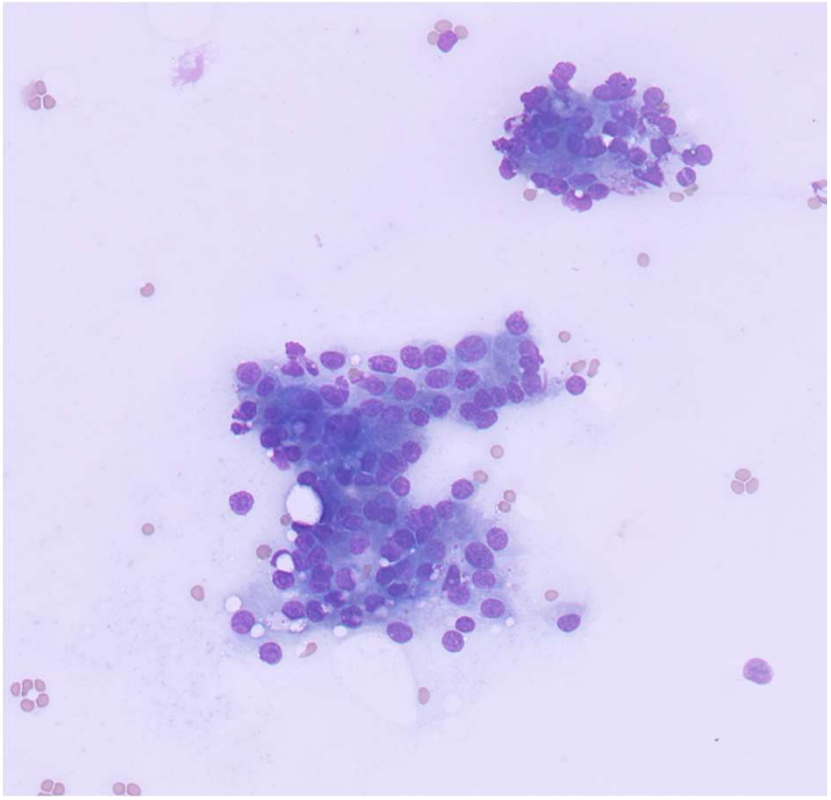
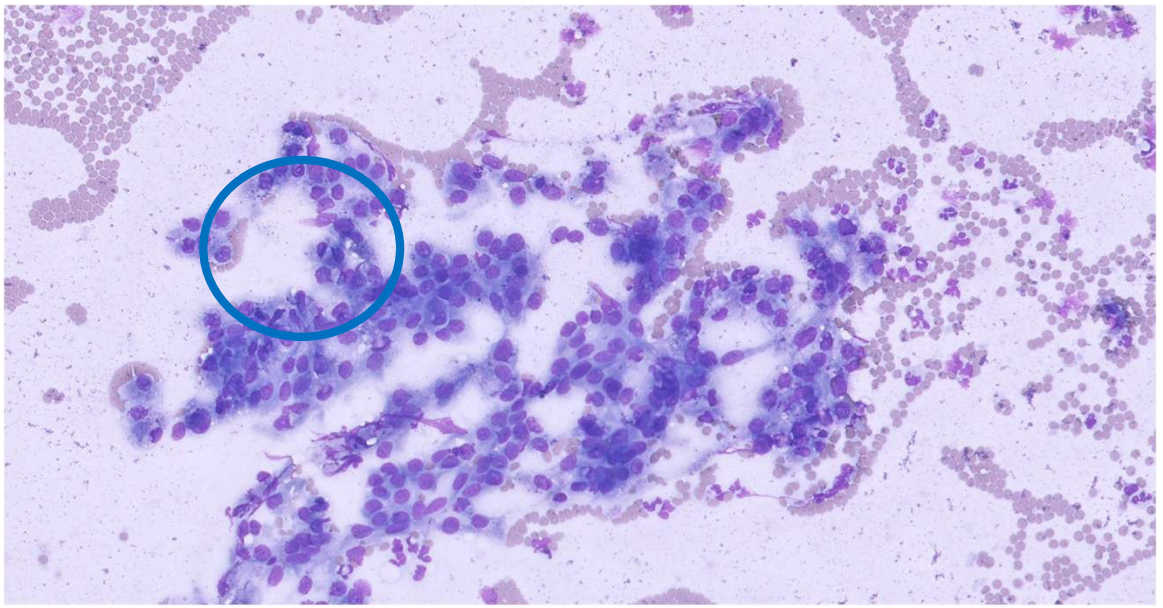
Pancreatic Cytology





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Diagnostic Approach

Clinical Presentatic

Histopathology "gold standard" for definitive diagnosis

Is pancreatic biopsy necessary???

Pancreatic Lipase

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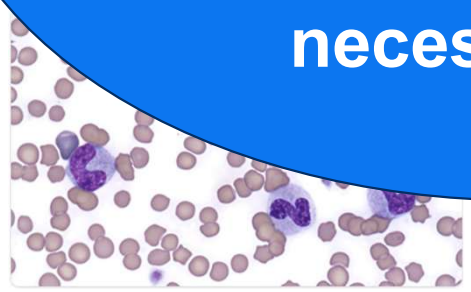

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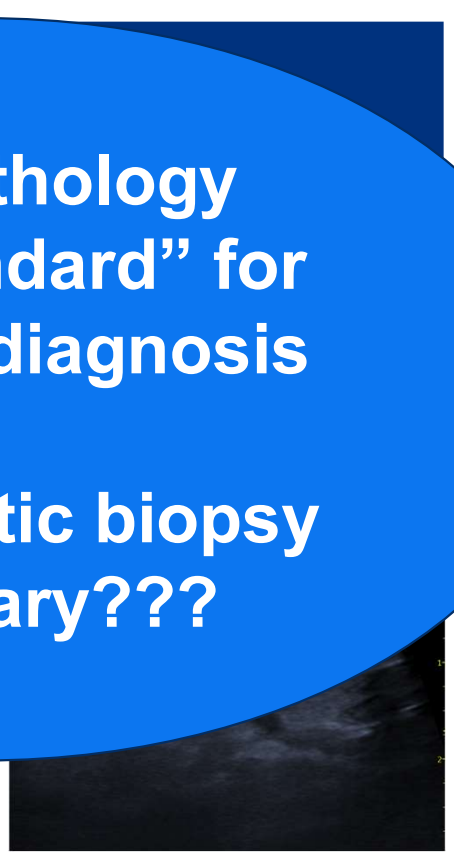

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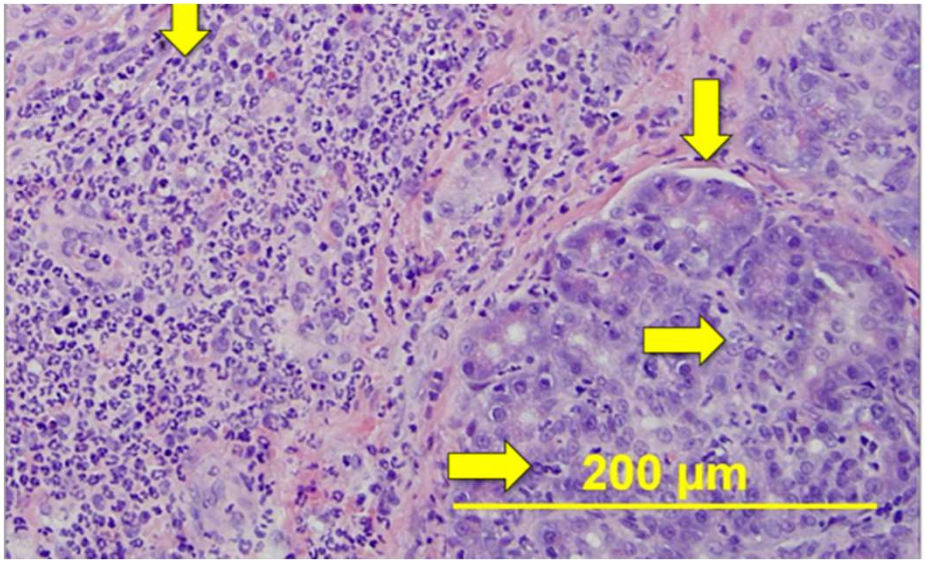
Histopathology

Acute

Suppurative inflammation



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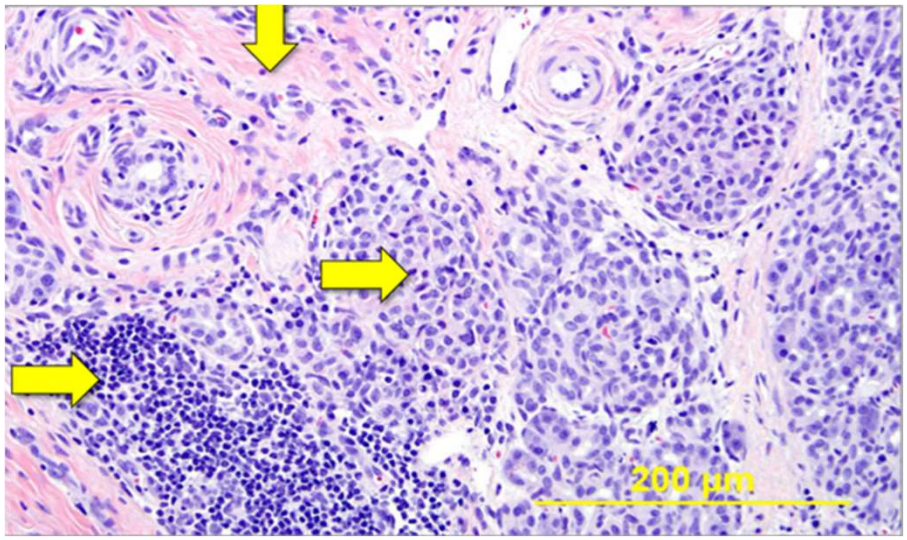
Chronic

LP inflammation and fibrosis



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Histopathology

Acute

Suppurative inflammation

Chronic

inflammation and fibrosis

Pancreatic Histopathology

Heterogeneous distribution of the lesions
Anaesthetic risk
May not change treatment

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Presumed diagnosis

Hepatobiliary disease, cholelith in CBD

Pancreatitis

Presumed chronic enteropathy with vitamin B12 mal absorption

Triaditis suspected

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Comorbidities

- Triaditis
  - Concurrent inflammation of small intestines, pancreas, and hepatobiliary system
- Hepatic lipidosis
- Cholangitis/cholangiopathies
- Chronic enteropathy
- Diabetes mellitus

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Treatment

- Depends on severity of signs
- Treat cause
- Investigate/treat comorbidities
  - Chronic enteropathy, triaditis, DM
- Supportive treatment
  - Fluid therapy
  - Analgesia
  - Anti-emetics and appetite stimulants
  - Nutritional support
- Other therapies
  - Immunomodulatory therapy
  - Antibiotics

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Fluid therapy

- Correct dehydration and electrolyte imbalances
- Improve organ perfusion, particularly pancreatic
- Reverse metabolic acidosis and prerenal azotaemia if present
- Balanced isotonic solution
  - Lactated Ringers (Hartmann’s)
- Avoid fluid overload

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Analgesia

- Parenteral
- Opioids
  - Full Agonists: Methadone, Fentanyl
  - Partial Agonists: Buprenorphine

- Oral
- Buprenorphine (transmucosal)
- Gabapentin
- Tramadol
- Maropitant (may provide visceral analgesia)

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Antiemetics and appetite stimulants

- Antiemetics
  - Maropitant
  - Ondansetron / Dolasetron
  - Metoclopramide CRI (prokinetic)

- Appetite stimulants
  - Mirtazapine
  - Capromorelin

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Nutrition

- Fasting is detrimental
- Enteral feeding avoids the risks associated with parenteral feeding
- Enteral feeding promotes enterocyte and mucosal health
- Diet choice should consider comorbidities
- Highly digestible diet
- Warm food

- PERT (pancreatic enzyme replacement therapy) no proven benefit shown in cats with pancreatitis
- Indicated in the treatment of EPI in cats

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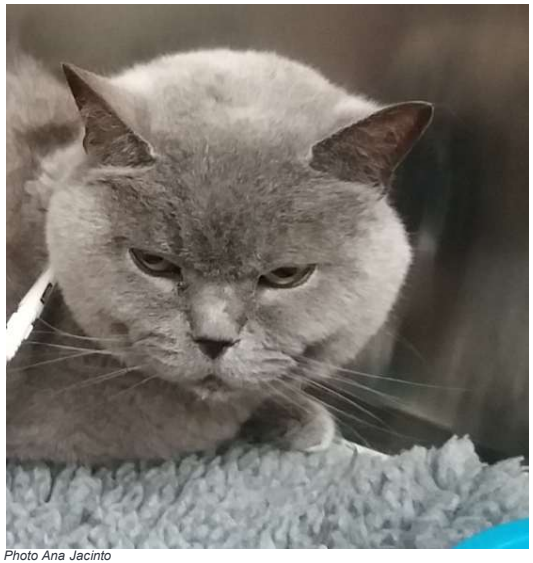
Nutrition

+ NO feeding tube for short term
+ OE feeding tube
+ *RER (kcal/day) = 70 × $BW^{0.75}$
+ * * RER (kcal/day) = 30 x BW (kg) + 70
+ Gradually increase over few days up to full RER



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Cridge H, Parker VJ, Kathrani A. Nutritional management of pancreatitis and concurrent disease in dogs and cats. J Am Vet Med Assoc. 2024 Apr 3;262(6):834-840. doi: 10.2460/javma.23.11.0641. PMID: 38569533.

**Quimby J, Gowland S, Carney HC, DePorter T, Plummer P, Westropp J. 2021 AAHA/AAFP Feline Life Stage Guidelines. J Feline Med Surg. 2021 Mar;23(3):211-233. doi: 10.1177/1098612X21993657. Erratum in*: J Feline Med Surg*. 2021 Aug;23(8):NP3. PMID: 33627003.

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Immunomodulatory therapy

+ Corticosteroids
+ LP inflammation
+ Indicated for common comorbidities such as chronic enteropathy and LP cholangitis
+ Contra indicated in DM

+ Cyclosporine

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Small Animal Internal Medicine Gastroenterology

Randomized Open-Label Clinical Trial Comparing Prednisolone and Cyclosporine With a Nonrandomized Active Control for Treating Presumed Chronic Pancreatitis in Cats

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Antibiotic

+ Pancreatitis is generally sterile
+ Antibiotics not indicated unless
  - Suspected or confirmed pancreatic infection, eg:
    - Infected necrotic tissue
    - Pancreatic abscess
  - Ascending infections
  - Concurrent conditions
  - CBC suggestive of sepsis

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Monitoring and Prognosis

- Monitoring
  - Clinical signs
  - Haematology, serum biochemistry
  - Pancreatic lipase
  - Diagnostic imaging

- Prognosis
  - Variable for acute pancreatitis
  - Generally good for chronic pancreatitis

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Simba

6 years 9 months

DSH, MN

Weight loss

within 6 mths BW dropped 7.2 Kg to 5.5 Kg

Polyphagia

Soft faeces, defecates 3 to 4x/day

Occasional vomiting

Previous treatments: hydrolysed diet, probiotic, vitamin B12 supplementation, prednisolone, wormer, maropitant

Clinical examination: “ropy” intestines on abdominal palpation

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Diagnostic tests

+ Previous diagnostic tests
+ Serum vitamin B12 <150 ng/L
+ Serum folic acid >24 ng/ml
+ Abdominal us: thickened colonic walls

+ Haematology, biochemistry, UA unremarkable

Faecal Test	Result
Giardia spp (Ag) ELISA	Positive
Faecal flotation test	Negative
Tritrichomonas foetus PCR	Negative

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Simba

Psyllium

Fenbendazole 50mg/Kg PO q24h 5 days

GI diet

Faeces formed but voluminous
Increased BW

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Simba

Trypsin-like Immuno-reactivity (TLI)	a	6	12 - 82 µg/l	

Reference range

- < 8.0 µg/L, diagnostic of EPI
- 8.1 – 11.9 µg/L, equivocal
- 12-82 µg/L, normal
- 82.1-99.9 µg/L, mildly increased
- >100µg/L, increased

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Exocrine Pancreatic Insufficiency

Traditionally considered rare in cats

Chronic pancreatitis main suspected cause

From 3 months to almost 19y old, median approximately 8-year-old

Clinical signs

- Weight loss (almost all)
- Polyphagia
- Anorexia
- Diarrhoea (significant % don’t have it!)
- Steatorrhea

Vitamin B12 is low in majority of cases

Pancreatic US: may cause minimal to no ultrasonographic pancreatic changes

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Treatment

- Pancreatic enzyme replacement therapy
- Raw cow and pork pancreas (may be frozen)
- Cobalamin supplementation
- High quality diet

- If no satisfactory response
  - Pancreatic enzyme treatment adjustment
  - Omeprazole
  - Diet change
  - Address comorbidities

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Thank you!

Any question?

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