

GI

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## Case 1

4y FN DSH

Vomiting + weight loss for 1 year

DD for chronic GI signs:

- EXTRA-GI

- Pancreas
- Liver
- Renal
- Thyroid

Spec fPL: N, not compatible with pancreatitis

TLI: N or high (no significance), ruling out EPI

Biochemistry: N

USG + dipstick: N

T4 in cats >6 years to rule out hyperthyroidism

- GI

- Parasites
- Neoplasia
- Ulcers
- Foreign body
- Food allergies
- IBD

Fenbendazole 50mg/kg PO 5 days (treat ALL cats & dogs in the household for 3 days if asymptomatic + wash bedding)

Abdominal ultrasound: mild GI changes

3 week trial with hydrolysed diet trial  
(2 months for pruritus / otitis)

Endoscopy – is it needed?

vitB12: low (<400)

Low vitB12 is a VERY IMPORTANT finding because:

1. Regardless of the cause, GI signs will never resolve completely if vitB12 is low and not supplemented.
2. If hyperthyroidism, EPI and severe parasitism have been ruled out, it confirms chronic & diffuse ileal disease:
  - Food allergies
  - IBD
  - Low grade (small cell) lymphoma

Measure vitB12 in all cats and dogs with chronic GI signs (>3 weeks)!

Supplement all cats and dogs with vitB12 <400 ng/L

**For oral cobalamin supplementation:**

Protocol: daily administration for a total of 12 weeks and re-check serum cobalamin concentration one week after finishing supplementation.

Dose: 250 µg in cats and 250 – 2000 µg in dogs, depending on the size of the patient:

Dogs weight (lb)	Below 22 lbs	22 to 100 lbs	Above 100 lbs
Dose of Cobalamin	250 µg	1000 µg	2000 µg

**For parenteral cobalamin supplementation:**

Protocol: weekly injections for 6 weeks, then one dose a month later, and retesting one month after the last dose.

For either oral or parenteral supplementation, if the underlying disease process has resolved and cobalamin body stores have been replenished, serum cobalamin concentration should be supranormal at the time of reevaluation. However, if serum cobalamin concentration is within the normal range, treatment should be continued at least monthly (for parenteral supplementation) and the owner should be forewarned that clinical signs may recur sometime in the future. Finally, if the serum cobalamin concentration at the time of reevaluation is subnormal, further work-up is required to definitively diagnose the underlying disease process and cobalamin supplementation should be continued weekly or bi-weekly (for parenteral supplementation) or daily (for oral supplementation).

Dose: SC injection of 250 µg per injection in cats and, 250-1500 µg per injection in dogs, depending on the size of the patient:

Dogs weight	Below 10 lbs	10 lbs-20 lbs	20 lbs-40 lbs	40 lbs-60 lbs	60 lbs-80 lbs	80 lbs-100 lbs	Above 100 lbs
Dose of Cobalamin	250 µg	400 µg	600 µg	800 µg	1000 µg	1200 µg	1500 µg

Case 1

4y FN DSH

Vomiting + weight loss for 1 year

↓vitB12

Treatment: fenbendazole + hydrolysed diet + vitB12.

Clinical signs resolved.

What is your diagnosis?

Food allergies or IBD - if food responsive, it doesn't matter if it's food allergies or IBD!

Lymphoma would not have resolved with diet.

## IBD MYTHS

Only cats <1 year have food allergies or parasites.

WRONG: The younger the cat, the more likely it's food allergies or parasites, but they can affect cats of at any age.

Food allergies are ruled out if they don't respond to a food trial.

WRONG: As you cannot know what they are allergic or intolerant to (food allergy tests are not reliable in cats or dogs!), it may take 2-3 dietary trials to find the best diet for each patient.

It is not IBD if the ultrasound is N.

WRONG: Most IBD cases have mild or no changes on ultrasound.

Normal vitB12 rules out IBD.

WRONG: It only rules out chronic & diffuse ileal disease, but IBD can affect only the duodenum or only the colon.

You must treat Helycobacter if you find it on biopsies.

WRONG: Helycobater can be found in up to 100% of healthy cats and dogs, it's not to be treated.

## IBD MYTHS

All animals with IBD need steroids lifelong.

WRONG: Many IBD cases are controlled with hydrolysed diet + vitB12, and do not require steroids.

If steroids are needed, give for 4months, then stop and see if the disease can now be controlled on diet alone.

I should give metronidazole to cats with chronic diarrhoea, to rule out antibiotic-responsive diarrhoea (ARD).

WRONG: ARD is a disease of large-breed dogs (especially German Shepherd), very rare in cats or small dogs.

Cats with IBD may temporarily improve with “gut antibiotics” (metronidazole or tylosin) but later they’ll relapse and may have dysbiosis for months (i.e. antibiotics can make IBD more refractory to treatment).

I should give metronidazole and famotidine to cats with IBD.

WRONG: Metronidazole is not recommended in IBD anymore.

There are only 3 indications to use gastroprotectants...

**CONSENSUS STATEMENT**

Consensus Statements of the American College of Veterinary Internal Medicine (ACVIM) provide the veterinary community with up-to-date information on the pathophysiology, diagnosis, and treatment of clinically important animal diseases. The ACVIM Board of Regents oversees selection of relevant topics, identification of panel members with the expertise to draft the statements, and other aspects of assuring the integrity of the process. The statements are derived from evidence-based medicine whenever possible and the panel offers interpretive comments when such evidence is inadequate or contradictory. A draft is prepared by the panel, followed by solicitation of input by the ACVIM membership that may be incorporated into the statement. It is then submitted to the *Journal of Veterinary Internal Medicine*, where it is edited before publication. The authors are solely responsible for the content of the statements.

**ACVIM consensus statement: Support for rational administration of gastrointestinal protectants to dogs and cats**

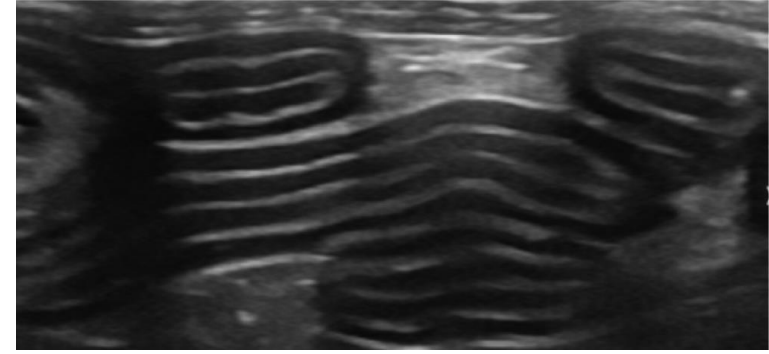
## Summary of the guidelines:

- If you need a gastroprotectant, use omeprazole 1mg/kg q12h
- If you think q24h is enough, you probably don't need a gastroprotectant!
- Ranitidine doesn't work in cats/dogs as an antacid or prokinetic
- There are 3 indications to use omeprazole:
  1. Regurgitation/reflux
  2. Evidence/high suspicion of GI ulcers (haematemesis, melaena)
  3. Intoxication with NSAIDs
- Except for the 3 situations above...  
NOT TO BE USED in vomiting, anorexia, renal or liver disease, pancreatitis, when using steroids or NSAIDs!



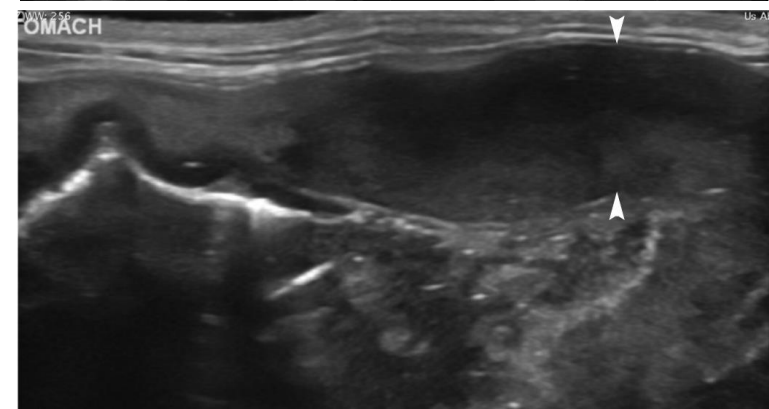
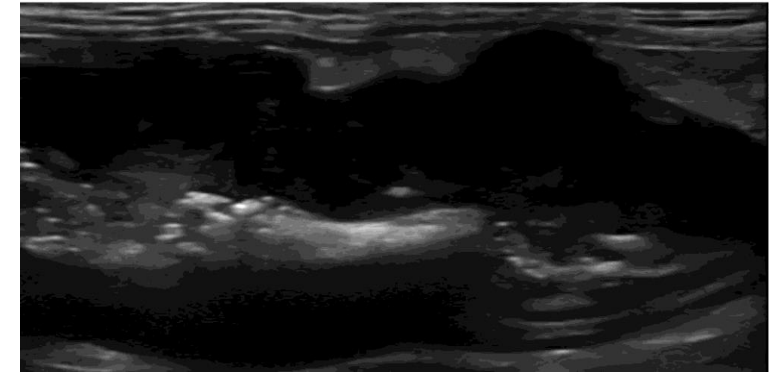
## LOW GRADE (SMALL CELL) GI LYMPHOMA:

- Diffuse
- Difficult to distinguish from severe IBD, even after histo, PARR and immunohisto.
- Treatment is the same: pred + chlorambucil PO
- Prognosis: very good, can live >5 years



## HIGH GRADE (LARGE CELL) GI LYMPHOMA:

- Focal mass with loss of layering or very large lymph node(s)
- Treatment: often COP
- Prognosis: poor, most die in <10 months



# Pancreas

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# PANCREATITIS

## Diagnosis:

**SNAP** (qualitative, + or -)



In cats, a + is most useful (confirms pancreatitis, no need to do spec)

In dogs, a – is most useful (rules out pancreatitis, do spec only if you're very suspicious of chronic mild panc)

**SPEC** (quantitative)

In cats, do when snap is – but you're still suspicious

In dogs, do when snap is + to confirm if it's pancreatitis (70% of snap+) or a false+ (30% of snap+)

## **Ultrasound:**

Large pancreas, hyperechoic mesentery around pancreas (focal peritonitis), ascites.

Cats with severe inflammation often develop abdominal, pleural and/or pericardial effusions! Uncommon in dogs.

## **Effusion analysis:**

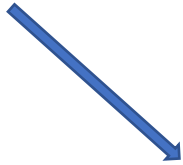
Many neutrophils but no bacteria (aseptic exudate → effusion does not indicate need for antibiotics!)

## Treatment:

In dogs: pancreatitis is ALWAYS inflammatory (no antibiotics!!)

In cats: can be inflammatory or infectious (antibiotics if not improving)

It causes NAUSEA + PAIN (give anti-nausea drugs + analgesia to ALL cats and dogs).



Maropitant  
Ondansetron

Appetite stim:  
Mirtazapine  
Capromorelin = Entyce

NOT SYRINGE FEEDING!

Buprenorphine  
Or Fentanyl transdermal  
  
NOT TRAMADOL!



## Diet:

In dogs: low-fat, consistency is very important:

A treat or changing from one low fat to another low fat can trigger a flare-up!

RC GI Low-Fat, Hill's id Low-Fat, carrot, broccoli, potato, sweet potato, chicken.

In cats: not low fat, hydrolysed (as they commonly also have IBD).

# Hepatobiliary

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ALT or AST – in cytosol, so ↑ indicates cell death.

ALP or GGT – in membrane, so ↑ indicates cholestasis (toxic bile acids dissolve the membrane)

ALP mainly in hepatocytes - ↑ in cats often indicates lipidosis.

GGT mainly in cholangiocytes - ↑ often indicates cholangitis in cats, cholecystitis or mucocele in dogs.

	DOG	CAT
Hepatobiliary disease affects mostly...	The liver parenchyma or gallbladder	The bile ducts
Is the above also true for tumours?	Yes, the most common is massive hepatocellular carcinoma (good prognosis if removed surgically)	Yes, the most common is bile duct cystadenoma.
Most commonly abnormal...	ALT, ALP	GGT, AST
A moderate increase is...	>3 fold	Even small increases are significant

## Bile duct cystadenoma...



Less common: cystadenocarcinoma, hepatocellular carcinoma, mast cell, lymphoma.



	Lymphocytic cholangitis/cholangiohepatitis	Neutrophilic cholangitis/cholangiohepatitis
Cause	Inflammation, presumed immune-mediated	Infection, ascending from GI tract
Clinical signs	Chronic mild GI	
Physical exam	Lively +/- jaundice	
Haematology	Normal	
Biochem	↑globulins, ↑ liver parameters	
Ultrasound	Often normal	
Diagnosis	Bile cytology: no bacteria or neutrophils Liver cytology: variable* Liver biopsy: lymphocytic cholangitis + fibrosis	
Treatment	Prednisolone (minimum 4 months, often lifelong) +/- ursodeoxycholic acid	

**\*If no masses, liver cytology is only useful to rule in or out 3DD: lymphoma, mast cell tumour, lipidosis.**

## Case 2

11y old FN DSH

Hx: acute lethargy, vomiting, anorexia (SICK)

Physical exam: fever

Haematology: mature and band neutrophilia

Bioch: ↑ALT, ↑GGT

### Problem list:

- ↑ALT and GGT
- Fever
- Neutrophilia
- Acute Gi signs

### Main DD ↑ALT or AST:

- Primary hepatopathy (**cholangitis**)
- Reactive hepatopathy (pancreatitis, hyperT4)
- Muscle damage

### Main DD ↑GGT:

- **Cholangitis**
- Cholestasis
- Steroids or phenobarbitone (ONLY DOGS)
- Kittens/puppies

### DD fever:

- Infection (Toxoplasma, **cholangitis**)
- Severe inflammation (pancreatitis)
- Neoplasia
- Immune-mediated

### DD GI signs:

- Extra-GI (**cholangitis**, pancreatitis)
- GI

Main DD:

- Pancreatitis
- Toxoplasmosis
- Neutrophilic cholangitis

Plan:

- SNAP fPL: negative
- Toxoplasma IgG IgM: low
- Abdominal ultrasound: sediment in the gallbladder
- PT APTT: normal
- Bile cytology: bacteria and neutrophils
- Bile culture: E. coli

Diagnosis: neutrophilic cholangiohepatitis

Treatment: Hartmanns, Maropitant, Mirtazapine, Ursodeoxycholic Acid, Amoxi-Clav IV q8h (then PO minimum 3weeks)

NOT CONVENIA! Poor penetration in biliary tree.

NOT ENRO! Can cause blindness in cats. If you need to use a quinolone, use Pradofloxacin or Marbo.

### Case 3

11y FN DSH

Hx: chronic weight loss

Physical exam: N

Haematology: N

Bioch: ↑globulins, ↑GGT, ↑bilirubin

#### Problem List:

- ↑bilirubin
- ↑GGT
- ↑globulins
- Chronic weight loss

#### DD ↑bilirubin:

- Pre-hepatic (haemolysis)
- Hepatic (**cholangitis**)
- Post-hepatic

#### Main DD ↑GGT:

- **Cholangitis**
- Cholestasis
- Steroids or phenobarbitone (ONLY DOGS)
- Kittens/puppies

#### DD ↑globulins:

- Infection (Toxoplasma)
- Inflammation (**cholangitis**)
- Neoplasia
- Immune-mediated

#### DD GI signs:

- Extra-GI (**cholangitis**)
- GI

Main DD:

- Toxoplasma
- FIP
- Hepatobiliary neoplasia
- Lymphocytic cholangitis or TRIADITIS (lymphocytic or neut. cholangitis + pancreatitis + IBD)

Plan:

- SNAP fPL: negative
- Toxoplasma IgM & IgG: low
- vitB12: normal (MEASURE IN ALL CATS & DOGS WITH GI SIGNS FOR >3WEEKS)
- Abdominal ultrasound: normal
- PT APTT: normal
- Liver cytology: not lymphoma, mast cell tumour or lipidosis
- Bile cytology: no bacteria or neutrophils
- Bile culture: negative
- Liver biopsies: lymphocytic cholangitis + fibrosis

Diagnosis: lymphocytic cholangitis

### Treatment?

- Prednisolone 2mg/kg PO q24h with food, drop dose by ~25% q 2weeks
- If cat is easy to medicate: ursodeoxycholic acid 15mg/kg PO q24h with food

### For how long?

- If liver parameters normalise: can try to stop pred after 4 months, monitor!
- If liver parameters never normalise, or if they increase after stopping pred: find the lowest effective dose.

### Diet?

- If weight doesn't normalise or if cat has intermittent GI signs: hydrolysed diet (possible concurrent IBD)

## HEPATIC LIPIDOSIS

- History?

Obese cat who developed anorexia and lost weight.

- Clinical signs?

Very sick (lethargic, vomiting), jaundiced, hypersalivation (the most common manifestation of HE in cats), neck ventroflexion.

- Main lab abnormality?

↑↑ALP - DD:

- Hepatitis lipidosis
- Cholestasis
- Steroids or phenobarbitone (ONLY DOGS)



## Investigations

Haematology: may have severe anaemia (oxidative damage to erythrocytes + anaemia of inflammatory disease)

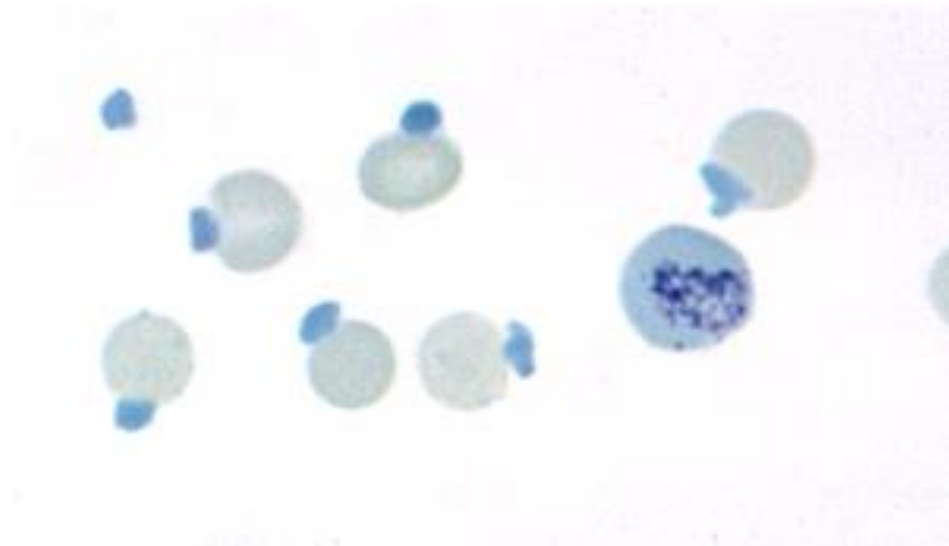
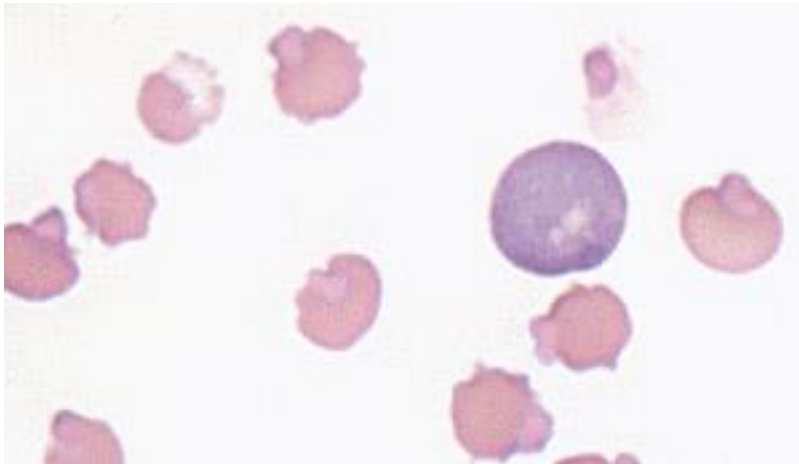
Biochemistry: liver failure

Electrolytes: K↓

PT APTT: ↑

Abdominal ultrasound: large hyperechoic liver

Fine needle aspirates (after correcting PT APTT): >50% of hepatocytes have large lipid vacuoles.





## Treatment

The most important is EARLY INTENSIVE FEEDING (↓mortality from 90% to <40%)

Cat will take 2-4 weeks to start eating! → oesophageal feeding tube

Get the fat out of the liver:

→ high protein diet

Hydrate:

→ Ringer's / Hartmanns

Treat HE:

→ amoxicillin 10-12mg/kg IV q8h + lactulose 0.5ml/kg via feeding tube q8h

Stop the vomiting:

→ maropitant IV q24h **AND** ondansetron IV q12h

Protect against oxidative damage:

→ N-acetylcysteine IV, when vomiting improves swap to SAME + ursodeoxycholic acid via feeding tube

Treat the nutritional deficiencies:

→ Vit K

→ Vit B12 250 ug/cat SC (one dose)

→ Vit B, vit E, taurine, carnitine, potassium → **kaminox** via feeding tube

