

Suffering in silence: spotting signs of feline triaditis

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DVM, MVetMed, DACVIM, DECVIM-CA, MRCVS



Introduction – feline triaditis

Concurrent inflammation of small intestines, pancreas and hepatobiliary system

No standardised diagnostic criteria

Clinically prevalent & relevant - lack of clinical studies

Challenges in definitive and presumptive diagnosis and treatment

Impact of multiple vs single organ inflammation on treatment response and outcome

Chronic enteropathy

Chronic persistent or recurrent GI signs

All other causes excluded

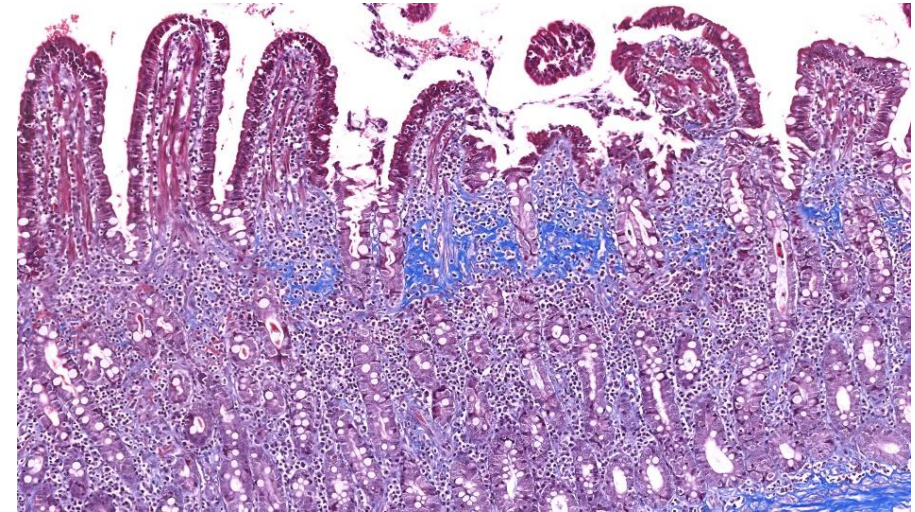
Mucosal inflammatory infiltrates

Lymphoplasmacytic, eosinophilic,
neutrophilic

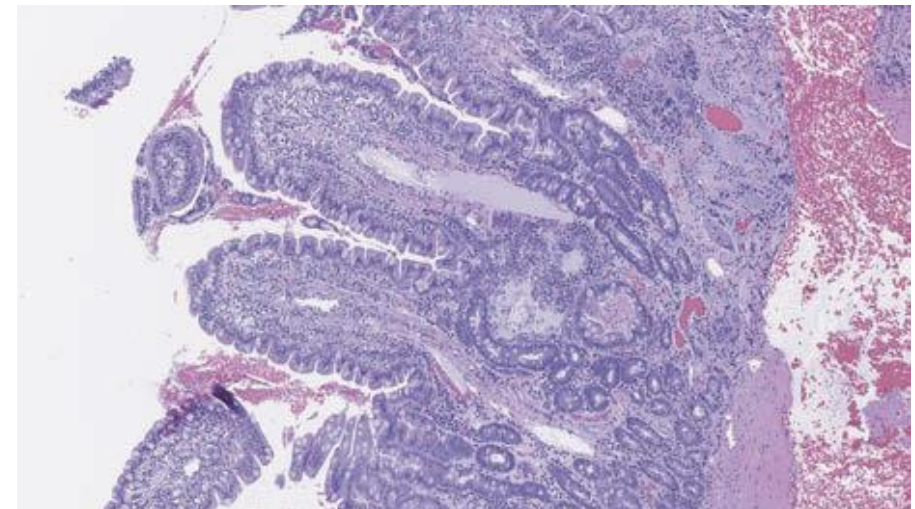
Ultrastructural changes

Epithelial injury, villous atrophy, fibrosis,
lymphangectasia, crypt disease, goblet cells

Dysbiosis



Bandara Y et al. J Vet Intern
Med. 2023;37(3):936-947



Neutrophilic cholangitis (NC)

Key histological features

Neutrophilic infiltration

Affecting bile duct lumen and/or epithelium

Periportal oedema and necrosis

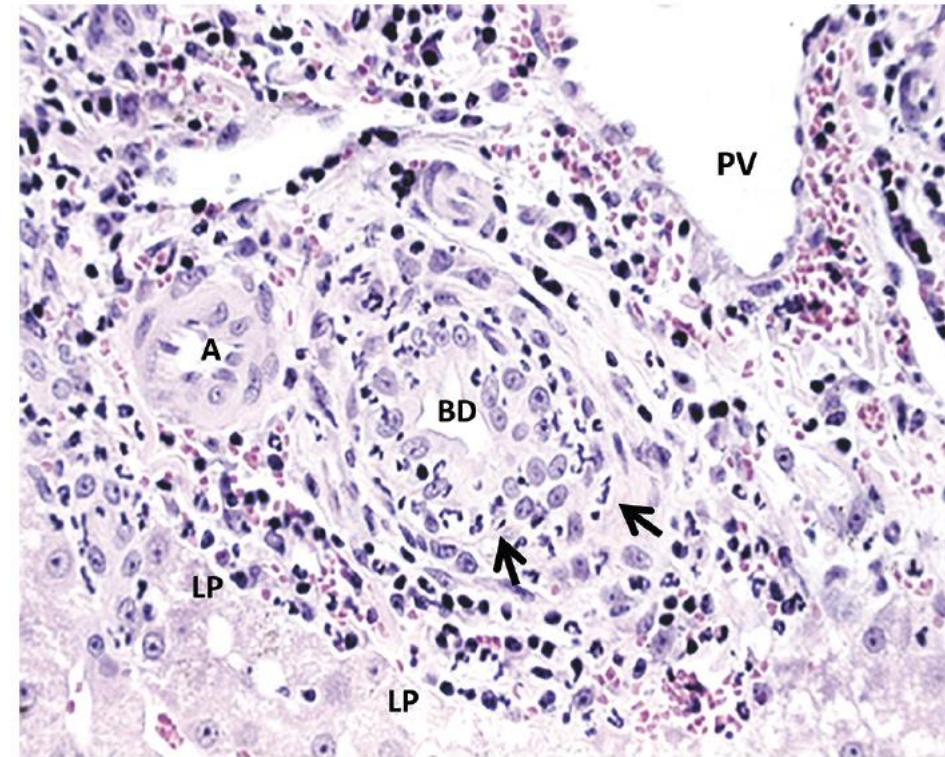
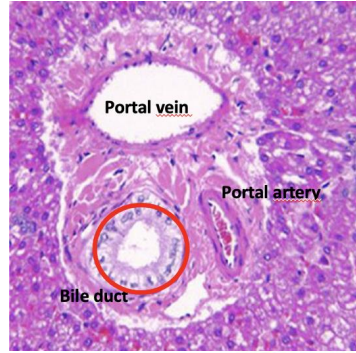
As disease progresses infiltrates cross the limiting plate (cholangiohepatitis)

Chronic phase

Infiltration with lymphocytes and plasma cells

Ductular proliferation

Fibrosis



Snead E, et al. Can Vet J. 2009 Sep;50(9):984–5

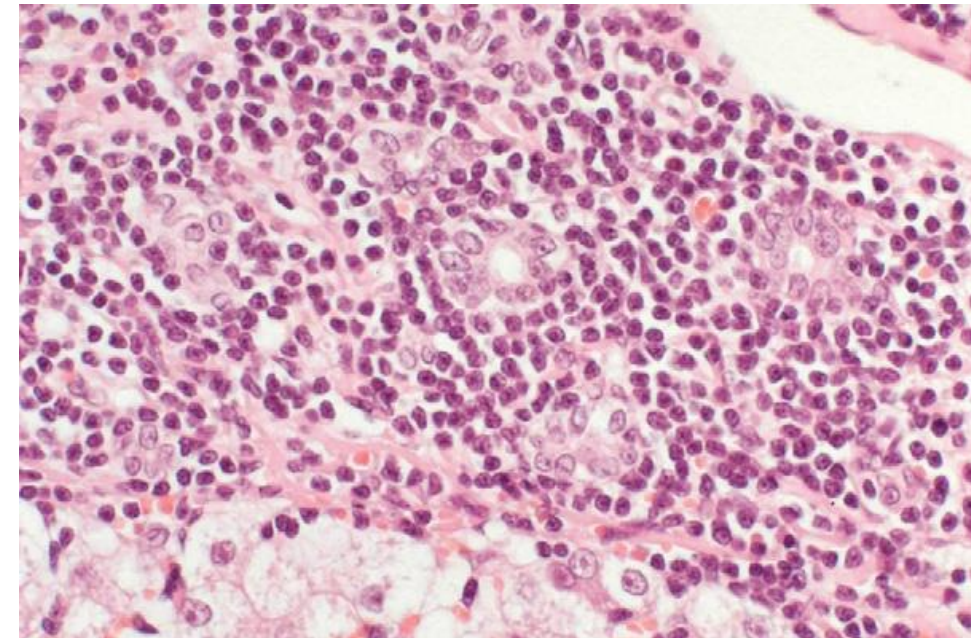
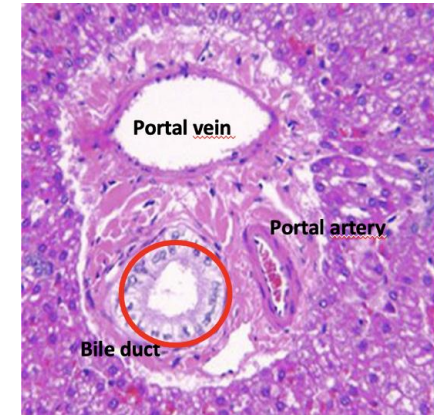
Lymphocytic cholangitis (LC)

Key histological features

Infiltration of small lymphocytes restricted to portal areas with variable fibrosis and bile duct proliferation

Proliferation of lymphocytes within the bile duct epithelium and destruction (ductopenia) possible but not typical

Some plasma cells, eosinophils and lipogranulomas possible



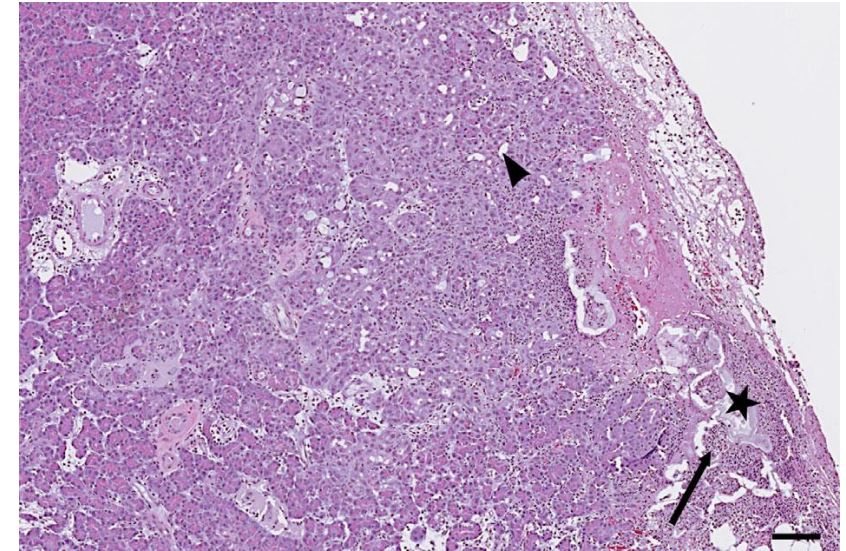
Pancreatitis

Acute pancreatitis (AP) – less common

Suppurative inflammation

Oedema and necrosis

Reversible



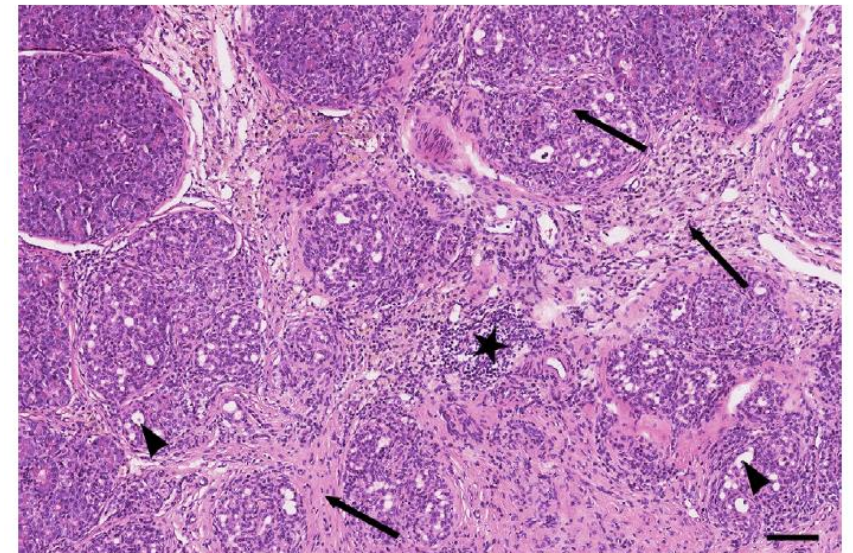
Chronic pancreatitis (CP) – more common

Lymphoplasmacytic inflammation

Fibrosis

Atrophy

Irreversible



Clinical prevalence triaditis

Fragkou et al, 2016

47 cats with histopathology available

27 symptomatic vs 20 asymptomatic (healthy undergoing OHE)

More than 1 organ involvement in 27/47 (57.4%)

Two organs involved in 19/47 (40.4%), 10 asymptomatic cats

FCE + cholangitis in 16

FCE + pancreatitis in 3

Triaditis 8/47 (17%)

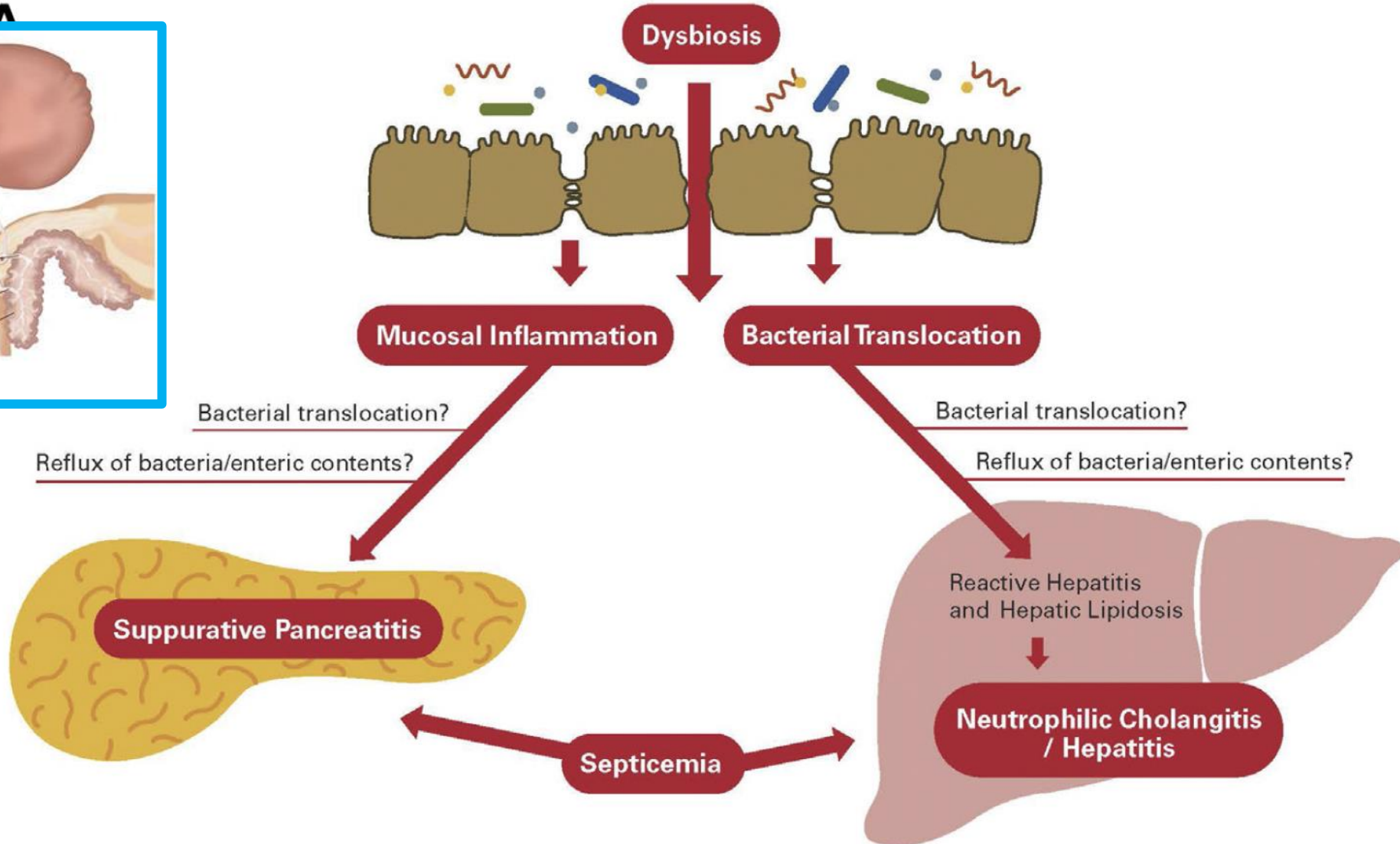
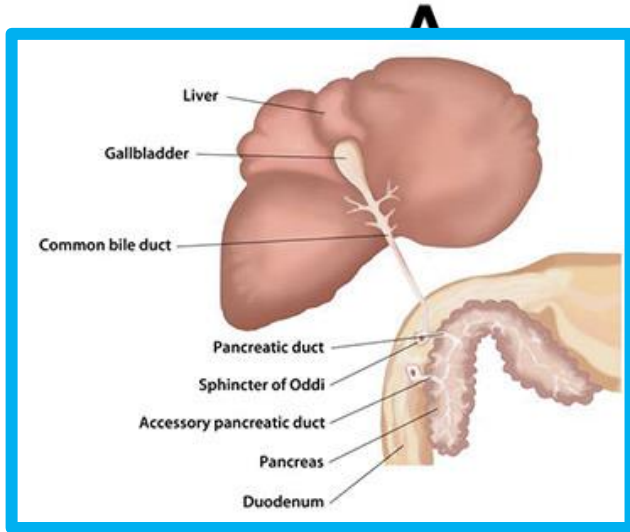
All 8 symptomatic (29.6%)

J Vet Intern Med 2016;30:1031–1045

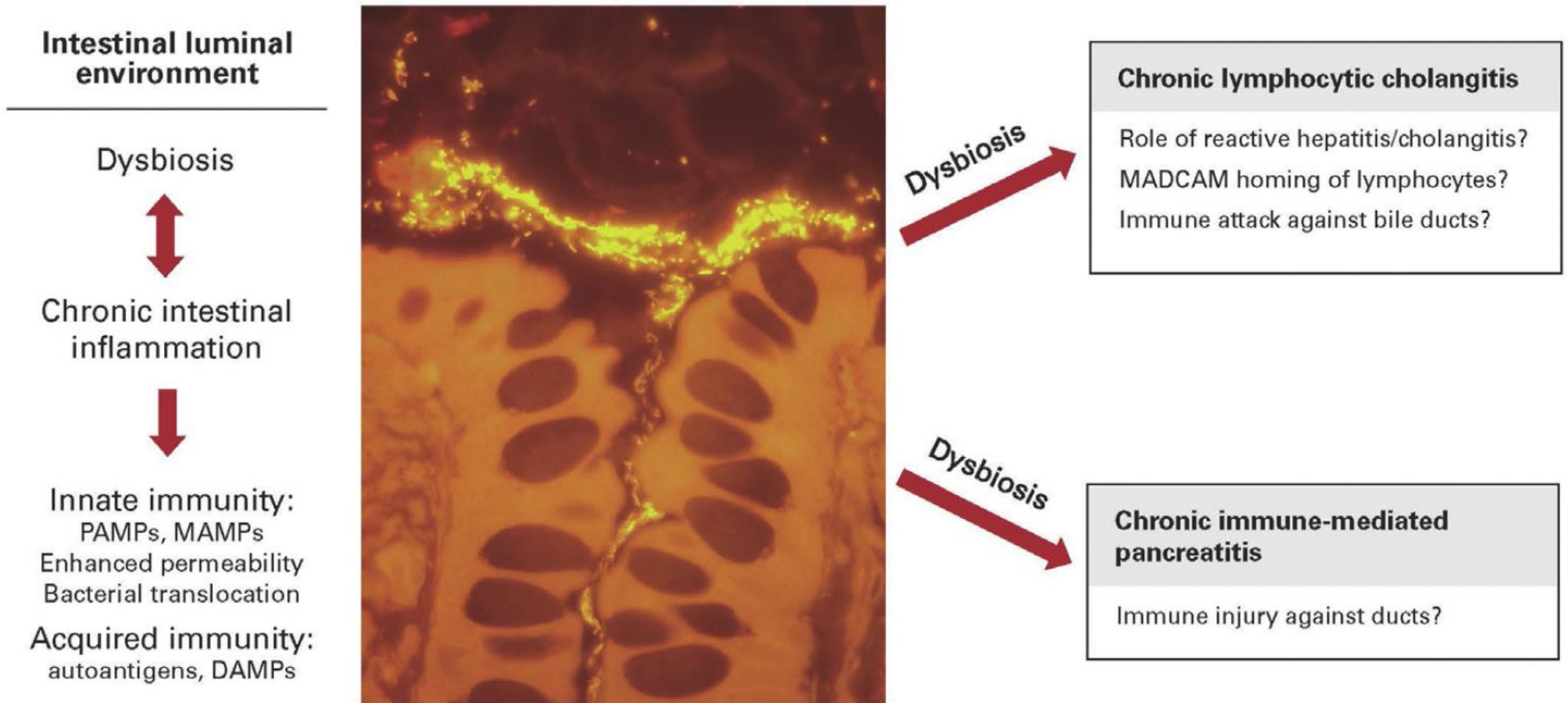
Prevalence and Clinicopathological Features of Triaditis in a Prospective Case Series of Symptomatic and Asymptomatic Cats

F.C. Fragkou, K.K. Adamama-Moraitou, T. Poutahidis, N.N. Prassinou, M. Kritsepi-Konstantinou, P.G. Xenoulis, J.M. Steiner, J.A. Lidbury, J.S. Suchodolski, and T.S. Rallis

Pathogenesis – bacterial translocation



Pathogenesis - autoimmune

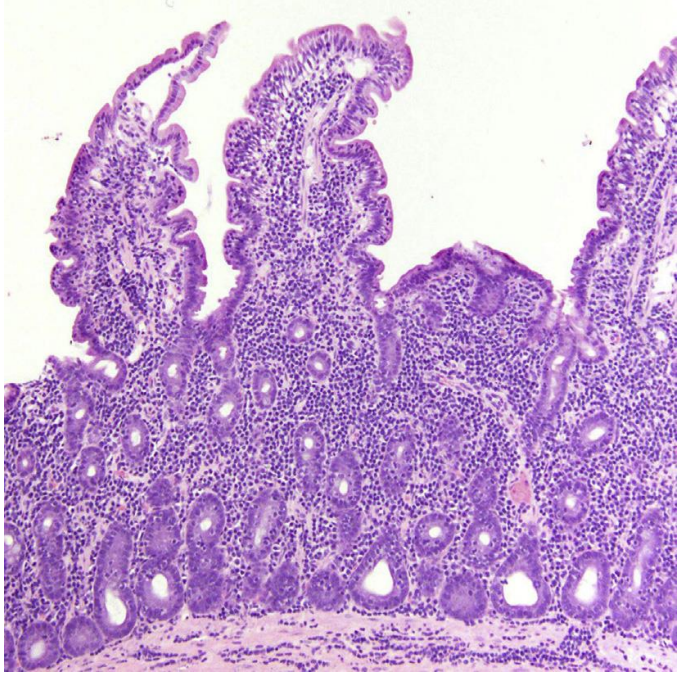


Diagnosing Triaditis

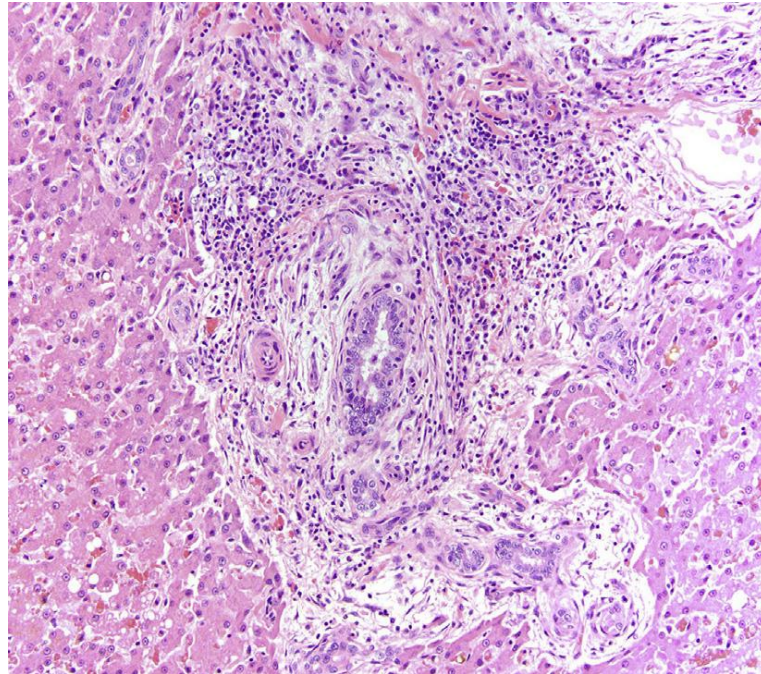


Definitive diagnosis

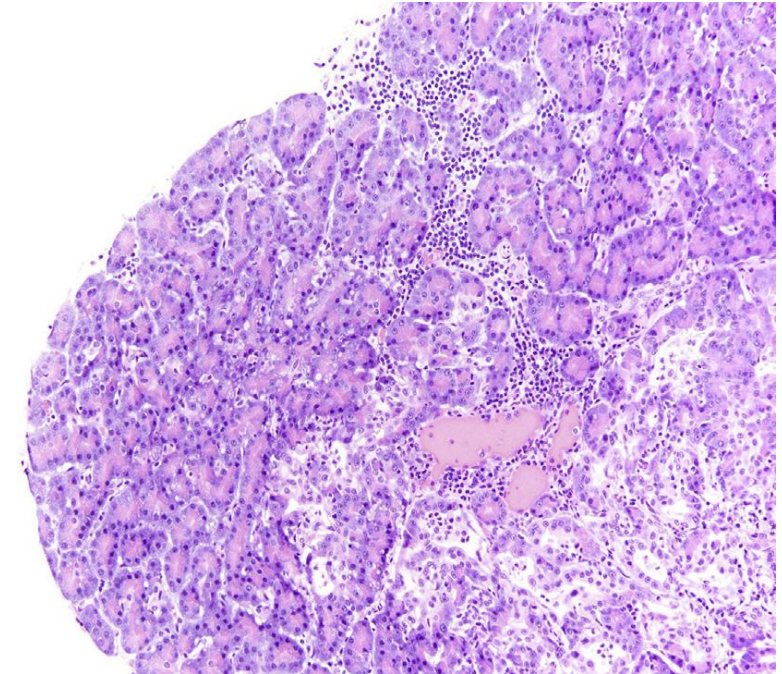
Histological evidence of inflammation



Chronic enteropathy



Cholangitis



Pancreatitis

Diagnostic challenges

Histopathology of all 3 organs seldom available

Food responsiveness of majority of FCE cases

Limitations of GI histology in predicting response to treatment

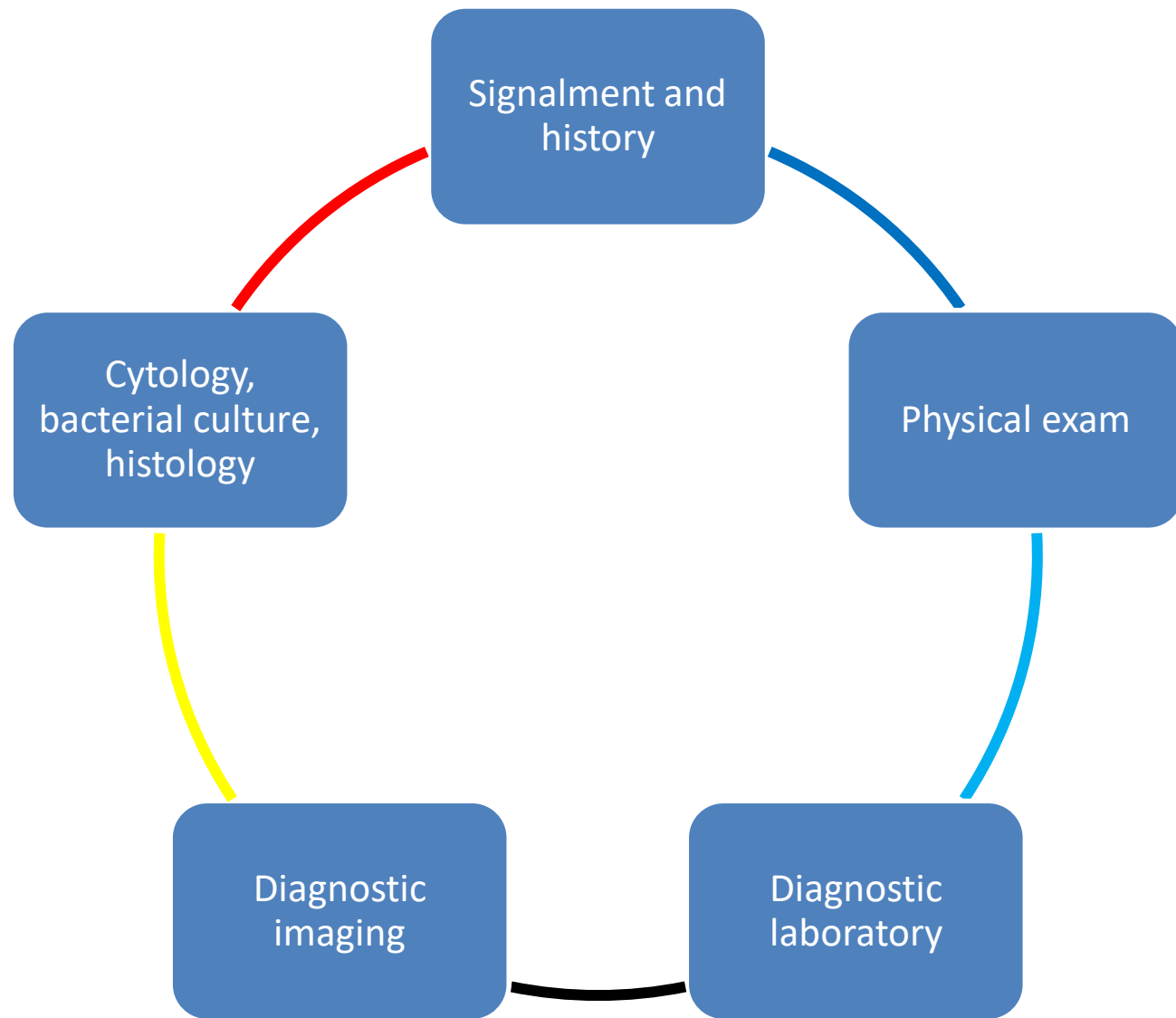
Variability between pathologists

Invasiveness of pancreatic biopsies

Equivocal significance of low grade inflammation in absence of clinical signs

Non invasive diagnosis of neutrophilic cholangitis easily achievable

Diagnostic approach



Signalment

Any breed, age and sex can be affected

Cats with triaditis tend to be older than cats with just FCE or FCE + cholangitis/pancreatitis

Some breed association identified with inflammatory liver disease

NC- British shorthair, Burmese and Persian in UK

LC- Norwegian forest cats in Netherlands



Clinical signs

The most common clinical signs reported

Lethargy – 74%

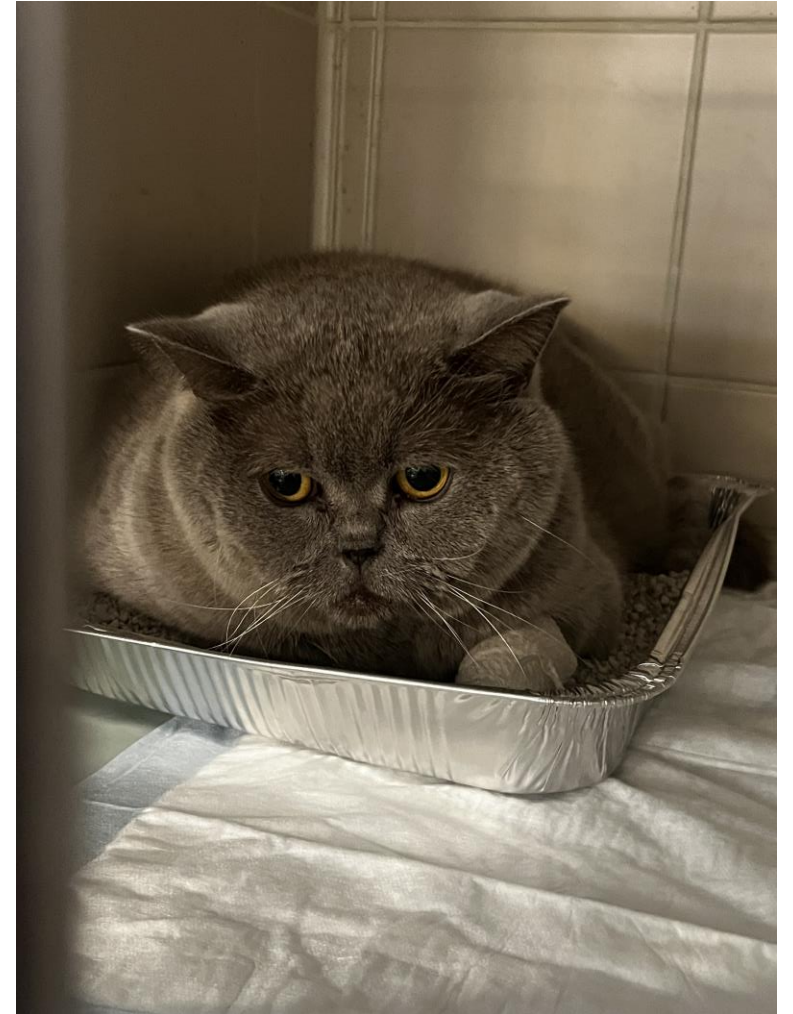
Anorexia – 67%

Weight loss – 62%

Vomiting – 54%

Abnormal feces – 56%

Polyphagia – 15%



Physical examination findings

Most common findings

Lethargy – 70%

Poor body condition score – 37%

Jaundice – 20%

Abnormal abdominal palpation – 15%

Thickened intestinal loops

LN's enlargement

Pain – 11%






Hepatomegaly – 7%





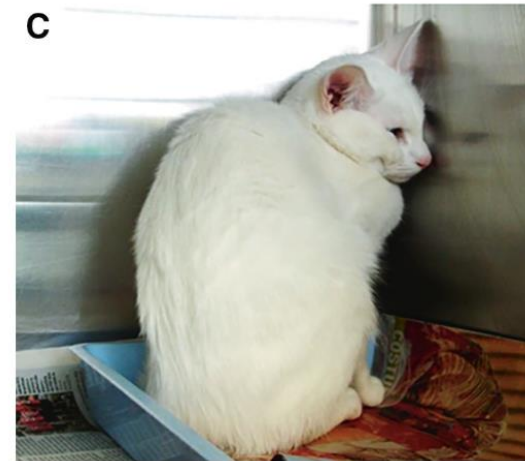
2022 WSAVA guidelines for the recognition, assessment and treatment of pain

AUTHORS:

B. P. MONTEIRO ^{1,*}, B. D. X. LASCELLES [†], J. MURRELL [†], S. ROBERTSON [§], P. V. M. STEAGALL ^{1,**} AND
B. WRIGHT^{||}

Cats

- Changes in facial expressions (Fig 7)
- Change in body posture or body position (Fig 10)
- Decreased activity and/or playfulness
- Decreased interest in the environment
- Decreased willingness to interact
- Decreased appetite
- Abnormal gait or shifting of weight
- Sitting or lying in abnormal positions (may reflect discomfort and protection of an injured area)
- Quietness, hiding
- Hissing, growling or fear-related aggressiveness
- Attention towards a specific area of the body (usually involving surgical wounds)
- Guarding behaviour
- Cessation of grooming (or increased grooming in one specific location)
- Tail flicking
- Hunched position and/or a tense abdomen†
- Difficulties grasping food and increased head shaking during feeding‡
- Depression and immobility; appears tense and distant from the environment§



Spotting pain in cats



Journal of Feline Medicine and Surgery
Volume 26, Issue 9, September 2024
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<https://doi.org/10.1177/1098612X241260712>

Sage Journals

Pain and pain management in cats - Original Article
Video-based compilation of acute pain behaviours in cats



Sabrina Marangoni ^{1,2} and Paulo V Steagall ^{1,2,3}



Laboratory findings

Most common findings

Mild non-regenerative anaemia

Mild inflammatory leukogram

Increased liver enzymes activities

Increased total bilirubin

Mild hypoalbuminaemia

Electrolytes imbalances

	Pancreatitis	Cholangitis	Inflammatory bowel disease
Haematocrit	N or ↓	N or ↓	N or ↓
Leukocytes	N or ↓	N or ↑	N or ↑
Neutrophils	N or ↑ or ↓	N or ↑	N or ↑
Lymphocytes	N or ↑ or ↓	N or ↑ or ↓	N or ↑ or ↓
ALT	N or ↑	N or ↑	N
ALP	N or ↑	N or ↑	N
Bilirubin	N or ↑	N or ↑	N
Bile acids	N or ↑	N or ↑	N
Glucose	N or ↑ or ↓	N	N or ↑

Černá P, Kilpatrick S, Gunn-Moore DA.
J Feline Med Surg. 2020;22(11):1047-1067

Spec fPL[®] and triaditis

Fragkou et al, 2016

Spec fPL increased - 13/47 (28%) cats
(cut off 3.5 µg/L)

Cats	fPLI (µg/L)
Group (N) (S/A)	Median (Range) (n)
Ctrl (8) (0/8)	1.5 ^a (1.3–1.8) (0)
IBD (13) (8/5)	1.7 ^{a,c} (1.2–4.5) (2)
Ch (6) (2/4)	4.2 ^b (1.6–6.6) (4)
IBD+Ch (16) (6/10)	1.9 ^{a,c} (1.2–18.5) (3)
IBD+Ch+P (8) (8/0)	2.0 ^c (1.5–4.0) (1)
Reference interval	0–3.5
MSSDO _{0.05}	0.5
Kruskal-Wallis <i>P</i>	.022

Table 7. Numbers of cats with serum fPLI concentrations above or below the cut-off value of 3.5 µg/L.

fPLI	Cut-off value (µg/L)	Result (number of cats)	Histopathological results		
			Cats without any inflammatory lesions (N = 8)	Cats with other inflammatory lesions, but no lesions of pancreatitis (N = 34)	Cats with pancreatic lesions with or without other inflammatory lesions (N = 11)
3.5		Negative (n ≤ 3.5)	8	25	7
		Positive (n > 3.5)	0	9	4

Possible false positive – 9

Possible false negative – 7

New reference Spec fPL[®] value

Wu et al, 2022

Unlikely Spec fPL < 4.4 ug/L

Possible Spec fPL 4.5-8.7 ug/L

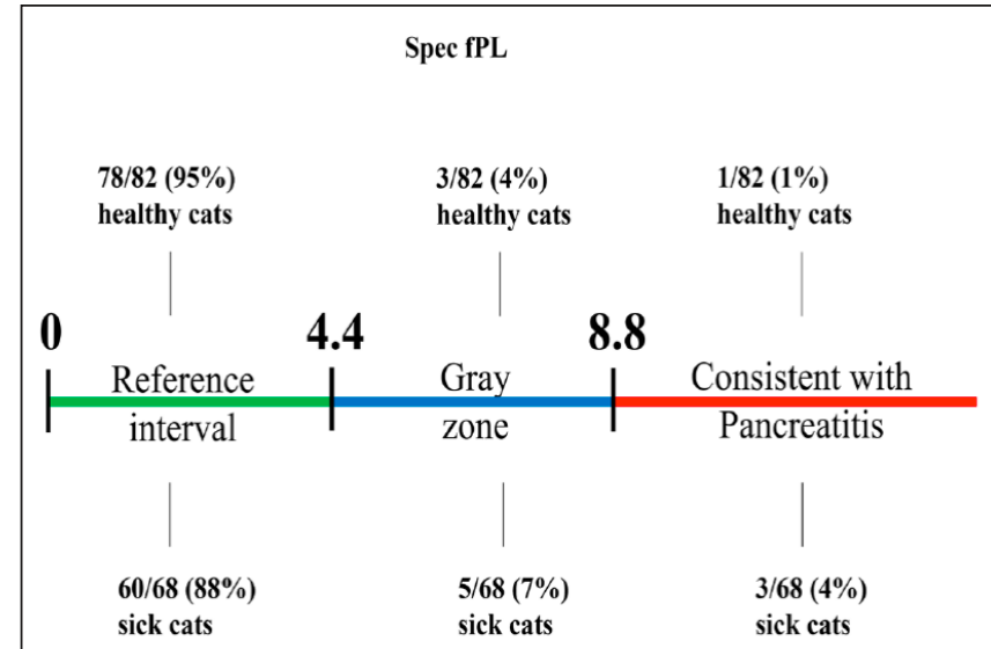
Pancreatitis probable if Spec fPL > 8.8 ug/L – 99% specificity

ORIGINAL ARTICLE

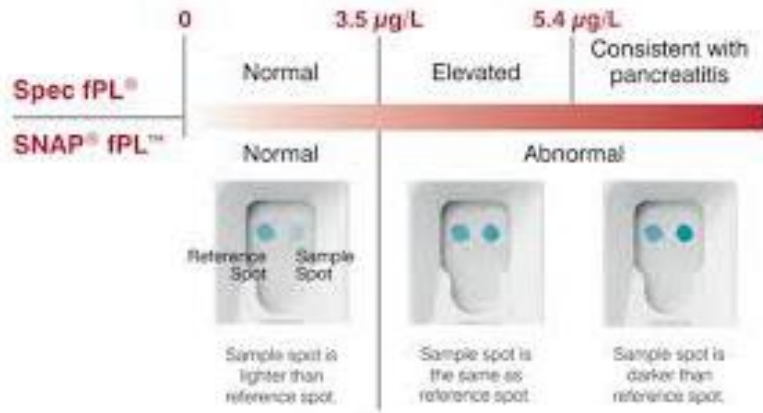
Veterinary Clinical Pathology
An International Journal of Laboratory Medicine WILEY

Analytical validation of an ELISA for the measurement of feline pancreas-specific lipase and re-evaluation of the reference interval and decision threshold for diagnosing pancreatitis

Yu-An Wu¹ | Jörg M. Steiner¹ | Elke Huisinga² | Melissa J. Beall² | Jesse Buch² | Geoffrey T. Fosgate³ | Jonathan A. Lidbury¹



Lateral flow immunoassay – SNAP® fPL™



Journal of Feline Medicine and Surgery
Volume 21, Issue 8, August 2019, Pages 700-707
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<https://doi.org/10.1177/1098612X18796624>



Original Article



Diagnosis of feline pancreatitis with SNAP fPL and Spec fPL

Fanny Schnauß^{1,*}, Franziska Hanisch^{1,*}, and Iwan Anton Burgener²

Journal of Feline Medicine and Surgery
Volume 25, Issue 7, July 2023
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<https://doi.org/10.1177/1098612X231183299>



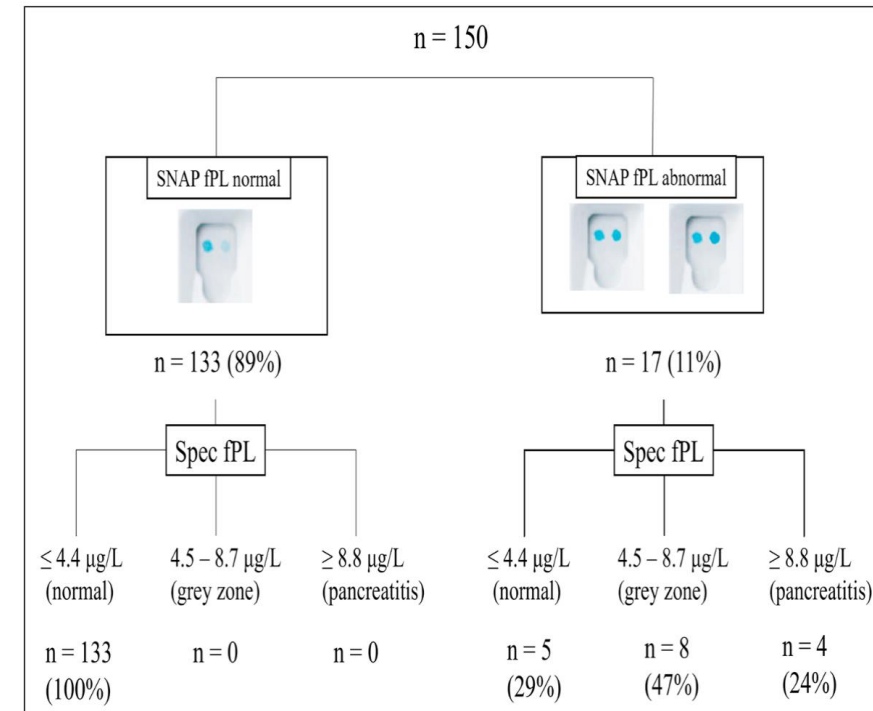
Original Article



Specificity of a pancreatic lipase point-of-care test and agreement with pancreatic lipase immunoreactivity in cats without clinical evidence of pancreatitis

Panagiotis G Xenoulis^{1,2}, Katerina T Moraiti¹, Victoria M Spanou¹, Manolis K Chatzis¹, Kassiopi CG Kokkinaki¹, Manolis N Saridomichelakis¹, and Jörg M Steiner²

97.5% concordance for negative results
90% concordance for abnormal results



Strong agreement between Catalyst[®] Pancreatic Lipase Test and Spec[®] fPL[™]

Overall agreement 87.5%



		Spec fPL		
		≤ 4.4 µg/L	4.5–8.7 µg/L	≥ 8.8 µg/L
Catalyst PL	≤ 4.4 U/L	52.7%	8.1%	0.0%
	4.5–8.7 U/L	2.7%	14.2%	0.4%
	≥ 8.8 U/L	0.0%	1.4%	20.5%



		Spec fPL			
		≤ 4.4 µg/L	4.5–8.7 µg/L	≥ 8.8 µg/L	
Catalyst PL	≤ 4.4 U/L	86.8%	13.2%	0.0%	100%
	4.5–8.7 U/L	15.5%	82.4%	2.0%	100%
	≥ 8.8 U/L	0.0%	6.4%	93.6%	100%

Abdominal ultrasound – evaluation of

GI tract (absolute and relative wall thickness and echogenicity, diffuse vs focal disease)

Mesenteric lymph nodes (size, shape, and echogenicity)

Hepatobiliary system (volume, texture of parenchyma, gallbladder wall thickness and content, diameter and content of intra- and extrahepatic bile ducts)

Pancreas (volume, echogenicity, duct diameter and content, peripancreatic fat)

Allows collection of FNAs or bile samples

Distinguishing FCE vs SCL

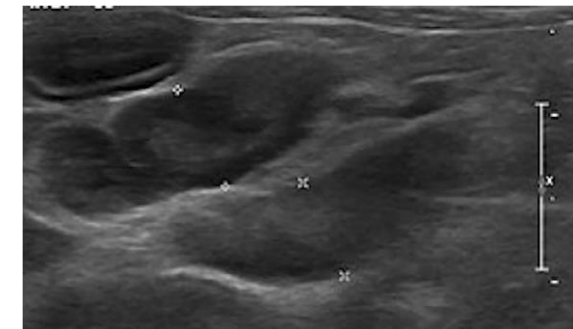
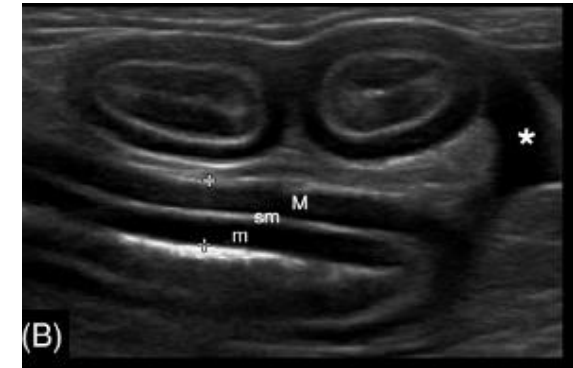
Freiche et al, 2021

22 cats with SCL and 22 cats with LPE (FCE)

Small volume abdominal effusion

Rounded and hypoechoic jejunal LN

More prevalent in SCL



Received: 26 February 2021 | Accepted: 14 September 2021
DOI: 10.1111/jvim.16272

STANDARD ARTICLE

Journal of Veterinary Internal Medicine 
American College of Veterinary Internal Medicine

Clinical, laboratory and ultrasonographic findings differentiating low-grade intestinal T-cell lymphoma from lymphoplasmacytic enteritis in cats

Valérie Freiche¹ | Julien Fages² | Mathieu Victor Paulin³ | Julie Bruneau⁴ |
Lucile Couronné⁵ | Alexander J. German⁶ | Dominique Penninck⁷ |
Olivier Hermine⁸

Cholangitis

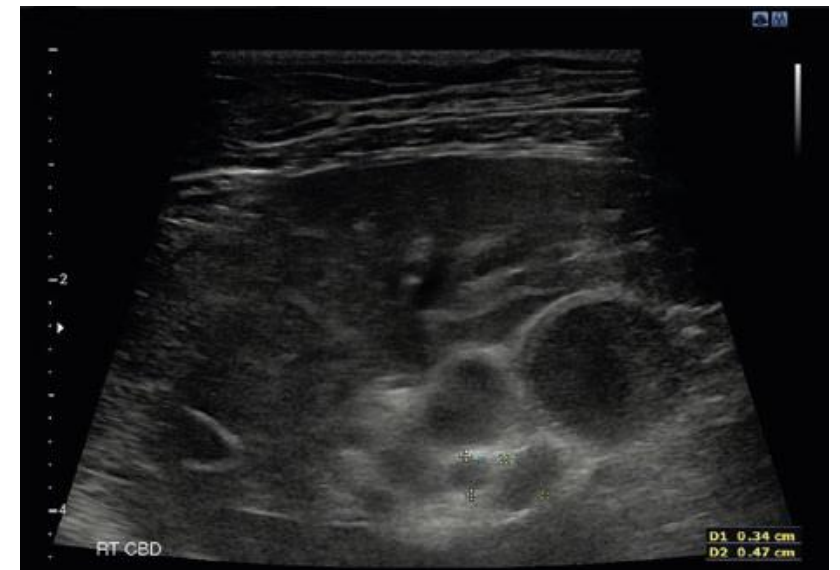
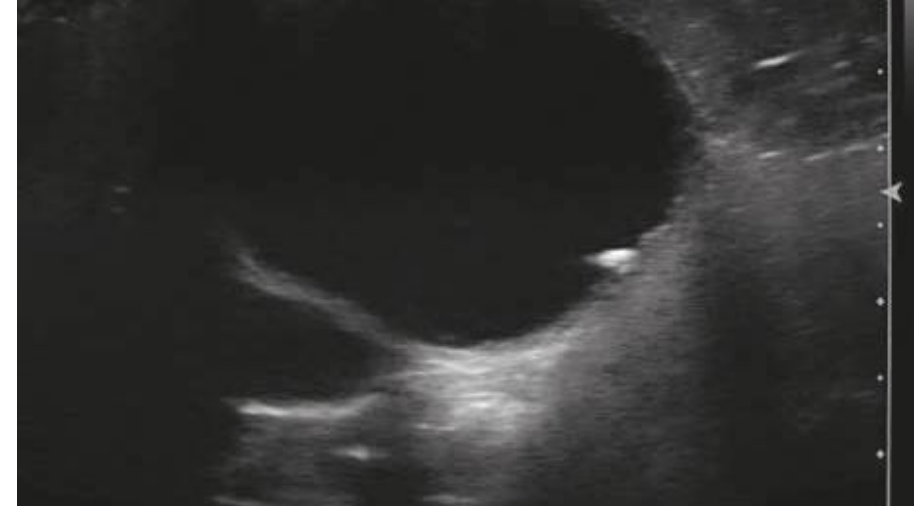
Possible findings

Hepatomegaly

Heterogenous parenchyma

Diffuse or segmental dilatation of bile ducts

Gallbladder and bile ducts walls thickening



RETROSPECTIVE STUDIES

Ultrasonographic Findings of Feline Cholangitis

Angela J. Marolf, DVM, DACVR, Lesley Leach, DVM*, Debra S. Gibbons, MS, DVM, DACVR†, Annette Bachand, PhD, David Twedt, DVM, DACVIM

Predictive value of GB ultrasound changes

Policelli Smith et al, 2017

Clinical Finding	Cats		
	Odds Ratio for Positive Bile Culture	95% CI (OR)	P Value
Abnormal gallbladder ultrasound	21.0	2.6–170	<0.001***
Thickened wall	6.7	2.2–20.5	0.001***
Sludge	3.2	1.1–9.3	0.050*
Wall edema	1.1	0.2–6.5	1.00
Cholelith	7.4	0.7–75.9	0.089
Mucosal hyperplasia	2.3	0.3–17.5	0.585
Mucocele ^a	–	–	–

Journal of Veterinary Internal Medicine

ACVIM
American College of Veterinary Internal Medicine

Open Access

Standard Article

J Vet Intern Med 2017;31:1451–1458

Association between Gallbladder Ultrasound Findings and Bacterial Culture of Bile in 70 Cats and 202 Dogs

R. Policelli Smith, J.L. Gookin, W. Smolski, M.F. Di Cicco, M. Correa, and G.S. Seiler 

Pancreatitis

Considerations

Variable sensitivity (AP > CP)

Operator dependent

Lag phase vs clinical signs and lipases

Abnormalities might persist beyond clinical resolutions

Poor correlation with lipases

Table 2. Frequencies of US findings among groups.

US Findings Pancreas	PA (n = 27) n (%)	PD (n = 134) n (%)	NP(n = 157) n (%)	p-Value
Enlargement	16 (59) ^{ac}	70 (52) ^a	37 (24) ^b	<0.0001
Hypoechogenicity	12 (44) ^{ab}	60 (45) ^a	44 (28) ^b	0.008
Hyperechoic mesentery	12 (44) ^{ac}	48 (36) ^a	26 (17) ^b	<0.0001
Mixed echogenicity	10 (37) ^a	43 (32) ^a	36 (23) ^a	0.11
Hyperechogenicity	8 (30) ^a	24 (18) ^a	18 (11) ^a	0.04
Fluid peripancreatic	4 (15) ^a	11 (8) ^a	12 (8) ^a	0.46

Agreement of serum feline pancreas-specific lipase and colorimetric lipase assays with pancreatic ultrasonographic findings in cats with suspicion of pancreatitis: 161 cases (2008–2012)

Ultrasound guided cholecystocentesis

Under heavy sedation or general anaesthesia

Experienced operator

23-gauge, 1.5-inch needle attached to an extension set

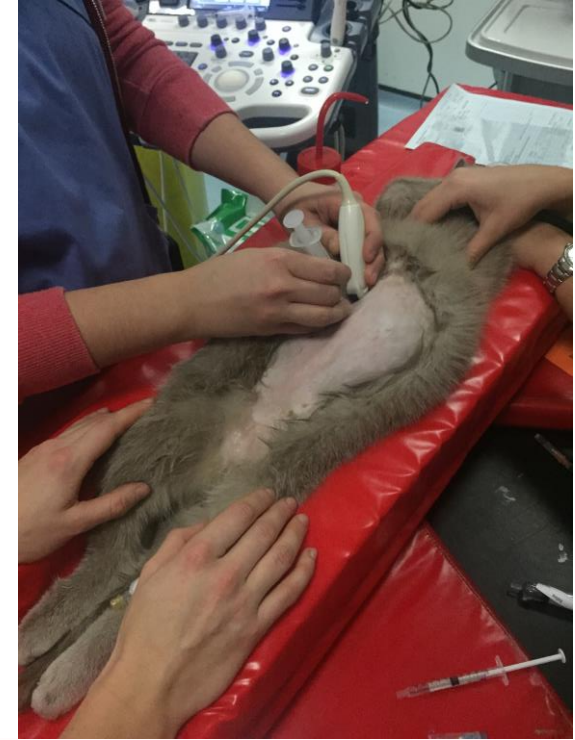
Must empty fully gallbladder to reduce risk of bile leakage

Request cytology and bacterial culture

Avoid if

High risk of bleeding

Emphysematous cholecystitis suspected



**Percutaneous cholecystocentesis
in cats with suspected hepatobiliary
disease**

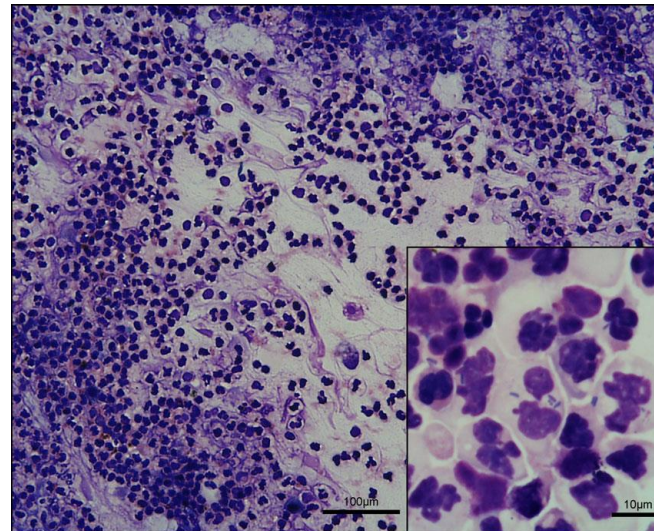
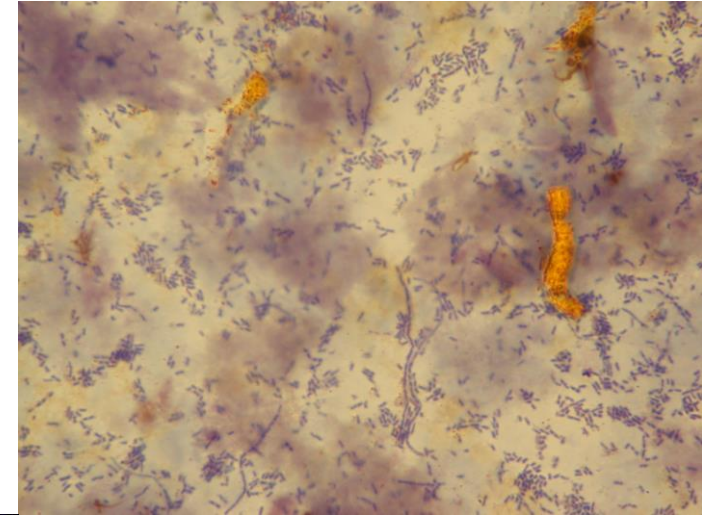
Victoria L Byfield^{1*}, Julie E Callahan Clark^{1†}, Bradley J Turek^{2‡},
Charles W Bradley² and Mark P Rondeau¹

Bile cytology

Peters et al, 2016

20% bile samples in cats had some evidence of infection

24% by cytology vs 21% by culture




Isolates – bile culture

80 cats undergoing percutaneous ultrasound-guided cholecystocentesis ^[9]		78 cats undergoing cholecystocentesis ^[8]		70 cats undergoing percutaneous ultrasound-guided cholecystocentesis ^[11]	
<i>Escherichia coli</i>	8.8%	<i>Escherichia coli</i>	17.9%	<i>Escherichia coli</i>	35.7%
<i>Streptococcus</i> spp.	2.5%	<i>Enterococcus</i> spp.	5.1%	<i>Enterococcus</i> spp.	14.3%
<i>Klebsiella pneumoniae</i>	1.3%	<i>Clostridium</i> spp.	2.6%	<i>Streptococcus</i> spp.	2.9%
<i>Pseudomonas aeruginosa</i>	1.3%	<i>Proteus</i> spp.	1.3%	<i>Staphylococcus</i> sp.	1.4%
<i>Enterococcus faecalis</i>	1.3%	<i>Peptostreptococcus</i> spp.	1.3%	<i>Clostridium</i> spp.	1.4%
		Alpha-haemolytic <i>Streptococcus</i>	1.3%	<i>Bacillus</i> sp.	1.4%
				<i>Enterobacter cloacae</i>	1.4%

Percutaneous cholecystocentesis in cats with suspected hepatobiliary disease


Victoria L Byfield^{1*}, Julie E Callahan Clark^{1†}, Bradley J Turek^{2‡}, Charles W Bradley² and Mark P Rondeau¹

Journal of Veterinary Internal Medicine 
Open Access
J. Intern. Med. 2016;30:123–131
Cytological Findings of 140 Bile Samples from Dogs and Cats and Associated Clinical Pathological Data
 L.M. Peters, B. Glanemann, O.A. Garden, and B. Szladovits

Journal of Veterinary Internal Medicine 
Open Access

Standard Article
J. Vet. Intern. Med. 2017;31:1451–1458

Association between Gallbladder Ultrasound Findings and Bacterial Culture of Bile in 70 Cats and 202 Dogs

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Cytology

Poor sensitivity

No information on

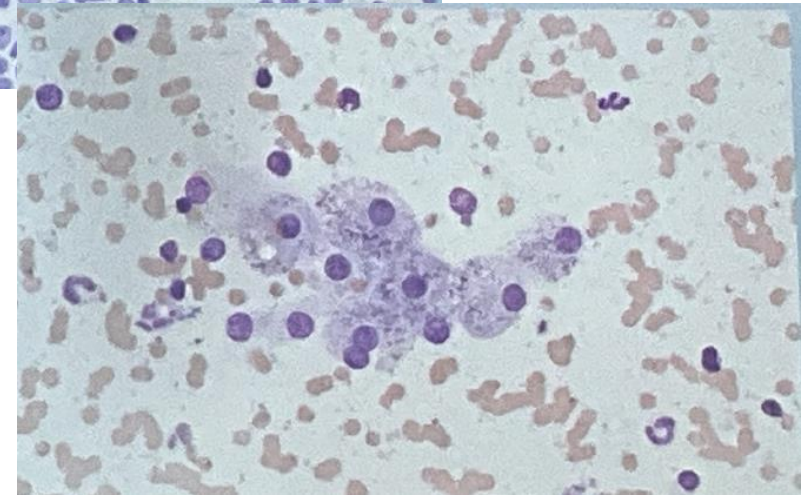
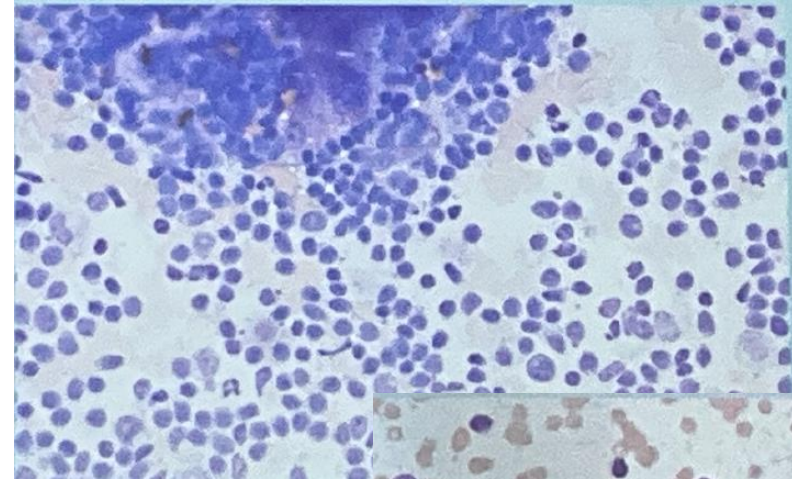
Architecture

Fibrosis

Bile duct changes

Can show bacteria and/or neutrophilic inflammation

Poor accordance with gold standard method (histology)



**Comparison of Liver Cytology and Biopsy Diagnoses
in Dogs and Cats: 56 Cases**

Managing triaditis



Considerations

Cats affected by triaditis might be systemically ill

As needed on individual basis

Nutritional support

Analgesia

Intravenous fluid therapy

Electrolytes supplementation

Antiemetics

Vitamin K1 supplementation

Sometimes cats can be treated on out-patient basis (if eating spontaneously around 75% of RER)

Supportive + symptomatic treatment

Based on individual patient assessment

Hydration + volaemia/perfusion status

Electrolytes balance

Pain

Nutritional status/appetite

Vomiting/nausea

Feline grimace scale (FGS)

Evangelista et al, 2019

5 action units, AU – scored from 0 to 2

Ear position

Orbital tightening





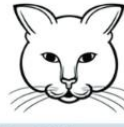

Muzzle tension

Whiskers change

Head position

Maximum possible score is 10

Total score of 4 or above suggests analgesia should be considered

		
		
Score 0 = AU is absent	Score 1 = AU is moderately present or there is uncertainty	Score 2 = AU is present
<ul style="list-style-type: none">• Ears facing forward• Eyes opened• Muzzle relaxed (round shape)• Whiskers loose and curved• Head above the shoulder line	<ul style="list-style-type: none">• Ears slightly pulled apart• Eyes partially opened• Muzzle mildly tense• Whiskers slightly curved or straight• Head aligned with the shoulder line	<ul style="list-style-type: none">• Ears flattened and rotated outwards• Squinted eyes• Muzzle tense (elliptical shape)• Whiskers straight and moving forward• Head below the shoulder line or tilted down (chin towards the chest)

Good-excellent inter- and intra-rater reliability
FGS detected response to analgesic treatment
Valid and reliable tool for acute pain assessment in cats

SCIENTIFIC REPORTS | (2019) 9:19128 | <https://doi.org/10.1038/s41598-019-55693-8>

OPEN Facial expressions of pain in cats: the development and validation of a Feline Grimace Scale

Marina C. Evangelista¹, Ryota Watanabe¹, Vivian S. Y. Leung^{1,2}, Beatriz P. Monteiro¹, Elizabeth O'Toole¹, Daniel S. J. Pang^{1,2,3} & Paulo V. Steagal^{1*}

Analgesia – treat to target

Buprenorphine† 0.02–0.03 mg/kg IV/IM/SC q6–12h

Can also be given transmucosally

Methadone 0.1–0.3 mg/kg IV q4–6h

Gabapentin 5–10 mg/kg PO q8–12h

Maropitant 1 mg/kg SC/IV/PO q24h (visceral analgesia)

Fentanyl 5 µg/kg IV bolus or 2–4 µg/kg/h CRI

Nutritional support

Enteral nutrition

Start as soon as possible

Reverse negative energy balance

Reverse catabolic state

Prevent hepatic lipidosis

Ensure intestinal integrity and function

Feeding tubes

Naso-esophageal/gastric (unstable/coagulopathic cats)

Esophagostomy tube (stable cats)



How much?

$$\text{RER} = 70 \times (\text{body weight in kg})^{0.75}$$

Start with 30% of resting energy requirement (RER) for first 24 hrs

Increase by 20% every 24 hrs if well tolerated

Food boluses every 4-5 hrs (alternatively can give as CRI)

If regurgitation or vomiting: stop feeding, reduce meal volume by 50% and restart feeding after 6 hours

Diet composition

Feed a calorie dense food

High protein (40-45%)

Moderate fat (40%)

Low carbohydrates/NFE (< 20%)

Excessive NFE can cause diarrhea, borborigmi, pain, hyperglycemia and lead to electrolyte imbalances

Disease specific treatment - FCE

Diet trial

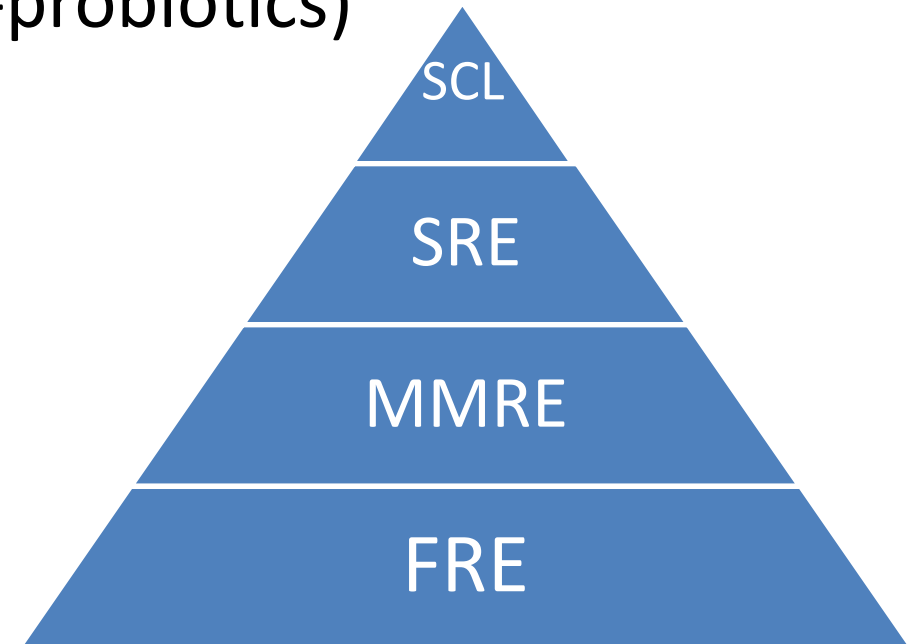
Hydrolysed, limited ingredient, low residue, fiber enriched

Microbiota modulating therapies (FMT, pre-probiotics)

Immunosuppressive drugs

Prednisolone 1-2 mg/kg SID

Do not use antibiotics routinely



Prevalence of food responsiveness

49-66%

Chronic enteropathy responsive to food?



Adverse food reactions?

Disease specific treatment -cholangitis

Hepatic supportive

S-adenosyl methionine

Silimarin

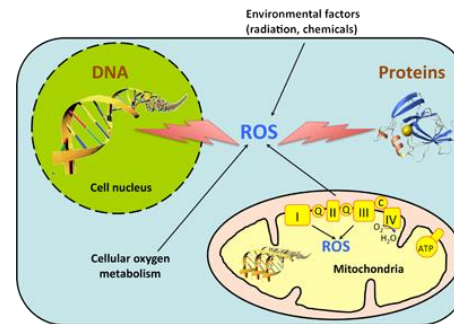
Ursodesossicholic acid

Vitamin E

Aetiology-targeting

Antimicrobial treatment (NC)


Immunosuppressive treatment (LC)



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The Effects of S-Adenosylmethionine on Clinical Pathology and Redox Potential in the Red Blood Cell, Liver, and Bile of Clinically Normal Cats

S.A. Center, J.F. Randolph, K.L. Warner, J. McCabe-McClelland, P. Foureman, W.E. Hoffmann, H.N. Erb

Antibiotics - NC

Chosen based on culture results

Empirically in case of negative or non-available culture

Must have activity against Gram + and Gram -, aerobic and anaerobic

Must be bactericidal and have good biliary penetration

IV therapy in critically ill cats

Amoxy-clavulanate – 20 mg/kg PO/IV q 12h

Clindamycin - 10-12.5mg/kg PO/IV q12h

Pradofloxacin – 7.5 mg/kg PO q24h

How long for?

5-7 days in people – Tokyo guidelines 2018

No guidelines in cats

Minimize duration if underlying cause identified and treated

Repeated bile culture off antibiotics to reduce duration –
2 weeks?

Recommended 4-6 weeks with clinical and laboratory-based monitoring

Immunosuppression - LC

Initial protocol

Prednisolone 1-2 mg/kg PO q24 hours

Taper down every 3 weeks

Monitor liver enzymes

Monitor clinical signs

Long term treatment often required

Refractory forms

Chlorambucil 2mg/cat PO q48-72 hours

20 mg/m² PO q14 days

Cyclosporin 5 mg/kg PO q12 hours



Cyclosporine and chronic pancreatitis

Hoeyrup et al, 2021

19 cases of suspected CP

Inclusion criteria

2 Clinical signs (vomiting, lethargy, hyporexia, weight loss and abdominal pain)

Spec fPL >5.3 g/L in 2 more occasions 21 days apart – **old cut off**





Article

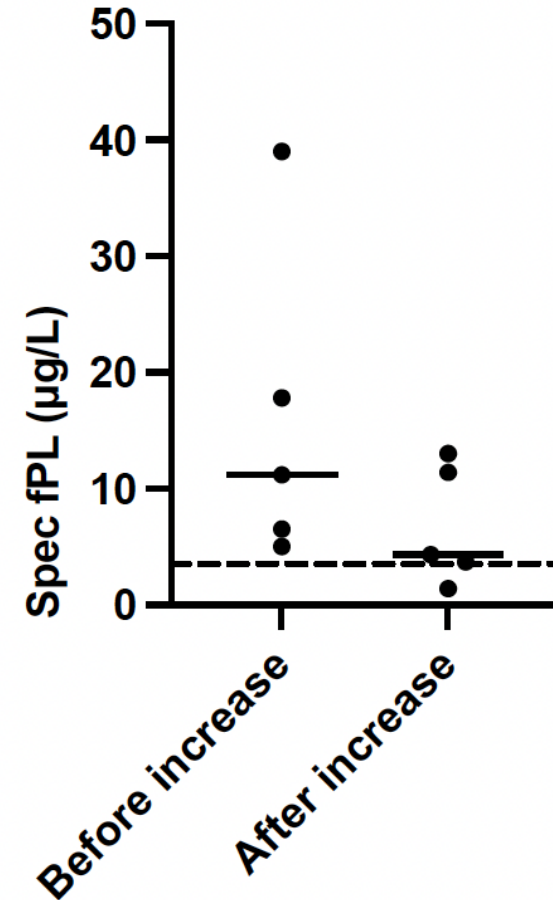
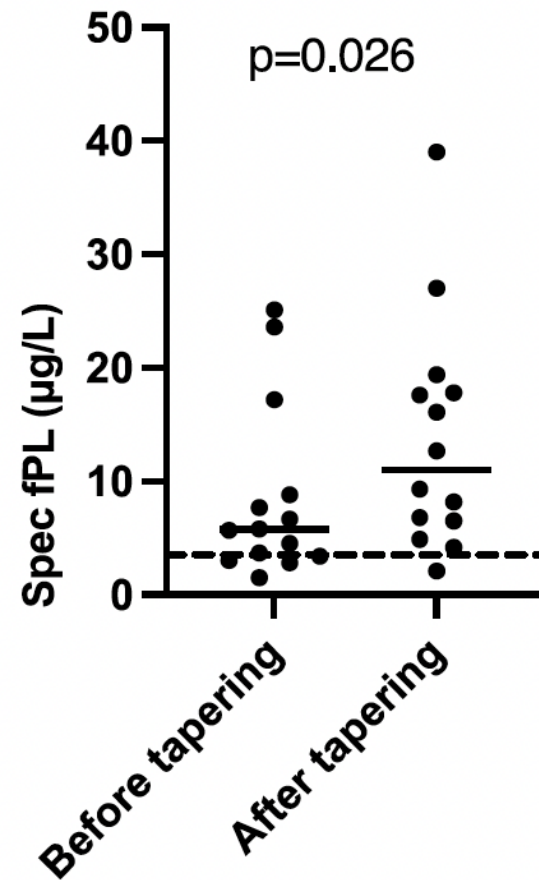
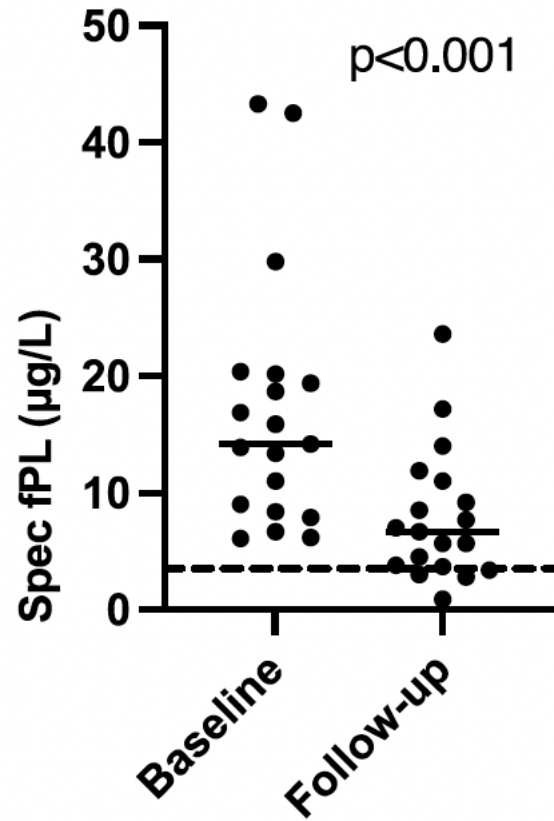
Cyclosporine Treatment in Cats with Presumed Chronic Pancreatitis—A Retrospective Study

Nina Hoeyrup ^{1,†}, Thomas Spillmann ² and Linda Toresson ^{1,2,*}

Article

Cyclosporine Treatment in Cats with Presumed Chronic Pancreatitis—A Retrospective Study

Nina Hoeyrup ^{1,†}, Thomas Spillmann ²  and Linda Toresson ^{1,2,*} 



Prognosis

Depends on severity of their disease – good in mild disease

With acute severe disease +/- systemic complications have guarded prognosis

Negative prognostic markers include

- Severe hypoalbuminaemia

- Neutropaenia

- Hypoglycaemia

- Hypocalcaemia

- EHBO

Clinical case



Meet Flora

12 yrs old FN DSH

Indoor only

Fed a maintenance commercial dry + wet diet

1 month history of weight loss (5% of body weight)

Vomiting, intermittent

Decreasing appetite

Lethargy

No other clinical signs



Physical exam

Quiet, alert responsive

Poor body condition

BCS 3/9

Mild dehydration

Equivocal thickening of intestinal loops

Reminder within normal limits



Clinical and diagnostic staging

Feline grimace scale AUS – 5 (mild pain)

Blood-work

CBC within normal limits

Moderate ALT and ALP increase (200 and 250 u/L)

Total bilirubin borderline (6.0 $\mu\text{mol/L}$)

Mild hypoalbuminaemia

Snap fPL – abnormal

T4 (total) 23 13–48 nmol/L

Additional tests

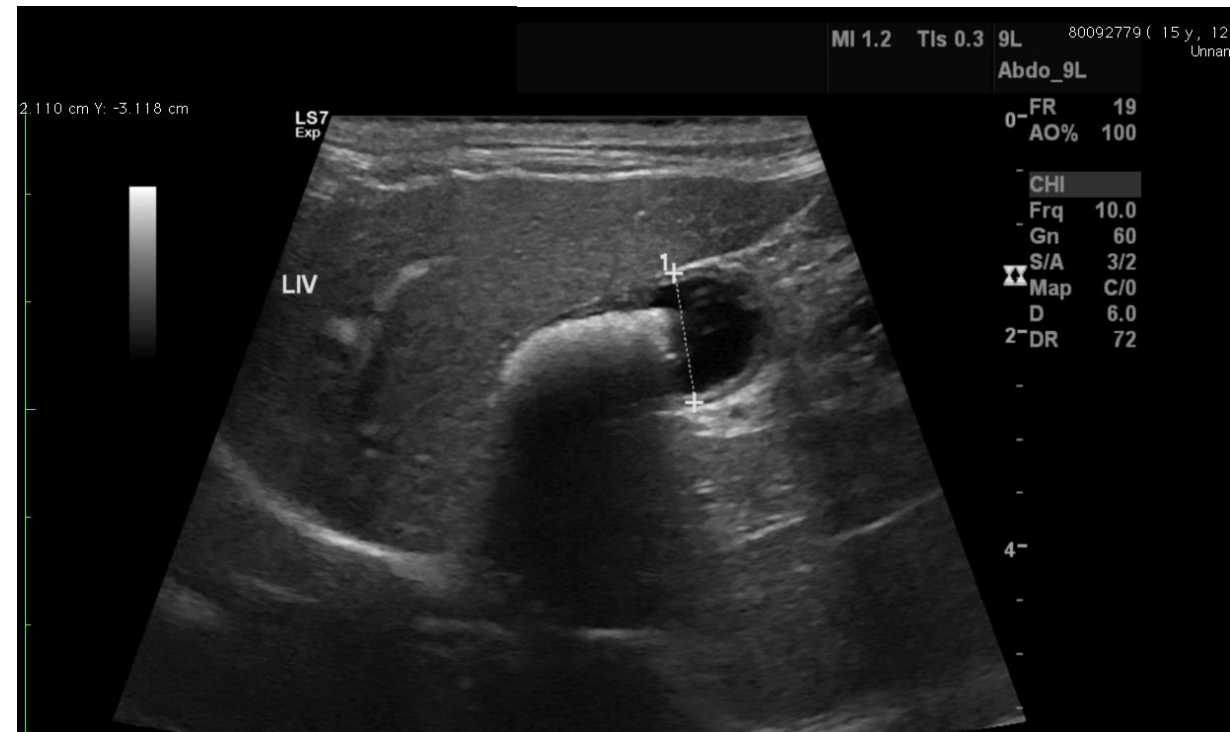
Spec fPL 15.8 $\mu\text{g/l}$

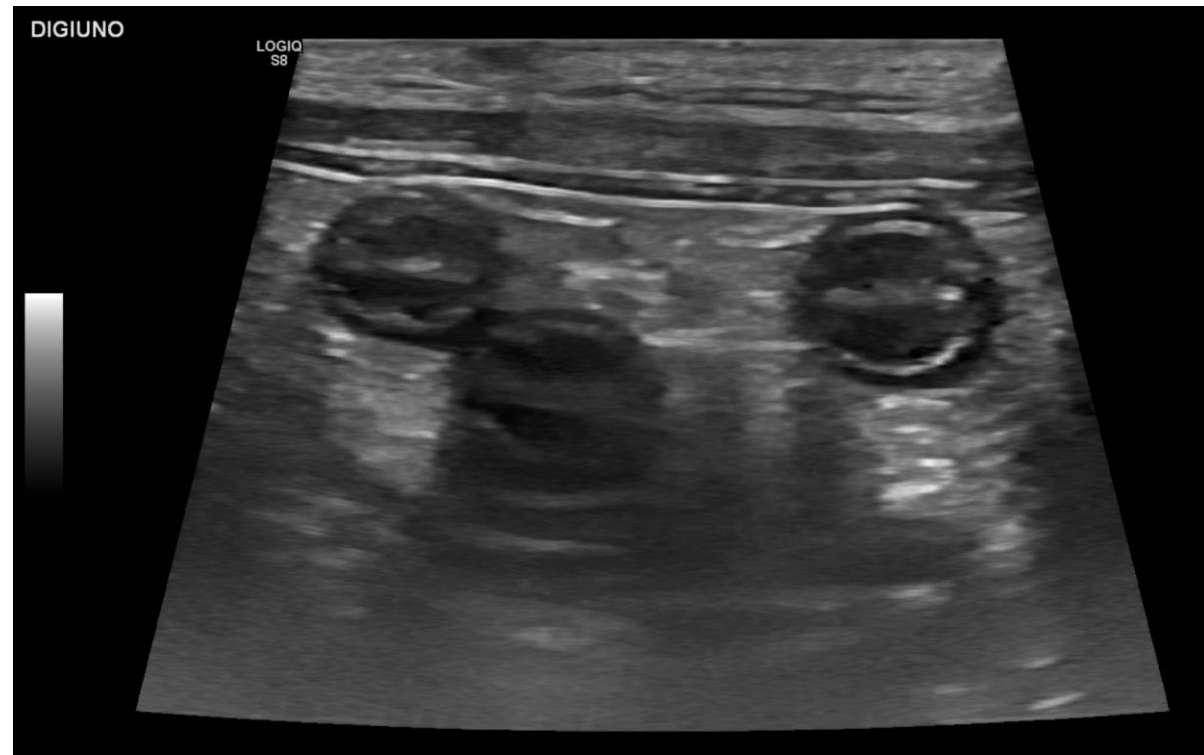
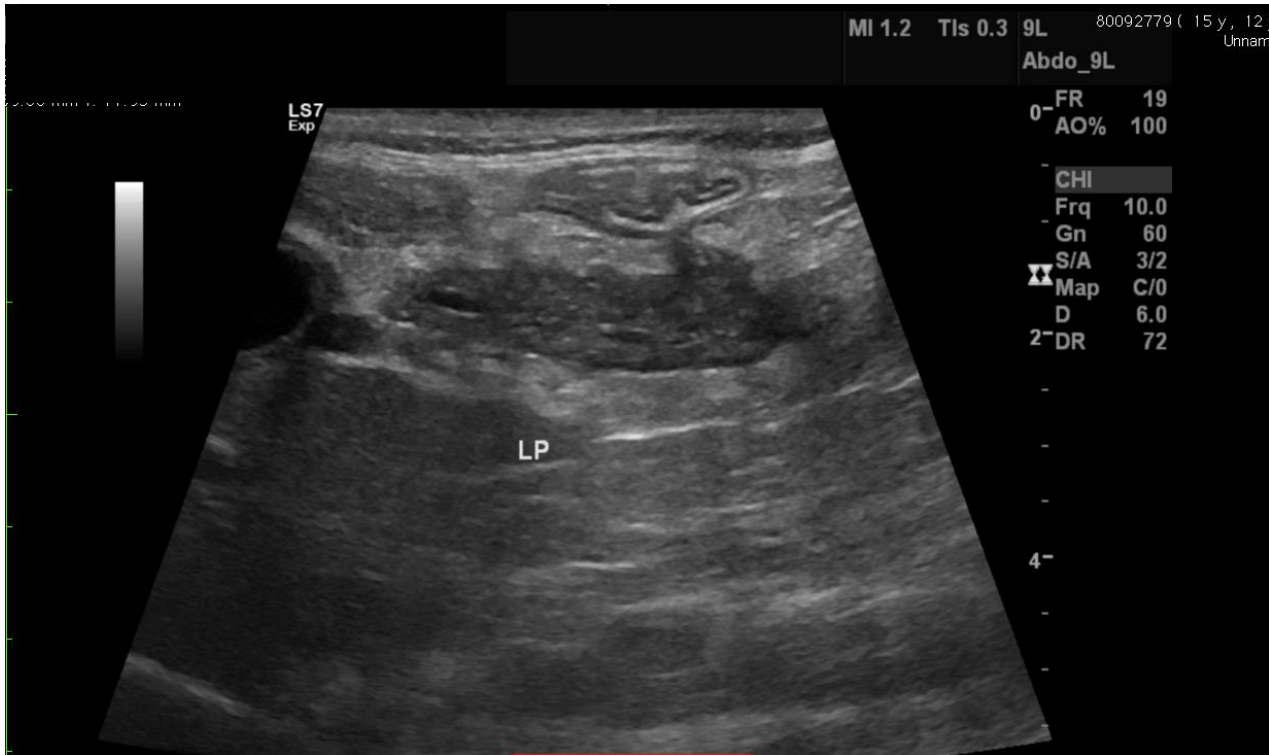
Serum cobalamin 192 ng/mL – fTLI/folate within normal limits

PT 9.78 sec (8.0-13.0), aPTT 21.75 (12-25)

Abdominal ultrasound

Once analgesia provided – buprenorphine
0.02–0.03 mg/kg IV q8h





Initial treatment plan

Continue analgesia to effect

IVFT – isotonic solution to correct dehydration (3 ml/kg/h)

Maropitant 1 mg/kg SQ

Naso-esophageal feeding tube

Highly digestible moderate calories diet (RCW GI)

Vitamin K1 2.5 mg PO q8 hours

Cyanocobalamin 250 mcg SQ

Further diagnostics

Ultrasound guided FNA

Liver – neutrophilic inflammation, vacuolar hepatopathy (steatosis)

Pancreas – acinar cell degeneration, neutrophilic inflammation

Cholecystocentesis

bile cytology – neutrophilic inflammation with bactibilia

bile culture – heavy growth
amoxicillin + clavulanic acid
Escherichia coli sensitive to

Further treatment plan

Returned to spontaneous food intake at day 3

Transition from *highly digestible gastrointestinal* to hydrolysed diet

Discontinue analgesia – FGS AUS 2

Discontinued IVFT

Amoxicillin + clavulanic acid 20 mg/kg PO q12 hours

Treat for 2 weeks + advise rpt serum biochemistry and cholecystocentesis

Probiotic – EF SF68

Cyanocobalamin 500 mcg PO q48 hours

Follow-up at 3 weeks

Complete clinical remission

Eating full MER

Repeat serum biochemistry – within normal limits

Repeat serum Spec fPL 2.8 µg/l

Repeat US-guided cholecystocentesis

Negative bile culture

Continue probiotic + cyanocobalamin

Plan further follow-up at 3 months time

PE, abdominal ultrasound, lab-work

Triaditis

Food responsive FCE

Neutrophilic cholangitis

Acute pancreatitis

Take home messages

Triaditis is the concurrent presence of FCE, cholangitis and pancreatitis

Real prevalence of triaditis in cats yet to be determined

May occur as a result of an infectious or autoimmune process

Anatomy of the feline GI tract may play role in aetiology due to increased risk of ascending bacterial infections of the liver and pancreas

Ante-mortem diagnosis of triaditis can be challenging

Cats will present with non-specific and overlapping clinical signs

Take home messages

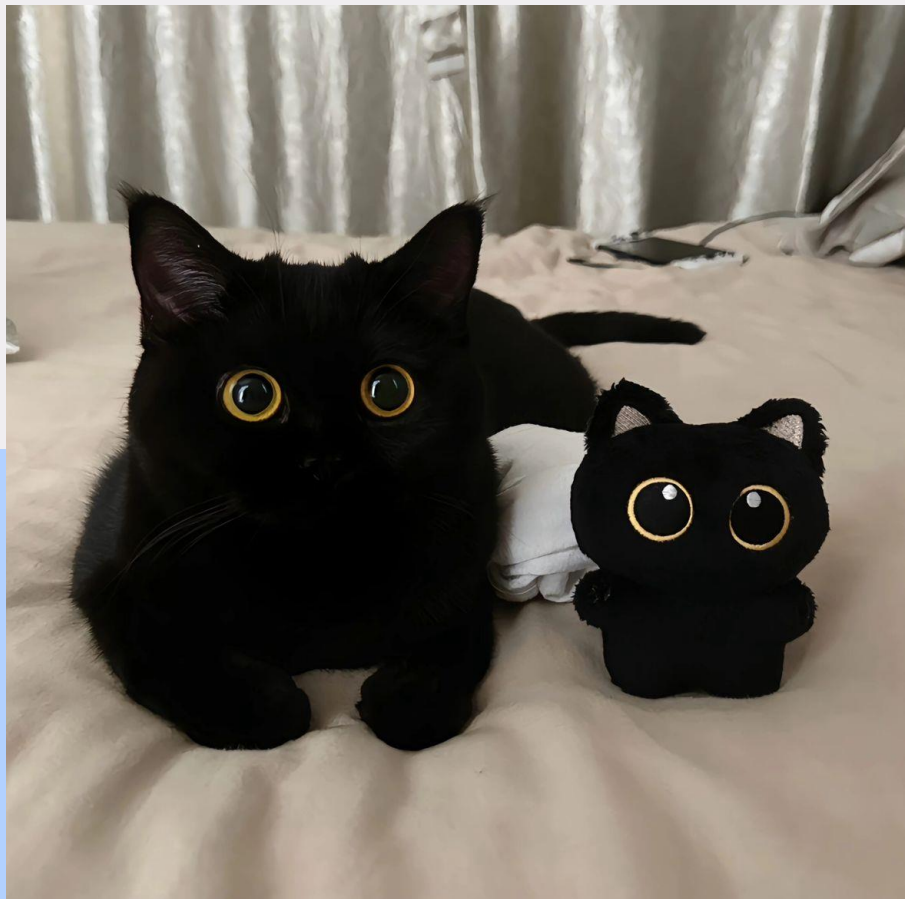
Definitive diagnosis requires histopathology from each organ, hence triaditis remains a presumptive diagnosis in many cases

Early and appropriate medical therapy and nutritional support are crucial in the management of feline triaditis to optimise outcome

Treatment should be focused on the specific type and severity of disease in each of the affected organ

It is often based on symptomatic and supportive treatment

Whenever possible, use of antimicrobials and immunosuppressive drugs should be based on evidence of infection or sterile chronic inflammation



Thank you very much
for the attention!

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Questions?

