Supplementary Materials

Intestinal S100/Calgranulin Expression in Cats with Chronic Inflammatory Enteropathy and Intestinal Lymphoma

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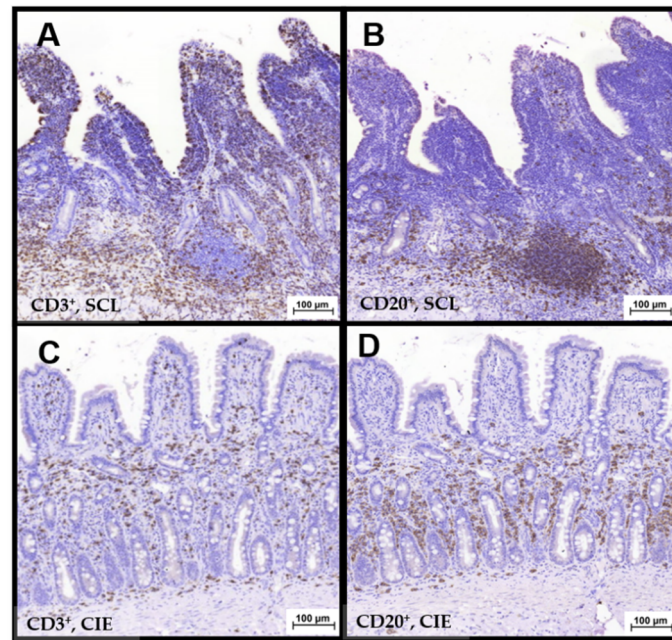
Figure S1. CD staining for T and B lymphocyte populations. Positive staining (brown) for CD3 (T cells; panels A&C) and CD20 (B cells; B&D) in the duodenal mucosa of a cat diagnosed with small-cell lymphoma (A&B) and a cat with CIE (C&D).
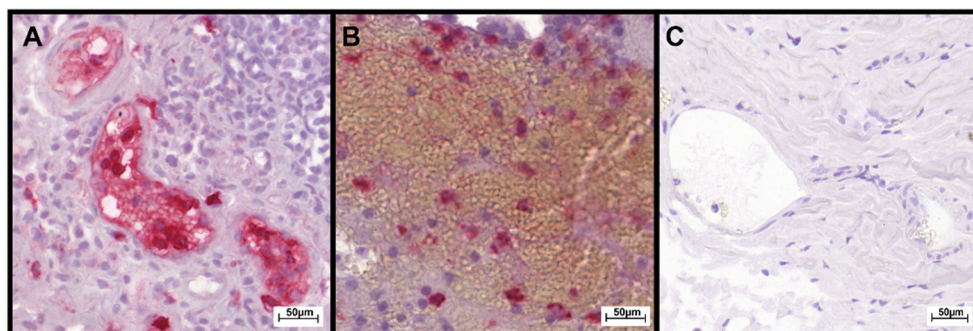

Figure S2. Intestinal blood vessels containing polymorphonuclear cells. (A) S100A8/A9 immunohistochemistry (IHC), (B) S100A12+ cells within an intestinal blood vessel, (C) negative IHC control.
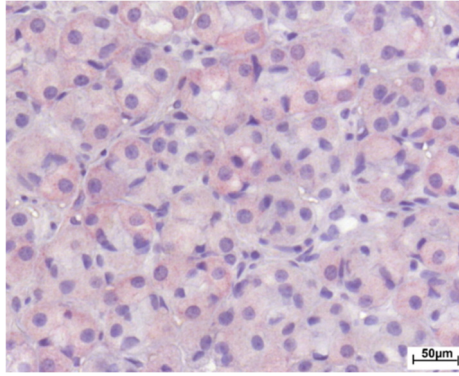
Figure S3. Slight nonspecific background staining (S100A8/A9-IHC) of gastric parietal cells.

Table S1. Patient characteristics, clinical findings, and clinicopathologic parameters in cats with chronic inflammatory enteropathy (CIE; *n* = 16), alimentary lymphoma (*n* = 8), and controls without histologic lesions (*n* = 16) included in the study.

Patient Characteristic	CIE	Lymphoma[#]	Controls
Age in years, median (IQR)	**6.5 (2.5–12.0)**[A]	**12.0 (9.5–13.0)**[B]	6.5 (0.5–13.5)[*,A,B]
Sex, male (neutered) / female (spayed)	12 (11) / 4 (4)	4 (4) / 4 (4)	8 (4) / 7 (6)[†]
Body weight in kg, median (IQR)	4.2 (3.0–4.8)	3.5 (2.5–4.0)	3.9 (2.6–4.4)[$]
Breed, *n* (%)			
- Domestic (European) Shorthair	12 (75%)	8 (100%)	8 (67%)[‡]
- other breeds	4 (25%)	0	4 (33%)[‡]
Negative retrovirus (FeLV/FIV) status	10 (100%)[§]	8 (100%)	–
Clinical signs present in months, median (IQR)	5.0 (2.0–12.0)	2.5 (1.0–19.5)	–
Survival time in months, median (IQR)	24.0 (7.0–45.0)	18.0 (6.0–33.0)	–
Number of sites biopsied, median (IQR)	3 (2–4)	2 (2–3)	2 (1–3)
Number of biopsies per site, median (IQR)			
- stomach[¶]	8 (5–9)	8 (6–10)	2 (1–2)
- duodenum/prox. jejunum[**]	7 (3–11)	7 (2–7)	3 (1–4)
- ileum[†]	2 (1–5)	5 (1–8)	1 (1)
- colon[$$]	6 (5–8)	5 (5)	1 (1)
	Clinical parameters		
FCEAI score, median (IQR)	**7 (4–10)**[A]	**11 (9–12)**[B]	
- mild clinical activity (score of 0–5), *n* (%)	6 (38%)	1 (13%)	
- moderate clinical activity (score of 6–12), *n* (%)	10 (62%)	5 (62%)	
- severe clinical activity (score of 13–19), *n* (%)	0	2 (25%)	
			–
- severity of vomiting	1 (1–2)	1 (1–1.5)	
- severity of diarrhea	1.5 (0–2)	1.5 (0–2)	
- severity of weight loss	**2 (0–2)**[A]	**3 (2–3)**[B]	
- severity of hyporexia	1 (0–2)	2 (1–2)	
Presence of endoscopic lesions, *n* (%)	13 (85%)	8 (100%)	
- stomach	- 8/13 (62%)	- 2/2 (100%)	
- duodenum	- 9/13 (69%)	- 6/6 (100%)	–
- ileum	- 4/6 (67%)	- 3/3 (100%)	
- colon	- 7/11 (64%)	- 1/1 (100%)	
Presence of dermatological signs, *n* (%)	2 (13%)	1 (13%)	–
	Clinicopathologic parameters		
Serum cobalamin in pmol/L, median (IQR)	257 (111–1,002) [†]	102 (77–155)	–
Hypocobalaminemia (<199 pmol/L), *n* (%)	**7 (44%)**[†,A]	**7 (88%)**[B]	–
Serum folate in nmol/L, median (IQR)	40.0 (23.0–48.0)[§]	38.5 (21.1–65.4)[$]	–
Hypofolatemia (<25.2 nmol/L), *n* (%)	3 (19%)[§]	2 (25%)[$]	–
Hyperfolatemia (>49.0 nmol/l), *n* (%)	2 (13%)[§]	2 (25%)[$]	–
Serum total protein in g/L, median (IQR)	69.0 (59.5–79.0)	71.5 (66.5–75.5)	–
Hypoproteinemia (<59 g/L), *n* (%)	3 (19%)	1 (13%)	–
Hyperproteinemia (>87 g/L), *n* (%)	0	1 (13%)	–
Serum albumin in g/L, median (IQR)	28.0 (24.5–34.0)	28.5 (24.8–32.5)	–
Hypoalbuminemia (<27 g/L), *n* (%)	8 (50%)	4 (50%)	–
Serum globulin in g/L, median (IQR)	40.0 (31.3–46.3)	40.5 (38.0–48.3)	–

Hyperglobulinemia (>47 g/L), *n* (%)	3 (19%)	2 (25%)	–
Serum total calcium in mmol/L, median (IQR)	2.25 (2.18–2.49) [†]	2.28 (2.23–2.45)	–
Total hypocalcemia (<2.2 mmol/L), *n* (%)	7 (44%)[†]	2 (25%)	–
Serum BUN in mmol/L, median (IQR)	10.1 (7.5–12.0)	10.6 (8.6–16.1)	–
Serum BUN increase (<5.7 mmol/L), *n* (%)	1 (6%)	2 (25%)	–
Serum phosphorus in mmol/L, median (IQR)	1.3 (1.1–1.6) [†]	1.1 (0.9–1.4)	–
Hypophosphatemia (<0.8 mmol/L), *n* (%)	0[†]	1 (13%)	–
Serum ALT activity in U/L, median (IQR)	55 (36–64)	63 (48–124)	–
Serum ALP activity in U/L, median (IQR)	28 (17–43) [†]	32 (28–44)	–
Serum tT4 in nmol/L, median (IQR)	24.5 (20.0–27.7)[††]	24.5 (17.4–28.8)	–
Serum fPLI in μg/L, median (IQR)	2.1 (1.1–3.5)[‡‡]	3.3 (1.8–5.9)[$]	–
Serum fructosamine in μmol/L, median (IQR)	203 (183–247)[§§]	213 (186–240)[¶¶]	–
Serum fructosamine increase (>340 μmol/L), *n* (%)	1 (9%)	0	

Sonographic abnormalities

Increased GI wall thickness, *n* (%)	9 (56%)	4 (50%)	–
Thickened tunica muscularis layer, *n* (%)	12 (75%)	4 (50%)	–
Loss of GI wall layering, *n* (%)	4 (25%)	3 (38%)	–
Enlarged regional lymph nodes, *n* (%)	11 (69%)	6 (75%)	–
Evidence of free abdominal fluid, *n* (%)	4 (25%)	5 (63%)	–

Note: FCEAI: feline chronic enteropathy activity index; GI: gastrointestinal; IQR: interquartile range; PCV: packed cell volume; WBC: white blood cell. [#]2 cats in this group had repeated endoscopy 5 and 29 months after initial diagnosis (due to disease recurrence or relapse) but are entered only once in this group. Parameters in bold font indicate significant differences at $p < 0.05$.[*]available from *n* = 14 cats; [$]available from *n* = 6 cats; [†]available from *n* = 15 cats; [‡]available from *n* = 12 cats; [§]available from *n* = 10 cats; [¶]available from *n* = 35 cats; [**]available from *n* = 27 cats; [$$]available from *n* = 19 cats; [††]available from *n* = 9 cats; [‡‡]available from *n* = 13 cats; [§§]available from *n* = 11 cats; [¶¶]available from *n* = 7 cats.

Table S2. Correlation of mucosal S100/calgranulin-positive cell counts with endoscopic lesions in cats with chronic enteropathy in this study.

	Segmental S100A8/A9+ cell counts				Segmental S100A12+ cell counts			
	Epithelium		Lamina propria		Epithelium		Lamina propria	
Diagnostic imaging variable	Median (range)	*p*	Median (range)	*p*	Median (range)	*p*	Median (range)	*p*
Endoscopy								
Stomach								
normal endoscopy	**0 (0)**	**0.028**	0 (0–3)	0.026	0 (0)	0.059	**0 (0–0.5)**	**0.044**
endoscopic lesions	**0 (0–3.5)**		0 (0–2.5)		0 (0–2)		**0 (0–1.5)**	
Duodenum/proximal jejunum								
normal endoscopy	0.5 (0–2)	0.125	4 (1–21.5)	0.490	**0.5 (0–3.5)**	**0.041**	3.5 (1–10.5)	0.873
endoscopic lesions	0 (0–0.5)		8 (0–13.5)		**0 (0–0.5)**		4.5 (0.5–10.5)	
Ileum								
normal endoscopy	0.5 (0.5)	N/A[*]	10 (10)	N/A[*]	0 (0)	N/A[*]	7.5 (7.5)	N/A[*]
endoscopic lesions	0 (0–0.5)		3 (0.5–12)		0 (0–0.5)		2 (0.5–9.5)	
Colon								
normal endoscopy	0.5 (0–0.5)	0.077	2.5 (1–3.5)	0.151	0 (0)	0.0803	2 (0.5–3)	0.361
endoscopic lesions	0 (0–0.5)		5.5 (1.5–10.5)		0 (0–1)		5 (0.5–9)	

[*]N/A: not applicable (statistical comparison not performed as data in one group only available from *n* = 1 cat). Parameters in bold font and green indicate significant differences at $p < 0.05$.