

JVDI: Supplementary material

Becher A, et al. Blood neutrophil-to-lymphocyte ratio (NLR) as a diagnostic marker in dogs with chronic enteropathy

**Supplementary Table 1.** Study questionnaire for owners of 65 dogs with chronic enteropathy (CE). Information obtained from dogs included in the first part of the study (I.a–c) consisted of a canine CE clinical activity index (CCECAI)<sup>1</sup> sheet to assess each dog’s CCECAI score, and an owner questionnaire to obtain a thorough medical history of the dog. Both study forms were combined into one table.

<b>Study ID:</b> _____		<b>Submission date:</b> _____	
<b>Patient</b>			
Name of your dog: _____			
Age/DOB: _____ / _____		Weight (in lbs.): _____	
Breed: _____			
Sex (mark as appropriate): <input type="checkbox"/> male <input type="checkbox"/> male neutered <input type="checkbox"/> female <input type="checkbox"/> female spayed			
<b>Owner</b>			
Name: _____			
Contact information: _____			
<b>Canine chronic enteropathy clinical activity index (CCECAI) score</b>			
Clinic/Hospital: _____		Dog evaluated by: _____	
Date of evaluation: _____			
<b>Evaluation of:</b>	<b>Score (please circle)</b>		<b>Specify, if applicable</b>
<b>Attitude/activity</b>	0	normal	
	1	slightly decreased	
	2	moderately decreased	
	3	severely decreased	
<b>Appetite</b>	0	normal	
	1	slightly decreased	
	2	moderately decreased	
	3	severely decreased	

<b>Vomiting</b>	0	normal	
	1	mild (1x per week)	
	2	moderate (2-3x per week)	
	3	severe (>3x per week)	
<b>Stool consistency</b>	0	normal	
	1	slightly soft feces, or fecal blood, mucus, or both	(please circle)
	2	very soft feces	
	3	watery diarrhea	
<b>Stool frequency</b>	0	normal	
	1	slightly increased (2–3× per day)	
	2	moderately increased (4–5× per day)	
	3	severely increased (>5× per day)	
<b>Weight loss</b>	0	none	
	1	mild (<5%)	loss: _____ lbs/kg
	2	moderate (5–10%)	
	3	severe (>10%)	
<b>Albumin concentration</b>	0	Albumin >20 g/L	
	1	Albumin 15–19.9 g/L	
	2	Albumin 12–14.9 g/L	
	3	Albumin <12 g/L	
<b>Ascites and peripheral edema</b>	0	none	
	1	mild ascites or peripheral edema	
	2	moderate amount of ascites/peripheral edema	
	3	severe ascites/pleural effusion and peripheral edema	

<b>Pruritus</b>	0	no pruritus	Changes in hair/coat/skin?
	1	occasional episodes of itching	
	2	regular episodes of itching, but stops when the dog is asleep	
	3	dog regularly wakes up because of itching	

Additional parameters

<b>Water intake</b>		normal	
		decreased	
		moderately increased	
		severely increased	

<b>Urination amount</b>		normal	
		decreased	
		moderately increased	
		severely increased	

<b>Flatulence</b>		normal	
		mild	
		moderate	
		severe	

**Medical history**

When was the first time of clinical signs?	
How long has this patient had the clinical signs?	
Was this patient on any immunosuppressive drugs at the time of sample collection?	
Please list all immunosuppressive drugs given up to 6 months prior.	
Was this patient on any antibiotic drugs before/at the time of sample collection?	
Please list all antibiotics given up to 6 months prior to sample collection.	
Please tell us about cobalamin supplementation given up to 6 months prior to sample collection.	

Please list all additional medications given 6 months prior to the sample collection.	
<b>Vomiting</b>	
Is your dog vomiting?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, since when?	
How often (how many times per day, week or month)?	
When does it occur (after eating, or unrelated to feeding)?	
What does the vomited material look like (digested or undigested food, foamy, yellowish/green, red/fresh blood, "coffee grounds" appearance, other)?	
<b>Diarrhea</b>	
Does your dog have diarrhea?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, since when?	
Is the diarrhea persistent (constant) or intermittent (does it go away sometimes)?	
How many times per day does your dog have diarrhea	
What is the character of the stools?	<input type="checkbox"/> soft with shape <input type="checkbox"/> soft without shape ("cow-patty") <input type="checkbox"/> watery <input type="checkbox"/> other: _____
Is there any mucus, fresh blood, or do the stools appear black or very dark?	
What is the color of the stool?	
Is this color normal for your dog?	
<b>Weight loss</b>	
Have you noticed any weight loss?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, since when?	
If yes, approximately how much?	
<b>Appetite</b>	
Is your dog's appetite reduced?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, since when?	
Would you describe this as a mild, moderate, or severe reduction?	

<b>Activity</b>	
Is your dog lethargic/less active?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, since when?	
<b>Medical conditions</b>	
Does your dog currently have any other major medical problems or signs of disease?	
Has your dog had any other medical problems or signs of disease in the past?	
<b>Dietary history</b>	
What kind of food do you currently feed your dog?	
How much and how often do you feed your dog?	
Do you feed your dog any treats? If yes, which ones?	
Does your dog receive any supplements (vitamins or other)? If yes, which ones?	
<b>Medication (incl. preventative drugs and vaccination)</b>	
What kind of medications is your dog taking (including monthly preventative medications, such as flea or heartworm prevention etc.)?	
What is your dog's vaccination history (most recent vaccinations)?	
<b>Additional information</b>	
Is there anything else that you would like to add or let us know about?	

**Supplementary Table 2.** Final diagnosis questionnaire for 17 dogs with chronic enteropathy (CE). Information obtained from dogs included in the second part of the study (II) consisted of a questionnaire to be completed by a veterinarian or veterinary staff. Follow-up also included a canine CE clinical activity index (CCECAI<sup>1</sup>) sheet to assess each dog's CCECAI score.

<b>Study ID:</b>	Follow-up date:
<b>Concurrent disease(s)</b>	
Did your patient have any other major medical problems or signs of disease?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, please specify.	
<b>Elimination diet trial</b>	
Did you perform food trials?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, what did you use?	
Please specify if a commercial diet was used.	
Did the food trials alleviate the clinical signs?	
If yes, what ingredient(s) were eliminated/ may have been associated?	
Did you re-challenge to confirm hypersensitivity?	
What was the food that the patient responded well too?	
<b>Antibiotic trial</b>	
Did you prescribe an antibiotic drug?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, did the antibiotic drug alleviate the clinical signs?	
What was the antibiotic drug used, the dosage, and for how long was it administered?	
<b>Anti-inflammatory/ immunosuppressive medication</b>	
Did you prescribe an immunosuppressive drug or anti-inflammatory drug?	<input type="checkbox"/> yes <input type="checkbox"/> no
If yes, did the drug(s) alleviate clinical signs?	
What was/were the immunosuppressive drug(s) and/or anti-inflammatory drug(s), what dosage was/were used?	

<b>Additional follow-up information</b>	
Did you treat sequentially by trying remedies one at a time or all together?	
What was the final or tentative diagnosis for this patient?	
When is the last time you saw this patient?	
What was the patient's condition?	
Is there anything else that you would like to add or let us know about?	

**Supplementary Table 3.** Histologic lesion score for 66 dogs with chronic enteropathy.

Listed are the structural and inflammatory lesions that were evaluated on a scale from 0 (normal) to 3 (severely abnormal).<sup>2,3</sup>

<b>Feature</b>	<b>Fundus</b>	<b>Antrum</b>	<b>Duodenum</b>	<b>Ileum</b>	<b>Colon</b>
<b>Structural lesions</b>					
Surface epithelial injury					
Gastric pit epithelial injury					
Villus stunting					
Crypt dilation/distortion					
Lacteal dilation					
Colonic goblet cell numbers					
Mucosal fibrosis					
<b>Inflammatory lesions</b>					
Intraepithelial lymphocytes					
LP lymphocytes and plasma cells					
LP eosinophils					
LP neutrophils					
LP macrophages					
Lymphoid follicular hyperplasia					

LP = lamina propria. Only white cells are relevant criteria for a specific segment.

### References

1. Allenspach K, et al. Chronic enteropathies in dogs: evaluation of risk factors for negative outcome. *J Vet Intern Med* 2007;21:700–708.
2. Day MJ, et al. Histopathological standards for the diagnosis of gastrointestinal inflammation in endoscopic biopsy samples from the dog and cat: a report from the World Small Animal Veterinary Association Gastrointestinal Standardization Group. *J Comp Pathol* 2008;138(Suppl 1):S1–S43.



3. Washabau RJ, et al. Endoscopic, biopsy, and histopathologic guidelines for the evaluation of gastrointestinal inflammation in companion animals. *J Vet Intern Med* 2010;24:10–26.