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Calprotectin, a Ca^{2+} – binding protein of the S100/calgranulin family, has potential as a marker of inflammation in dogs and mainly originating from granulocytes. Increased canine calprotectin concentrations have been detected in feces and serum samples from dogs with chronic inflammatory enteropathy (CIE). However, intestinal mucosal calprotectin concentrations have not been extensively investigated in canine CIE.

We evaluated the mucosal concentrations of calprotectin in dogs with CIE in comparison with healthy Beagle dogs using a particle-enhanced turbidimetric immunoassay (PETIA) method on a clinical chemistry analyzer. Additionally, we assessed the association of mucosal calprotectin levels with the canine clinical IBD activity index (CIBDAI), histopathologic findings, clinical outcome, and serum albumin concentrations. Intestinal mucosal biopsies were collected from 38 dogs with CIE (duodenum [n = 34], ileum [n = 10], colon [n = 14], and caecum [n = 7]). Archived intestinal tissue samples from 18 healthy Beagle dogs served as controls (duodenum [n = 17], ileum [n = 18], colon [n = 18], and caecum [n = 6]). Data are presented as medians (interquartile ranges).

In comparison to healthy Beagles, mucosal calprotectin concentrations of CIE-dogs were higher in the duodenum (332 [91-639] vs. 94 [24-137] μg/L; $P = 0.001$) and colon (380 [187-542] vs. 112 [36-196] μg/L; $P = 0.002$). Histologic severity was significantly associated with mucosal calprotectin levels ($P < 0.05$) for total histopathology score, lymphoplasmacytic infiltration in the duodenum, and epithelial injury in the colon. Duodenal calprotectin concentrations were higher in hypoalbuminemic dogs than normoalbuminemic dogs (1441 [1098-1748] μg/L vs. 227 [74-506] μg/L), but because of the small number of hypoalbuminemic dogs (n = 4) the results were only descriptively reported. There was no significant association of mucosal calprotectin levels with CIBDAI scores or with the clinical outcome.

This study showed that mucosal calprotectin concentrations are increased in the duodenum and colon of dogs with CIE. The results provide supporting evidence for the potential diagnostic value of mucosal (or fecal) calprotectin concentrations in dogs with CIE. Further prospective research is needed to assess the value of measuring mucosal calprotectin concentrations in clinical practice, the relationship between mucosal and fecal calprotectin, and other inflammatory markers in dogs with CIE.

Disclosures

No disclosures to report.

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Neutrophil-to-lymphocyte ratio (NLR) in canine patients with immunosuppressant-responsive enteropathy (IRE)

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In human IBD, neutrophil-to-lymphocyte ratio (NLR) was associated with active bowel inflammation and correlated with clinical and laboratory indices. So far, NLR in dogs has been only evaluated in oncologic patients and in septic peritonitis.

The aim of the study was to evaluate the NLR in canine immunosuppressant-responsive enteropathy (IRE).

Forty-one dogs presented to two veterinary facilities (Veterinary Teaching Hospital and Private Veterinary Center) with a final diagnosis of IRE were retrospectively included. The Canine Chronic Enteropathy Clinical Activity Index (CCECAI) score was assessed for each dog at presentation. The diagnosis of IRE was set on histopathology performed on endoscopic biopsies and classified using the current WSAVA guidelines. Lacteal dilatation (LD) and crypts abscesses (CD) were also recorded. NLR was calculated for each dog. Serum total protein, albumin, cholesterol and C-reactive protein (CRP) were also recorded. Kruskal-Wallis test was performed to evaluate NLR between different CCECAI category (0-3, 4-5, 6-8, 9-11 and > 12) and different histological grading. Spearman's correlation tests were performed between NLR and total protein, albumin, cholesterol and CRP. Mann-Whitney *U*-test was used to compare NLR in dogs with or without LD and CD. A receiving operator characteristic curve (ROC) was built to obtain an optimal cut-off value of NLR to differentiate dogs with or without LD. A Fisher's exact test was then performed between the presence of LD and NLR groups.

NLR was significantly different between CCECAI score categories ($P = 0.004$). NLR was negatively correlated with total protein ($P = 0.022$, $r = -0.35$), albumin ($P = 0.007$, $r = -0.41$) and cholesterol ($P = 0.03$, $r = -0.33$). No significant correlation between CRP and NLR was found. NLR was not different between histological grading and dogs with or without CD. Contrarily, NLR was higher in dogs with LD ($P = 0.004$). The cut-off value of NLR for the detection of LD was 3.96 (sensitivity 82.4% and specificity 58.3%).

So far, this is the first report evaluating the NLR in IRE dogs. Our results suggest that NLR could be an easy, feasible and economic additional tool to evaluate the disease severity in IRE dogs. Moreover, NLR seem to have a good correlation with other essential biochemistry parameters in the evaluation of dogs with protein-losing enteropathy. Furthermore, the most interesting data was the association between NLR and histologic lymphangectasia.

Disclosures

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A Novel Canine-Specific Model System to Study Intestinal P-Glycoprotein-Mediated Drug Transport

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P-Glycoprotein (P-gp) modulates oral absorption of therapeutic drugs in the small intestine. Many drugs serve as substrates for P - gp