Correlation of intestinal histopathologic findings with mucosa-attached bacteria, clinical disease activity, and clinical outcome in dogs with chronic enteropathies

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acid) and secondary (lithocholic-, deoxycholic-, ursodeoxycholic acid) BAs were quantified by gas chromatography/mass spectrometry. Abundance of *C. hiranonis* was determined by qPCR. A Mann-Whitney test was used for comparison of BAs between groups. To assess the relationship between the abundance of *C. hiranonis* and proportion of primary BAs Spearman's correlation coefficient was used. P<0.05 was considered statistically significant.

Changes in BA metabolism were detected in 10/17 dogs with CE, with primary BAs above the reference interval. Compared to H, the concentration of primary BAs (median [range]: CE, 2,057 [45–13,374] μg/mg; H, 130 [32–1,142] μg/mg; P=0.002) and percentage of primary BAs (median [range]: CE, 50.4 [0.6–95.0] %; H, 4.0 [0.9–13.0] %; P=0.02) were significantly increased in dogs with CE. The abundance of *C. hiranonis* and percentage of primary BAs showed a strong negative correlation (r=-0.68, P<0.001). Of note, 76% of dogs with CE responded to dietary changes alone.

BA metabolism and the abundance of *C. hiranonis* are altered in a subset of dogs with CE. Regardless, a large proportion of the dogs of our study population were considered diet-responsive.

Disclosures

Drs. Sung, Lidbury, Steiner, and Suchodolski are employed by the Gastrointestinal Laboratory at Texas A&M University, which offers gastrointestinal function testing on a fee-for-service basis.

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Correlation of intestinal histopathologic findings with mucosa-attached bacteria, clinical disease activity, and clinical outcome in dogs with chronic enteropathies

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While the pathogenesis of canine chronic enteropathies (CE) is not fully understood, an aberrant immune response to antigens derived from endogenous microbiota and/or diet is likely to play an important role. In this study, we assessed the relationship between histopathologic findings and mucosa-attached bacteria (as determined by routine histopathology), canine inflammatory bowel disease activity index (CIBDAI) and clinical outcome (food-responsive enteropathy [FRE], antibiotic-responsive enteropathy [ARE], steroid-responsive enteropathy [SRE]).

Endoscopic biopsies of intestinal mucosa from 65 dogs with CE (duodenum [n=43], ileum [n=34], and colon [n=35]) were collected from three study centers. Published scoring systems were used to assess clinical and histological severity of disease. *Spearman rank* correlation *tests were used to assess the relationship between* histopathologic findings, mucosa-attached bacteria, and CIBDAI. *Kruskal-Wallis tests were used to* assess the association of histopathologic findings with clinical outcome groups (FRE, ARE, and SRE).

Histopathologic findings only correlated significantly with mucosal bacterial attachment in the colon. The correlation was moderate for lamina propria neutrophils ($r = 0.427$, $p = 0.010$; 95% confidence interval [CI] = 0.010 to 0.671) and weak for surface epithelial injury ($r = 0.371$; $p = 0.028$; 95% CI = 0.033 to 0.632). There were no significant correlations between mucosal bacterial attachment in duodenum or ileum and histopathologic findings or clinical outcome groups. Among different clinical outcome groups, there were statistically significant differences in mean rank scores of the duodenum for summative histopathologic score (SRE 27.9 vs. ARE 16.6, $p = 0.028$), villus stunting (SRE 26.6 vs. FRE 18.5, $p = 0.033$), and lamina propria lymphocytes and plasma cells (FRE 27 vs. ARE 15.6, $p = 0.025$ and SRE 26.5 vs. ARE 15.6, $p = 0.028$). In the colon, the score of goblet cells differed between FRE and ARE (mean rank scores: FRE 23.0 vs. ARE 14.6, $p = 0.036$). There was no significant correlation between histopathologic findings and CIBDAI.

This study demonstrated that mucosa-attached bacteria show mild to moderate positive correlation with surface epithelial injury and lamina propria neutrophils in colon of dogs with CE. In addition, dogs with SRE had the highest summative histopathologic and villus stunting scores in the duodenum and dogs with FRE had the most severe infiltration with lymphocytes and plasma cells in duodenum, as well as decreased colonic goblet cells.

Disclosures

No disclosures to report.

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Evaluation of serum biochemical and urinary parameters suggesting renal involvement in a population of dogs with primary chronic enteropathy

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Approximately a half of IBD human patients show extra-intestinal manifestations, in which 4-23% may develop renal and urinary involvement. These findings may be linked to several conditions, such as the immune-system response of the primary chronic enteropathy (CE), reduction in short-chain fatty acids, or endotoxemia. No specific studies have been conducted in dogs, except for those describing familiar protein-losing nephropathy and enteropathy in soft-coated wheaten terriers.