Helicobacter: Its Role in Canine Gastritis

Gastritis is common in dogs, but the underlying cause is rarely identified. The disorder is often attributed to an undetermined type of immune response to intraluminal antigens of dietary or bacterial origin. Associations have been made between Helicobacter infection and gastritis in humans. While several studies have shown gastric Helicobacter infection in dogs to be common (67% to 100% in healthy dogs), there is still much to be learned about the role of Helicobacter in canine gastritis. This Danish study seeks to further define the inflammatory and immunologic nature of canine gastritis as well as the relationship of inflammatory and immunologic response to Helicobacter infection.

Thirty dogs were included in the study, 22 of which were evaluated for chronic gastrointestinal signs (vomiting, diarrhea, anorexia,weight loss). Biopsies of the stomach were taken and quantitatively evaluated for inflammatory cells. Messenger RNA (mRNA) for proinflammatory and immunomodulatory cytokines was quantitatively assessed. Mucosal atrophy, fibrosis, cellularity, and severity of gastritis were qualitatively graded, and Helicobacter infection status was determined. Four dogs were subsequently excluded from statistical analysis: 1 due to diagnosis of lymphoma and 3 because of inadequate biopsy samples.

Biopsy results showed that cellular infiltrate and architectural changes were related to the pattern of cytokine mRNA expression: neutrophils related to interleukin-8 (IL-8) and interferon gamma (IFN-g), macrophages and lymphocytes to IFN-g, and fibrosis to IL-1 b. Gastritis in all dogs was classified as lymphoplasmacytic. Histologic severity of gastritis was found to correlate with atrophy, infiltration with lymphocytes and macrophages, and expression of IL-10 and IFN-g. Helicobacter was identified in 76.7% of study dogs and was associated with increased expression of transforming growth factor–beta and fibrosis. The identity of infecting Helicobacter species was determined in 82% of the dogs, with H. bizzozeronii being the most prevalent. In humans, H. pylori is the most prevalent species. The authors concluded that lymphoplasmacytic gastritis in dogs is characterized by concurrent activation of proinflammatory and immunomodulatory cytokines and that associated pathologic conditions of the mucosa were related to the pattern of cytokine expression. They did not, however, feel they could clearly demonstrate associations between Helicobacter infection and cytokine expression, the severity of gastritis, or differences in the pathogenicity of various Helicobacter species.

COMMENTARY: This outstanding study characterized the cytokine response associated with gastritis in a group of pet dogs,many of which showed signs of gastrointestinal (GI) disease. The study also demonstrated that histologic interpretation of endoscopically obtained samples of gastric mucosa varied greatly among pathologists, even when a standardized evaluation protocol was used, which emphasizes the need for development and utilization of a universally accepted method of assessing gastric biopsy specimens. In this study, 8 dogs without clinical signs of GI disease had histopathologic findings and cytokine profiles similar to those with GI signs. This finding makes it difficult for practitioners to assess the histopathologic interpretation of gastric biopsy specimens from dogs that vomit. Unfortunately, the study did not provide clinical data on the potential association of Helicobacter to gastritis and vomiting. This was because of 1) the low number of Helicobacter-negative dogs included in the study, 2) the failure to separate data from dogs that vomited from those with diarrhea (unlikely to be caused by gastritis) or from those without any GI signs, and 3) the absence of antibacterial treatment for Helicobacter and a means of assessment of the clinical and pathologic response to successful eradication of the organism. Further studies are necessary to evaluate the potential relationship between Helicobacter and gastritis and vomiting in pet dogs. The authors are to be congratulated for this sophisticated study in a group of pet dogs with spontaneous disease.—*Michael S. Leib, DVM, MS, Diplomate ACVIM*

Quantitative analysis of inflammatory and immune responses in dogs with gastritis and their relationship to Helicobacter spp. infection.Wiinberg B, Spohr A, Henrik Dietz H, et al. J VET INTERN MED 19:4-14, 2005.