Gastroenterology

PERINUCLEAR ANTI-NEUTROPHILIC CYTOPLASMIC ANTIBODIES AND PROTEIN-LOSING ENTEROPATHY

Background

Protein-losing enteropathy and protein-losing nephropathy are chronic and often fatal diseases in soft-coated wheaten terriers (SCWT). The diagnosis typically is made when dogs are approximately 4 to 6 years of age. The life expectancy is just a few months after diagnosis. An estimated 10% of SCWTs in the United States are believed to be affected.

Cardinal clinical findings include decreased serum albumin and globulin concentrations, an increase in urine protein:creatinine ratio (UP:C), increased fecal concentration of α-proteinase inhibitor, and microalbuminuria. Advanced nephropathy is associated with increases in serum urea nitrogen and creatinine concentrations.

Renal biopsy specimens from SCWTs with protein-losing nephropathy have changes consistent with a sclerosing immune-complex glomerulonephritis. An immune-mediated process may also be involved in the pathogenesis of protein-losing enteropathy in SCWTs.

Circulating perinuclear anti-neutrophilic cytoplasmic autoantibodies (pANCAs) are associated with diet-responsive diseases in dogs of various breeds that have chronic enteropathies. Determining the presence of pANCAs has been used in humans as a reliable diagnostic test for subtypes of inflammatory bowel disease and autoimmune glomerulonephritis.

Objectives

To evaluate pANCA status in SCWTs and SCWT-beagle dogs and to correlate pANCA status of dogs with clinicopathologic variables of protein-losing enteropathy or protein-losing nephropathy, or both.

Procedure

Thirteen SCWTs and 8 SCWT-beagle dogs believed to have protein-losing diseases and a control group of 7 dogs with X-linked hereditary nephropathy and 12 healthy SCWTs more than 9 years old

were studied. Samples were obtained from affected dogs every 6 months. Collected samples included serum concentrations of albumin, globulin, creatinine, and urea nitrogen; fecal concentration of α-proteinase inhibitor; and urinary protein-to-creatinine ratios. These parameters were then correlated with pANCA findings.

Results

Twenty of the 21 dogs initially believed affected by protein-losing diseases had positive results for pANCAs at a minimum of 2 time points, and 18 of 21 dogs had definitive evidence of disease. None of the control dogs had positive results for pANCAs. A positive result for pANCAs was significantly associated with hypoalbuminemia but preceded the onset of hypoalbuminemia by an average of 2.4 years. Sensitivity and specificity of pANCAs to predict protein-losing enteropathy or nephropathy were 0.95 and 0.8, respectively.

Author Conclusion

Most dogs affected with protein-losing enteropathy or nephropathy, or both, have positive results for pANCAs before clinicopathologic evidence of disease is detected.

Inclusions

One figure, 14 references.

Editor Annotation

Circulating pANCAs are associated with diet-responsive diseases in dogs of various breeds that have chronic enteropathies. The results of this study show that detection of pANCAs precede the onset of hypoalbuminemia by more than 2 years. The pANCA test may therefore be a useful early non-invasive test of disease in SCWTs. Whenever commercially available, pANCAs could help breeders gradually decrease the incidence of protein-losing nephropathy and enteropathy in SCWTs by removing these dogs from the breeding pool. (MM)

Allenspach K, Lomas B, Wieland B, et al. Evaluation of perinuclear anti-neutrophilic cytoplasmic autoantibodies as an early marker of protein-losing enteropathy and protein-losing nephropathy in Soft Coated Wheaten Terriers. Am J Vet Res 2008;69:1301-1304.