

## ABSTRACT #26

A CASE-CONTROL STUDY OF NEPHROTIC SYNDROME IN DOGS: 78 CASES. ES Klosterman<sup>1</sup>, GE Moore<sup>1</sup>, JF de Brito Galvao<sup>2</sup>, SP DiBartola<sup>2</sup>, RP Groman<sup>3</sup>, JC Whittemore<sup>4</sup>, SL Vaden<sup>5</sup>, TL Harris<sup>5</sup>, JK Byron<sup>6</sup>, SR Dowling<sup>6</sup>, DC Grant<sup>7</sup>, GF Grauer<sup>8</sup>, BM Pressler<sup>1</sup>. <sup>1</sup>Purdue Univ, W. Lafayette, IN. <sup>2</sup>OSU, Columbus, OH. <sup>3</sup>UPenn, Philadelphia, PA. <sup>4</sup>UTenn, Knoxville TN. <sup>5</sup>NCSU, Raleigh, NC. <sup>6</sup>U of Ill, Urbana, IL. <sup>7</sup>VMRCVM, Blacksburg, MD. <sup>8</sup>KSU, Manhattan, KS.

Nephrotic syndrome (NS) is an uncommon complication of glomerular disease defined as the concurrent presence of proteinuria, hypoalbuminemia, hyperlipidemia (i.e. hypercholesterolemia), and ascites or other third space fluid accumulation. Although NS is well-recognized in dogs, published information is limited to occasional mention of affected animals in larger case series of glomerular disease and sporadic case reports. The purpose of this study was to describe a larger population of dogs with NS, and determine whether or not the diagnosis of NS is associated with signalment or select clinicopathologic or histologic findings in patients with glomerular disease.

Medical record databases were searched at 8 participating institutions using the term 'nephrotic syndrome.' Records were reviewed by participants, with inclusion requiring the concurrent presence of all four criteria. Two non-NS dogs with glomerular disease were selected as controls for each NS dog, using the search terms 'protein-losing nephropathy,' 'glomerular disease,' and 'glomerulopathy'. Signalment, time until death, albumin, cholesterol, creatinine, BUN, sodium, UPC, and histopathologic diagnosis were recorded for each patient, and NS and control populations were compared using chi-squared or two-sample t-tests as appropriate.

78 dogs with NS and 156 control dogs were included in this interim analysis. Neither sex nor neuter status were associated with NS ( $p=0.748$ ). Mixed breed dogs and 11 pure breed varieties had >5 animals within the 234 total dogs; however no breeds were over-represented in either group. Mean serum albumin in NS dogs was significantly lower than in control dogs (1.7 [95% CI 1.6-1.8] vs. 2.7 [95% CI 2.5-2.8] mg/dL,  $p<0.001$ ); mean cholesterol (373 [95% CI 357-390] vs. 313 [95% CI 289-338] mg/dL) and UPC (15.4 [95% CI 13.3-17.5] vs. 8.2 [95% CI 7.1-9.2]) in NS dogs were significantly greater than in control dogs ( $p\leq 0.001$ ). There were no significant differences in sodium, creatinine, or BUN between the two groups ( $p=0.311$ , 0.854, and 0.919, respectively). Of the 38 NS dogs for which a histopathologic diagnosis was available, the most frequently identified diseases were membranous glomerulopathy ( $n=10$ ), amyloidosis ( $n=8$ ), and membranoproliferative glomerulonephritis ( $n=8$ ); however, no individual diagnosis was over-represented in NS dogs as compared to control dogs ( $p=0.344$ ). There was no difference in mean survival between groups (NS: 68 d [95% CI 18-117 d] vs. controls: 74 d [95% CI 35-113 d]).

These preliminary results suggest that neither signalment nor histopathologic diagnosis affect the likelihood of dogs with glomerular disease being concurrently diagnosed with NS, and that NS is not associated with a concurrent diagnosis of azotemia or survival time in dogs with glomerular disease. These findings are in contrast to those in people with NS, in whom specific diseases are more likely to result in NS, and the diagnosis of NS may be a negative prognostic indicator.