Is Surgery Best for Diaphragmatic Hernia?

Peritoneopericardial diaphragmatic hernia (PPDH), an uncommon congenital malformation in dogs and cats, allows passage of abdominal contents through the diaphragmatic hernia into the pericardial sac. Diagnosis is made via evaluation of clinical signs or radiographs. This study reviewed medical records of 28 dogs and 30 cats with PPDH. Prevalence in both was rare (0.062% cats, 0.015% dogs). The most commonly affected breeds were the weimaraner in dogs and domestic longhair in cats.

Forty animals (22 cats, 18 dogs) presented with signs of PPDH, including tachypnea or dyspnea, exercise intolerance, vomiting, and anorexia. At examination, heart murmur, muffled heart sounds, and decreased lung sounds were most common. Sixteen dogs and 7 cats had signs of other congenital abnormalities (eg, umbilical hernia, cryptorchidism). Diagnosis was made via routine or advanced imaging. Surgical repair was performed in 34 animals (19 dogs, 15 cats); median age at surgery was 1.1 years, and 27 animals had a primary PPDH diagnosis. Signs resolved in 29 of 34 surgical patients. Surgery was not performed in 24 patients (median age at diagnosis, 7.3 years); these animals had fewer signs attributable to PPDH at the time of evaluation, and 11 of 24 had no signs. With regard to long-term survival, there was no significant difference between dogs and cats or between surgically and nonsurgically treated animals.

Commentary

PPDH has been considered a condition that warrants surgical management, particularly in patients with associated signs. Although numbers of nonsurgically-managed PPDH animals (9 dogs, 15 cats) in this study were small, results suggested that long-term survival is similar to that of surgically managed patients. This likely represents selection bias, as patients with signs were more likely to be recommended for surgery; however, positive outcomes with nonsurgical treatment of asymptomatic patients support consideration of this approach.—Jason Bleedorn, DVM, DACVS

Source


Setting the Stage for CKD Treatment

Regardless of initiating cause, the pathological endpoint of chronic kidney disease (CKD) is diffuse irreversible tubulointerstitial nephritis with fibrosis. Histologic staging of CKD, however, requires a renal biopsy. Cytokines such as transforming growth factor-β1 (TGF-β1) and interleukin-8 (IL-8) are associated with CKD and are found in urine. Released by damaged glomerular, mesangial, and endothelial cells, they are involved in the pathogenesis of inflammation and fibrosis. Vascular endothelial growth factor (VEGF), by contrast, is a proangiogenic factor important for the health and repair of renal vasculature; it is downregulated in end-stage CKD. This study sought to determine if profibrotic or proangiogenic cytokines measured in urine are useful biomarkers for the severity and progression of CKD in cats.

Urine samples from 26 cats with CKD (IRIS stage II-IV, nonhypertensive, nonproteinuric) and 18 healthy controls were evaluated. Urine cytokine levels were detected using commercially available ELISA kits; cytokine concentrations were normalized for differences in urine concentration using a urine:cytokine-to-urine-creatinine ratio (cytokine:UCrR). TGF-β1:UCrR and IL-8:UCrR were significantly higher in CKD samples, while VEGF:UCrR was lower compared with healthy controls. Urinary TGF-β1 levels correlated positively with serum creatinine concentrations in CKD cats. Urine cytokines such as TGF-β1, IL-8, and VEGF may provide sensitive and noninvasive alternatives for diagnosing and monitoring feline CKD. Further study may determine how these urinary cytokine levels vary with other renal or systemic inflammatory diseases or change as CKD progresses.

Commentary

The pathophysiology of progressive kidney function loss in CKD patients is complex. Increased intraglomerular pressure in remaining nephrons drives plasma proteins into the tubular fluid. Hyperfiltration and proteinuria are associated with induction of the renin-angiotensin-aldosterone system and changes in renal cytokine production associated with tubulointerstitial damage and renal fibrosis. Assessment of urinary cytokines is important in understanding the pathogenesis of feline CKD and helps set the stage for treatments that involve manipulation of cytokine pathways.—Gregory F. Grauer, DVM, MS, DACVIM

Source