

## Serum creatinine and urine protein : creatinine ratio in dogs affected by myxomatous mitral valve disease.

Cardiac disease is often associated with worsening renal function, in humans. The cardiorenal syndromes (CRS) were defined as disorders of the heart and kidneys whereby acute or chronic dysfunction in one organ may induce acute or chronic dysfunction of the other. Five subtypes of the syndromes were identified; of these, CRS 2 indicates chronic abnormalities in cardiac function causing progressive and potentially permanent chronic kidney disease. Recent investigations support the role of central venous congestion, neurohormonal activation, anemia, oxidative stress and renal sympathetic activity as potential contributors to this complex syndrome. The main marker of kidney's disease in humans is considered the glomerular filtration rate. However, serum creatinine (sCr) and urine protein:creatinine ratio (UPC) are recognized as predictors of worsening renal function as well. The aim of this study was to investigate renal function in dogs with myxomatous mitral valve disease (MMVD) and cardiac remodeling (ACVIM stage  $\geq$ B2) by measurement of sCr and UPC. This is an observational case-control study. Twenty dogs of various breeds, aged 7-15 years, affected by MMVD with hemodynamically significant mitral regurgitation and cardiac remodeling (left ventricle internal diameter in diastole normalized according to allometric scaling  $\geq$  1.7 and/or LA/Ao ratio  $\geq$  1.6) were included in the study. Twenty healthy dogs of various breeds, aged 7-15 years were included as controls. Dogs with congenital or acquired cardiac disease other than MMVD, dogs with previous history or clinical signs at presentation of systemic, inflammatory or infectious disease, malignancies, hypertension (systolic blood pressure  $>$ 160mmHg) or evidence of other organ dysfunction or hyperthermia were not included in the study. On each dog physical examination, echocardiography, ECG, RX, systemic blood pressure measurement, blood and urine analysis were performed in order to obtain a classification of MMVD (ACVIM consensus statement 2009) and chronic kidney disease (IRIS classification). Both dogs with MMDV and controls resulted IRIS class 1. The study revealed no statistically significant difference in sCr and UPC between dogs with MMVD (sCr: 0.76 mg/dl, 0.41 – 1.21; UPC: 0.26, 0.00 – 1.03) (mean; range) and controls (sCr: 0.74 mg/dl, 0.37 – 1.21; UPC: 0.21, 0.03 – 0.98) (mean; range). These results suggest that hemodynamically significant mitral regurgitation with cardiac remodeling and expected neurohormonal system activation do not affect proteinuria and renal function. Nevertheless further studies are needed to confirm these findings.