Iron status in dogs with myxomatous mitral valve disease

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Abstract

In humans, iron deficiency represents a relevant occurrence in heart failure (HF), with or without anaemia, and is associated with the worst outcome. Moreover, chronic kidney disease (CKD) is a well-known comorbidity of HF and is strongly associated with the risk of developing anaemia. The most common cause of HF in dogs is myxomatous mitral valve disease (MMVD). To the best of our knowledge, no studies have examined the iron status in dogs with HF, with and without CKD. The aim of this retrospective study was to evaluate the iron status in dogs affected by MMVD and how strong is the relation with HF.

The retrospective study included 54 dogs with complete case records, echocardiography and laboratory analyses. Iron status was evaluated by measuring serum iron concentration (SIC), unsaturated iron binding capacity (UIBC), total iron binding capacity (TIBC), and percentage of saturation (%SAT).

The prevalence of dogs showing low serum iron concentration (SIC) was 18% in the whole population, 33% in symptomatic patients, 100% in dogs with acute decompensated HF. No significant differences in SIC, UIBC, TIBC and %SAT median values were found among dogs classified in different ACVIM (American College of Veterinary Internal Medicine) classes, between symptomatic and non-symptomatic patients, and among IRIS (International Renal Interest Society) classes. Azotemic and non-azotemic patients presented a significant difference in SIC mean values (p=0.02). Generalised linear model (GLM) revealed that dogs with low SIC were at higher risk of being included in a higher ACVIM class (OR=6.383, p-value=0.014).

Log-rank analysis showed shorter survival in dogs with low SIC (p=0.020), multivariate Cox analysis revealed that only HF symptoms can affect survival.

Key words: iron, dog, myxomatous mitral valve disease, cardiorenal syndrome, cardiovascular-renal disorder