

CIRCULATING BIOMARKERS OF OXIDATIVE STRESS IN DOGS WITH MITRAL VALVE DISEASE

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Myxomatous mitral valve disease (MMVD) is the most common heart disease in dogs (Das and Tashjian, 1965; Detweiler and Patterson, 1965). Yet, pathogenesis remains elusive (Atkins, et al., 2009).

Oxidative stress is an imbalance between the generation of free radicals and the ability of the body to detoxify their harmful effects through neutralization by antioxidants. Increased oxidative stress in the myocardium possibly contributes to remodeling and dysfunction of the heart in human patients with mitral regurgitation (Chen, et al., 2009; Ahmed, et al., 2010). Accordingly, oxidative stress has been associated with cardiovascular disease in human patients (Sugamura and Keaney, 2011). Oxidative stress might be involved in the pathogenesis of MMVD in dogs as altered oxidative status has been associated with MMVD in dogs (Prasad, et al., 1996; Freeman, et al., 2005; Reimann, et al., 2014).

The aim of the study is to determine plasma concentrations of different markers of oxidative stress (isoprostanes, malondialdehyde, oxidized low-density lipoprotein and vitamin E) in dogs with different degrees of MMVD and to investigate if they are correlated to disease severity, disease progression and markers of myocardial function (natriuretic peptides and cardiac troponin I).

The study includes 89 privately owned dogs > 4 years with different severity of MMVD examined in 2011. All have had a clinical examination and additionally an echocardiographic examination, blood pressure measurement and blood sampling have been performed. The dogs have been re-examined in 2013 where information regarding disease progression and survival has been collected. So far analysis of malondialdehyde, oxidized low-density lipoprotein and vitamin E have been carried out. Analysis of isoprostanes, natriuretic peptides and cardiac troponin I will follow in the near future. Statistical analysis is pending.

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