

## News &amp; Comments

## Profile of Myxomatous Mitral Valve Disease in Dogs: Pro-Inflammatory and Immunological

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In human heart failure, pro-inflammatory cytokines like TNF-, IL-1, and IL-6 are widely mentioned as having a role in the pathophysiology of cardiac remodelling as well as systolic and diastolic dysfunction. These pro-inflammatory cytokines may affect the phenotypic and function of cardiac cells, inhibit cardiomyocyte contractile function, activate macrophages, promote matrix degradation in fibroblasts, and trigger microvascular inflammation and dysfunction. Because the hormone can be created in other ways or because there are various isoforms of the angiotensin-converting enzyme, people on ACE inhibitors have had elevated levels of aldosterone (a condition known as "aldosterone breakthrough") (ACE). The purpose of this study is to investigate how pro-inflammatory cytokines affect immune system malfunction in dogs with different stages of severity through the blood assessment.

A total of 36 dogs infected by MMVD were enrolled in the study at the Veterinary Educational Hospital, Department of Veterinary Medicine, and Animal Productions, including 14 females (11 spayed) and 22 males (3 neutered). Concomitant endocrine, infectious, or inflammatory illnesses, severe hepatic or renal failure, and further concurrent heart problems were the exclusion criteria. Animals who were contemplating receiving pharmacological therapy for conditions other than MMVD were disqualified from the research. For statistical analysis, Mann-Whitney or Wilcoxon paired signed-rank tests were used. In this study, MMVD was identified based on a thorough cardiovascular evaluation and categorized in accordance with the ACVIM recommendations.

The evidence of cytokine activation during CHF in dogs is currently scant and contradictory. Chronic mitral valve disease (MMVD), which is characterized by myxomatous degeneration, is the primary cause of CHF in canines. However, large-sized dogs can also be affected. In general, the disease is more common in small-sized dogs, and in some tiny breeds, it is known to have an incidence of close to 100% over the lifetime. Inflammatory cytokines may play a crucial role in the establishment of the unfavourable cardiac remodelling that results in systolic and diastolic dysfunction in both acute and chronic heart failure, according to numerous experimental and clinical studies on humans. Leptin level and the EDVI and ESVI of MMVD dogs were found to be correlated, although no differences were identified.

Overall, our findings point to a large rise in cytokine levels in dogs with more severe MMVD and consequently worse hemodynamic impairment, and the proportionate rise in Treg cells may be a regulatory mechanism limiting the inflammatory immune response. Additionally, the positive connection



between IL-6 and LV diastolic volume raises the possibility that inflammatory activation may contribute to the ventricular remodelling brought on by increasing volume overload in MMVD, but more research is needed to confirm this.

Source: [Veterinary Sciences](#)

**KEYWORDS**

Dog, myxomatous mitral valve disease, cytokines, immunophenotype, Treg cells

