Summary of the DVM thesis No 27204, Factually of Veterinary Medicine, Urmia University.

The Academic year: 2024-2025

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Thesis Title: Investigation of the serum Troponin I and Myoglobin status and CK-MB activity as cardiac damage indices in dogs with *Dirofilaria immitis* infected with *Wolbachia pipientis*

Abstract: Dirofilariasis is spreading worldwide and in different parts of Iran, infection with *Dirofilaria immitis* has been reported in dogs, cats, and humans. The symbiotic relationship between this parasite and the *Wolbachia pipientis* genus bacteria, is one of the important challenges in the pathophysiology and pathogenesis of the disease in the field of cardiovascular damage. This study aimed to evaluate the role of *Wolbachia pipientis* in increasing the pathogenicity of dirofilariasis in inducing cardiac damage by measuring cardiac biomarkers. The research was conducted at a shelter for stray dogs in Urmia. Out of 500 dogs housed in the center, a total of 135 exhibiting respiratory symptoms underwent examination and sampling. Among these, 29 were diagnosed with dirofilaria. In dogs infected with dirofilariasis, the presence or absence of *Wolbachia* bacteria was examined by PCR, and 15 of the infected dogs had *Wolbachia* and 14 did not. 53 healthy dogs without Dirofilaria infection were selected as a control group. Blood samples were collected from the selected dogs to measure serum levels of myoglobin, troponin I, and CK-MB. The levels of myoglobin, troponin, and CK-MB in dogs infected with Dirofilaria immitis showed a statistically significant increase compared to the control group. In infected dogs, gender had no effect on the levels of myoglobin and troponin I; while in the group infected with dirofilaria, CK-MB levels were higher in females than in males. Although the presence of microfilariae in the blood did not affect the levels of myoglobin, troponin I, and CK-MB, however an increase in the number of microfilariae correlated with higher levels of these biomarkers. The presence of *Wolbachia* in dogs infected with dirofilaria caused a significant increase in the indicators under study. The results of this study showed that the presence of *Wolbachia* bacteria has an aggravating effect on the pathogenicity of heartworm disease in dogs and causes an increase in the values of cardiac damage biomarkers including myoglobin, troponin I, and CK-MB.

Keywords: *Dirofilaria immitis*, Dog, Heart Worm, *Wolbachia pipientis*.