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Role of anti-inflammatory interleukin 10 in asymptomatic heartworm infection (Dirofilariasis) in dogs

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Abstract

Background: *Dirofilaria immitis* causes heartworm disease (HWD), a vector-borne zoonotic disease that primarily affects dogs and cats. Occasionally, human beings were reported to be infected as well. The current study aims to discover the asymptomatic dirofilariasis infection in dogs. In addition, to determine the prevalence of heartworm disease and the role of anti-inflammatory interleukin 10 (IL10) in developing the disease. Household dogs were selected from 10 veterinary clinics throughout Basrah, south of Iraq.

Methods: The study included 117 dogs older than 12 months, none of them had received heartworm vaccinations, and all of them lived in their owners' houses for at least 9 months. Animal ethics instructions were followed after the owner's consent was obtained. Physical and biochemical examinations were conducted including the examination of circulating antigens of microfilaria. The levels of anti-inflammatory IL10 and pro-inflammatory IL17, IL4, and IFN- γ were measured using ELISA tests. Descriptive statistics were used to evaluate the prevalence and the clinical and immunological results of the study.

Results: Canine heartworm disease prevalence was 29.05% (34 out of 117). The physical examination showed normal vital signs for both infected and non-infected dogs. A significant elevation in the total WBC count was noticed in the infected group. On the other hand, a significant decrease in RBCs count and hemoglobin was found in the infected group. There were neither changes in the platelet count nor the liver enzymes concentration between infected and non-infected groups. A significant increase in anti-inflammatory interleukin 10 level and a significant decrease in pro-inflammatory IL17, IL4, and IFN- γ were noticed in the infected dogs.

Conclusion: It is concluded that dirofilariasis infection is considered to be a serious life-threatening disease for dogs in Iraq. Therefore, a periodic test for heartworm infection every six months is recommended to eradicate heartworm infestations. The infected animals must be treated according to the American Heartworm Association recommendations.