O-12. MEASUREMENT OF CORTISOL IN DOGS INFECTED BY *DIROFILARIA IMMITIS*

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Cortisol, a steroid produced in the adrenal cortex, is a key hormone used as a measure of stress. Some studies demonstrate that prolonged stress, is associated with reduced survival, fecundity and immunity. Moreover, high cortisol levels have been associated with infectious diseases, and it has been demonstrated its utility as a biomarker of chronic stress in cardiovascular disease in humans. Furthermore, previous studies relate the presence of parasites and cortisol levels in several species.
The objectives were evaluating the potentially stressful effects of *Dirofilaria immitis* infection in dogs, comparing the results of cortisol levels with reference values and with other clinical parameters (parasite burden, presence/absence of pulmonary hypertension (PH), microfilariemic status) and evaluate the evolution of serum cortisol levels throughout adulticide treatment in dogs with heartworm.
The serum of 92 heartworm-infected dogs undergoing adulticide therapy was analyzed on days 0, 30, 60 and 90. The parasite load was echocardiographically assessed on day 0 and dogs were further classified based on low/high burden. The presence/absence of pulmonary hypertension was also assessed ultrasonographically by means of Right Pulmonary Artery Distensibility Index. Dogs were classified into two groups according to presence or absence of PH. The presence/absence of microfilariae was determined by using the modified Knott test. Serum cortisol was measured by using VCHECK V200 Veterinary Immunoassay Analyzer (Bionote, Minnesota, USA). Reference ranges for healthy dogs were established as 5±4,5 ng/ml. On day 0, the mean level of cortisol in heartworm infected dogs was 32,16±23,76 ng/ml. The parasite load was high in 30.4% (n=28) and low in 69.6% (n=64). The values of cortisol obtained for microfilaremic (32,39 ± 19,71 ng/ml) and amicrofilaremic (32,91 ± 28,40 ng/ml) dogs had no statistically significant differences; Same results were observed in dogs with a high parasite burden (33,64±24,46 ng/ml) versus dogs with a low burden (31,16 ± 24,09 ng/ml). When PH was evaluated, dogs with PH showed higher levels of cortisol (36,25±19,04 ng/ml) compared with dogs without PH (28,26±24,10 ng/ml) being a statistically significant difference ($p<0.05$) During the adulticide treatment, the levels of cortisol varied until reaching the lowest value on day 90 (17.58±1.02 ng/ml). In all time point measurements, significant differences were found when compared to reference values ($p<0.05$ for all time points). When evaluating the variations in cortisol levels throughout the study, statistically significant differences were found between the cortisol values obtained on day 90 compared to the values obtained at the other time points ($p<0.05$ for days 0, 30 and 60).
The results demonstrated stress in dogs infected by *D. immitis,* especially in those with presence of PH. Moreover, at the end of the treatment, when the parasites were eliminated, the levels of cortisol decreased, although remained above reference ranges. These results are similar to other studies which evaluated the effect of cortisol in several parasites in dogs. Accordingly, cortisol could be used as a supporting biomarker in the clinical staging of dogs with heartworm disease.
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