MEASUREMENT OF ALDOSTERONURIA IN HEALTHY AND CARDIOPATHIC DOGS: EARLY EVALUATION OF TWO ELISA METHODS

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Degenerative mitral valve disease (DMVD) is the most common acquired cardiovascular disease in dogs (75%) and it is characterized by a long pre-clinical period [1]. There are conflicting data concerning neuro-hormonal (RAAS) activation and about its role in early DMVD pharmacological treatment. Preliminary data showed that plasma aldosterone levels are significantly higher in asymptomatic affected dogs than in healthy dogs [2]. This observation suggest that aldosterone can be involved in the early course of DMVD and plays a key role in disease progression [3]. To date, ELISA kits to determinate aldosteronuria in dogs are available, but they are very expensive and for this reason, they are not currently used in veterinary practice.

The aim of the present study was to compare two commercial ELISA kits, one specific for canine species (Aldosterone ElA Kit-Mosowchoud - Cayman Chemical Company, USA), and the other specific for human beings (Aldosterone ELISA - DRG Instruments GmbH, Germany). The ELISA kit for humans, has a double advantage: it is cheaper than the canine kit and the execution time is short (4 hours vs 21 hours of the canine kit).

5 healthy dogs (named A-E) and 5 DMVD dogs (named F-L) were recruited in the Veterinary Teaching Hospital of the Department of Veterinary Sciences in Turin. Dogs were assigned to the groups after a physical examination performed by a veterinarian, specialist in cardiology. Urine samples were collected by cystocentesis and they were analyzed using the two kits, twice and in duplicate. Urine samples of healthy dogs were stripped using dextran charcoal (0.5 g/ml) and fortified with different concentrations (0, 20, 200, 500, 1000 pg/ml) of aldosterone (Sigma Aldrich, Milan, Italy) to evaluate the sensitivity and the accuracy of the two kits. A single concentration (500 pg/ml) of cortisol was added to all stripped samples and they were analyzed with both kits to evaluate specificity. Data were analyzed with GraphPad Prism 5.0 software using One-way Anova and Bonferroni’s post test (p<0.05).

No statically significant differences were highlighted among all the samples analyzed with both kits. Also the fortified samples didn’t show statically differences with the two different kits. Cortisone was added to stripped samples to verify cross-reactions and both kits didn’t measure cortisone. Surprisingly, the dog C, belonging to the group of healthy dogs, was statistically different from the dogs of its group, but similar to the group of pathological dogs, showing no statistically differences with them. This case was reported to the veterinarian that examined first this dog for further investigations. The results of this study seemed to highlight that ELISA kit to measure aldosteronuria in humans might be use also for dogs. This means a saving of time and money. Moreover, the data of dog C support the hypothesis that aldosteronuria could rapidly increase in early DMVD phase [4]. Further studies should be encouraged to improve specificity and sensibility of this test, comparing this trial with a gold standard method (i.e. LS-MS) and using a huge number of dogs to prove if this method might be a useful diagnostic and prognostic tool.