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

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Activation of the renin-angiotensin-aldosterone system (RAAS) leads to increased levels of angiotensin II and plasma aldosterone, and promote arterial vasoconstriction and remodeling, sodium retention, oxidative process, and cardiac fibrosis. Angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers may modulate this over-activity and improve survival in dogs with congestive heart failure. This pathology is characterized by a long pre-clinical period [1]. Preliminary data showed that plasma aldosterone levels are significantly higher in asymptomatic affected patients than in healthy ones [2]. This observation suggest that aldosterone can be involved in the early phases [3]. ELISA kits to determinate aldosteronuria in dogs are available, but they are very expensive, and consequently not currently used in veterinary practice.

The aim of the present study was to compare two commercial ELISA kits, one specific for canine species, and the other specific for human beings. The human ELISA kit is cheaper than the canine kit and the execution time is shorter (4 hours *vs* 21 hours, respectively).

5 healthy dogs and 5 cardiopathic dogs were recruited in the Veterinary Teaching Hospital of the Department of Veterinary Sciences in Turin. 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 sensibility and the accuracy of the two kits. A single concentration (500 pg/ml) of cortisone was added to all stripped samples and they were analyzed with both kits to verify cross-reactions. 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. The results of this study seemed to highlight that human ELISA kit to measure aldosteronuria might be use also for dogs.

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 greater number of dogs to prove if this method might be a useful diagnostic and prognostic tool.

[1]Borgarelli et al. Am J Vet Res. 2011, 72:1186-92. [2] Tidholm et al. Am J Vet Res. 200; 62:961-7.[3] Gardner et al. J Vet Cardiol. 2007; 9:1-7. [4] Atkins et al. J Vet Pharmacol Ther. 2012; 3:512-5.