Occurrence of Hypertrophic Cardiomyopathy in a Large Cohort of British Shorthair Cats
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## ORAL PRESENTATIONS – Thursday, June 10

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5:00 pm 176 Aarti Kathrani Overdominant Single Nucleotide Polymorphisms in the Nucleotide Oligomerisation Domain Two (NOD2) Gene are Significantly Associated With Canine Inflammatory Bowel Disease

5:15 pm 177 Jan Suchodolski Relationship of Mucosal Gene Expression to Microbiota Composition in Dogs With Inflammatory Bowel Disease

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184 Denise Schwartz Aparecido Camacho Six Minute Walk Test Standardization for Dachshund, Poodle and Labrador Retriever Dogs

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186 Masashi Mizuno Sara Granström Occurrence of Hypertrophic Cardiomyopathy in a Large Cohort of British Shorthair Cats

187 Aparecido Camacho Heart Rate Variability in Dogs With Mitral Endocardiosis or Natural Morbid Obesity

188 Carley Saelinger Comet-Tail Artificial in Dogs With Cardiogenic Pulmonary Edema

189 Pierre Menaut Circulating Natriuretic Peptides Concentrations in Hyperthyroid Cats

190 Alyia Magee Carolina Carlos Sampedrano Effects of High Versus Normal Salt Diets on Cardiovascular Variables in Healthy Aged Cats: A 6-Month Study

191 Takeshi Mizuno Relationship Between Prognosis and Immune Response in Dogs After Mitral Annuloplasty

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193 Takeshi Mizuno Meg Sleeper Dobutamine Stress Testing in Portuguese Water Dogs with Juvenile Dilated Cardiomyopathy

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195 Michael Katz Yoko Fuji Prevalence of Right to Left Shunt Due to Patent Foramen Ovale Concurrent with Pulmonary Stenosis in Dogs

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205 Silvia Lucas Evaluation of Oxidant/Antioxidant Total Status and Erythrocyte Antioxidant Defense in Cats With Lymphoma

206 Elizabeth Lechner Oxidative Stress in Dogs With Lymphoma Before and After Administration of Doxorubicin: A Pilot Study
ABSTRACT #185
EFFECTS OF TREADMILL TRAINING OVER AUTONOMIC AND HEMODYNAMIC FUNCTIONS IN HEALTHY DOGS. JPE Pascon, D Paulino-Junior, E Zacchê, FN Gava, EMG Ortiz, AA Camacho. College of Agricultural and Veterinary Sciences, São Paulo State University, Campus of Jaboratical, Brazil.

Regular physical activity has been widely used in human cardiovascular therapy, promoting better autonomic control, heart function, life quality and decreasing sudden death risks. In dogs, however, there is not a standardized guideline to be used. This research has the goals of evaluating the effects of standardized treadmill training over the autonomic and hemodynamic functions of healthy dogs.

Six dogs (4 Beagles; 2 mixed breed), with mean weight of 13.1 Kg, were enrolled in this study. Twenty-four hour time domain heart rate variability (HRV), and echocardiography were analyzed before and after four weeks, five days a week, 40 minutes a day training. The intensity of training was individually determined by a maximal heart rate (MHR), observed in a maximal progressive effort test. Gradually, the intensity of training was increased in 50% of MHR, in the first week, to 60%, 70% and 80% of MHR in the second, third and fourth weeks, respectively. The paired t test was used to compare data before and after training. The improvement in functional capacity of the dogs was attested by a better performance on treadmill running on a treadmill at 7 km/h for 10 minutes. Benazepril hydrochloride was administered to four dogs and then heart rate and blood pressure were measured every 5 minutes for 30 minutes. Plasma renin activity, angiotensin-converting enzyme (ACE), angiotensin II (Ang II), aldosterone, adrenaline, noradrenaline and urinary aldosterone were measured in the dogs before and after running on a treadmill at 7 km/h for 10 minutes. Benazepril hydrochloride significantly (P < 0.05) decreased ACE (0.9 ± 1.0 U/l) and aldosterone (21.1 ± 16.1 pg/ml) compared with the placebo (4.2 ± 1.5 U/l, 42.9 ± 29.8 pg/ml). Plasma renin activity, Ang II, aldosterone and adrenaline levels increased during exercise. Heart rate and blood pressure significantly (P < 0.05) increased with both placebo and benazepril hydrochloride during exercise and heart rate and blood pressure did not significantly differ between the two groups. These results suggest that the increase in heart rate and blood pressure during exercise is related to activation of the RAAS and that the effect of gender, weight and age as potential risk factors to presence of the disease. The conclusion of this study is that the BSH in our cohort had a high occurrence of HCM and that the BSH is highly predisposed to development of the disease.

ABSTRACT #187
OCCURRENCE OF HYPERTROPHIC CARDIOMYOPATHY IN A LARGE COHORT OF BRITISH SHORTHAIR CATS. Inoue, S Kurihara, Y Kamiyama. Nihon University, Kanagawa, Japan.

Familial hypertrophic cardiomyopathy (HCM) has previously been described in British Shorthair cats (BSH), but until now, no reports have been published on how prevalent the disease is within this breed. The aim of this study was to assess the occurrence of HCM in a large cohort of BSH and to evaluate the effect of gender, weight and age as potential risk factors to presence of the disease.

The study was conducted as a prospective study including all BSH presented at the Small Animal Hospital for HCM screening in the period of April 2006–August 2009. All cats were examined by the same two trained ultrasonographers using a Vivid 7 ultrasound system (GE Medical) with a 10 S phased array transducer (8–10 MHz). Measurements of the left ventricle were obtained by conventional 2D- and M-mode imaging of right parasternal long- and short axis views. Diagnosis of HCM was based on an overall assessment of echocardiographic findings, but cats were classified as to have a concentric hypertrophy if the interventricular septum (IVS) and/or left ventricular free wall (LVFW) measured > 5.5 mm in diastole. To rule out other causes of left ventricular concentric hypertrophy, a complete blood count, biochemical profile, thyroxin level and blood pressure were measured in affected cats. In the statistical analyses occurrence of HCM was expressed as a percentage at each age, weight and echocardiographic variable. Chi-square test was used to test the effect of gender, weight and age on HCM as outcome and a p-value of < 0.05 was considered significant.

A total of 282 cats were examined, 189 (67.0%) females and 93 (33.0%) males. The average age of the cohort was 40 (± 29) months and the average weight was 4.5 (± 1.1) kg. Twenty-three cats (8.2%) were classified as HCM positive, 14 (4.9%) as equivocal and 242 (85.9%) as HCM negative. Three cats (1.1%) were diagnosed with other heart disease and excluded from further analysis. The average diastolic wall thickness of the IVS and LVFW in the HCM affected cats were 7.0 (± 1.2) mm and 7.1 (± 2.4) mm, respectively. In the HCM negative group the corresponding measurements were 3.9 (± 0.5) mm and 3.8 (± 0.5) mm. Male cats had a significantly higher occurrence of HCM (20.4%) compared with the females (2.1 %) correspondingly an odds ratio (OR) of 12.7 (95 % CI 4.2–38.6) for male gender (p < 0.001). No effect of weight and age on presence of HCM could be identified. Eighteen of the HCM positive cats had diffuse, symmetric hypertrophic changes of the entire left ventricle, whereas 5 had an asymmetric or regional hypertrophy of the left ventricular myocardium.

The conclusion of this study is that the BSH in our cohort had a high occurrence of HCM. Most affected cats presented with pronounced, diffuse hypertrophic changes affecting the IVS, LVFW and papillary muscles. As in many other breeds, male gender predisposed to development of the disease.