INFLUENCE OF RENAL ULTRASONOGRAPHIC FINDINGS ON GFR DURING CHRONIC UNILATERAL URETERAL OBSTRUCTION IN DOGS

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Topic: 4. Canine and Feline Medicine

The degree of renal dysfunction can now be estimated through prediction of glomerular filtration rate (GFR) from B-mode sonography in pets. During a 20-day chronic unilateral ureteral obstruction model in experimental dogs, renal sonographic measurements were successfully used to predict changes in GFR. GFR was quantitatively measured following a single intravenous bolus of inulin (@100mg/kg); para-aminohippuric acid (PAH @ 10 mg/kg) was also intravenously injected, shortly thereafter, for quantitation of effective renal plasma flow (ERPF), and the total clearance of both markers was determined using a two-compartment model. Changes in renal architecture (i.e. length, width, depth, cortex, pelvis and ureteral dilation) were simultaneously assessed using B-mode ultrasonography. Statistically, changes in GFR and renal architecture showed significance, with minimum intragroup variance in renal length, width and depth. There was a highly significant average correlation coefficient (r) with low standard error of estimates (SEE) and greater predictability between GFR and left renal dimensions of length (r=−0.9454, SEE= 2.64), width (r=−0.8632, SEE= 1.69), depth (r=−0.9461, SEE= 2.11), pelvis (r=−0.9035, SEE= 3.91) and left ureter (r=−0.9714, SEE= 2.07). The prediction error was about 9-12%. ERPF, on the other hand, did not yield any significant correlation with any renal variable. Conclusively, B-mode sonographic changes in renal dimensions, particularly renal length, width and depth may successfully be used in dogs for prediction of changes in GFR, without the need to perform laborious complicated laboratory procedures in future.

Key Words: Ureteral obstruction; GFR; ERPF; B-mode sonography; dogs.

Table 3. Results of Linear Regression showing high Correlation of GFR with Renal Dimensions, with high predictability

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Formula for the Correlation</th>
<th>Prob</th>
<th>SEE</th>
<th>SEE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>(5) in relation with r or renal dimensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>24</td>
<td>y=−7.1783-0.0609x</td>
<td>0.0010</td>
<td>2.638</td>
<td>9.21</td>
</tr>
<tr>
<td>Width</td>
<td>24</td>
<td>y=7.2465-0.1499x</td>
<td>0.0227</td>
<td>1.69</td>
<td>10.32</td>
</tr>
<tr>
<td>Depth</td>
<td>24</td>
<td>y=5.1557-0.1609x</td>
<td>0.0014</td>
<td>2.108</td>
<td>9.71</td>
</tr>
<tr>
<td>Pelvis</td>
<td>24</td>
<td>y=2.6282-0.3675x</td>
<td>0.0075</td>
<td>3.916</td>
<td>12.25</td>
</tr>
<tr>
<td>Cortex</td>
<td>24</td>
<td>y=0.3411+0.4122x</td>
<td>0.0037</td>
<td>0.717</td>
<td>11.62</td>
</tr>
<tr>
<td>Ureter</td>
<td>24</td>
<td>y=2.4710+0.7751x</td>
<td>0.0001</td>
<td>2.073</td>
<td>9.17</td>
</tr>
</tbody>
</table>

NB: a. P<0.001, means highly significant;  
b. P<0.05, means significant;  
c. P=0.05, means moderate significance;  
NB: P>0.05, means non-significant.
EARTHQUAKE PREDICTION BY BEHAVIORAL CHANGES IN DOGS

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Topic: 4. Canine and Feline Medicine

Earthquake is one of the biggest preoccupations for all human in dangerous area. So, every body is looking for prediction way to prevent them from this disaster. Animals behavior changes is one of these ways from long time.

To study on dog behavioral changes caused by the electromagnetic waves, five healthy dogs of the same age and race were chosen. These dogs were exposed to 0 to 20 Hz electromagnetic waves for 30 minutes. Animal behaviors including ear, tail, mouth and eye movement; excitement and appetite were recorded on video tape. The data were categorized in five groups, based on the animal relax or stress situation.

Comparison study on recorded results showed that electromagnetic waves had a significant effect on dog behaviors that 7, 8 and 9 Hz frequencies had the most and 0, 1, 18, 19 and 20 Hz had the least effects.

The results concluded that pre- and post-earthquake animal behavioral changes could be related to those frequencies and used as an earthquake prediction indicator. Further study recommended to find sensitive breed and ages.
EFFICACY OF TWO NUCLEOSIDE AND ONE NON-NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS IN LATE STAGES OF FELINE IMMUNODEFICIENCY VIRUS-NATURALLY INFECTED CATS

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Topic: 4. Canine and Feline Medicine / Feline Medicine

The aim of this study is to report the comparative results of using combined antiviral drugs on naturally-infected FIV cats in the asymptomatic and AIDS stages of the disease. The drug combinations evaluated were: ZDV alone and ZDV+3TC+Nevirapine. Plasma viral load (QC-PCR) was measured at the beginning of treatment and at one year. CD4+/CD8+ ratios (flow citometry). Neurological disease was evaluated by evoked potentials determinations (Ati Nautilus). The study was approved by the Institutional Animal Care and Use Committee of the Faculty of Veterinary Sciences of the University of Buenos Aires. The results were expressed as median and range, and p<0.05 were considered significant. Statistical analysis was done using ANOVA non parametric (Kruskal Wallis) and comparison of means (Dunn test). Correlations study was done by Spearman test. CD4+/CD8+ ratio results on asymptomatic stage showed positive and significative correlation in the ZDV+3TC+Nevirapine group compared with ZDV alone. With respect to viral load, on ZDV+3TC+Nevirapine group it was observed (**) significative diferences comparing intial time to 1 year. On ZDV alone there were not significative differences. These results showed a better efficací of the combined therapy vs. ZDV alone, reducing the viral load, increasing the CD4+/CD8+ ratio and producing the improvement of the clinical signs in the asymptomatic stage. In the AIDS stage the differences between both protocols were not so marked, but the combined therapy produced better results compared with ZDV alone. Auditory and visual evoked potentials improved neurological disease with the combined therapy.
ACUTE PHASE PROTEINS IN CATS WITH LYMPHOMA AND ITS POSSIBLE RELATION WITH OVERALL SURVIVAL TIME


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Topic: 4. Canine and Feline Medicine / Oncology

Alpha-1-acid glycoprotein (AGP), serum amyloid A (SAA) and C-reactive protein (CRP) are acute-phase serum proteins (APP) that are produced by the liver in response to inflammation, infection and neoplastic conditions. The aim of this study was to determine AGP, SAA and CRP concentrations in cats with lymphoma at the moment of diagnosis and its possible relation with overall survival time. AGP, SAA and CRP were measured by the use of a commercial immunoassay test in two groups of cats: 20 healthy cats and 20 cats with lymphoma (alimentary, multicentric, mediastinal and renal), that had not received any treatment prior the diagnosis. For both groups, serum samples were collected, harvested and frozen at -70°C until assayed. Unpaired T test was used to compare the groups and the Pearson correlation coefficient (r) was used to assess if there was correlation between APP and overall survival time. Means of AGP, SAA and CRP concentrations were significantly higher (p<0.0001, p=0.0027 and p=0.0006, respectively) in cats with lymphoma at diagnosis (1097.68 ± 696.93µg/mL, 255.89 ± 157.80µg/mL and 3.65 ± 5.47µg/mL, respectively) than in healthy cats (235.22 ± 154.19 µg/mL, 108.86 ± 44.38µg/mL and 0.31 ± 0.37µg/mL, respectively), but there wasn’t correlation between APP mean concentrations with overall survival time (r = -0.3743 / p=0.1040, r= -0.2047 / p=0.3867 and r = 0.01674 / p=0.9442, respectively). In conclusion, AGP, SAA and CRP concentrations were higher in cats with lymphoma prior to chemotherapy, but did not correlate with overall survival time.
SERUM C-REACTIVE PROTEIN CONCENTRATIONS IN DOGS WITH MULTICENTRIC LYMPHOMA AND ITS POSSIBLE RELATION WITH OVERALL SURVIVAL TIME


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Topic: 4. Canine and Feline Medicine / Oncology

C-reactive protein (CRP) is an acute-phase protein that usually increases following inflammatory, infectious and neoplastic conditions in dogs. The goal of this study was to determine CRP concentrations in dogs with multicentric lymphoma at the moment of diagnosis and its possible relation with overall survival time. CRP was measured by the use of a commercial species-specific immunoassay test (Phase CRP Canine Assay Kit, Tridelta Ltd, Ireland) in two groups of dogs: 23 healthy dogs and 24 dogs with multicentric lymphoma, that had not received any treatment prior the diagnosis and that had not concomitant disease. The dogs were treated with Madison-Wisconsin short protocol. For both groups, serum samples were collected, harvested and frozen at -70°C until assayed. Mann-Whitney test was used to compare the groups and the Spearman’s rank correlation (r) was used to assess if there was correlation between CRP and overall survival time. Mean CRP concentration was significantly higher (p<0.0001) in dogs with multicentric lymphoma at diagnosis (40.72µg/mL) than in healthy dogs (0.94µg/mL) and there was a significant negative correlation between survival time and CRP (r = -0.61 / p=0.001). In conclusion, dogs with multicentric lymphoma showed higher serum CRP concentration at the time of diagnosis when compared to control group and high CRP concentration was associated with shorter survival time.

This study was supported by FAPESP.
PROGNOSTIC SIGNIFICANCE OF CAVEOLIN-1 AND UROKINASE PLASMINOGEN ACTIVATOR GENE EXPRESSION IN CANINE MAMMARY TUMORS

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Topic: 4. Canine and Feline Medicine / Oncology

Background Canine mammary tumors (CMT) are the most common neoplasms affecting intact female dogs. There is a critical need for the development of molecular biomarkers that can detect early stages of the disease, and thereby accurately diagnose both human and canine mammary tumors to ensure prompt treatment of these neoplasms. We prospectively attempt to establish a diagnostic methodology for classifying and determining the prognosis of CMT using gene expression profiling participated in metastasis. In this study, we examined whether Caveolin 1 (Cav1), urokinase plasminogen activator (uPA) and plasminogen activator type 1 (PAI-1) are associated with CMT malignancy and metastatic status compared to pathomorphology and prognostic status. Methods Sixty-three tissue samples (benign (n=30), malignant (n=28) and normal (n=5)) were analyzed with quantitative RT-PCR. Results Cav1, uPA and PAI-1 were highly expressed in CMT tissues compared to normal tissues. Especially, uPA were overexpressed in malignant CMT tissues and correlated with outcomes of the disease. Discussion and Conclusion These findings suggest that Cav-1, uPA and PAI-1 may be involved in CMT metastasis. Therefore, these markers were useful for prognostic diagnosis of CMT malignancy.
THE CASE OF DIABETIC KETOACIDOSIS IN CAT: THERAPEUTIC CAVEATS

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Diabetic ketoacidosis in cats is a serious metabolic disease associated with high concentrations of ketone bodies which can in extreme cases be fatal. This is especially the case when the patient is threatened by quickly developing hypovolemic shock, acidotic coma and brain oedema. Here I report the case of female crossbred cat at 8 years of age brought to clinics in a soporous state with suspected diabetic coma. The female has been receiving insulin for 3 years, with several attacks of hypoglycemia and ketoacidosis.

The owner often missed to apply insulin during the last months. Examination of blood revealed pH of 7.11, hyperglycemia (42 mmol/l) and increased concentrations of chlorides and bicarbonates. There were also ketonuria and glucosuria. At this point, three serious therapeutic mistakes can be made, resulting in further deterioration of patient’s state. First, starting with insulin to decrease the level of blood sugar with no prior attempt to stabilise circulation via infusion of crystalloid and glucose may lead to rapid blood sugar reduction with subsequent oedema of brain. Second, administration of bicarbonates to compensate for metabolic acidosis may readily turn to dangerous metabolic alkalosis. Acidosis is a symptom, not the cause of the disease. Finally, it is also important not to be confused by normal concentration of potassium. It is of intracellular origin whereas in cells its concentration can be severely reduced. A sufficient supply of potassium is thus necessary. Keeping all this caveats in mind, I was able to cure the cat in a short time.
INSULIN AND GLUCOSE DIFFER BETWEEN NORMAL WEIGHT DOGS, HEALTHY OBESE DOGS AND DOGS WITH HYPERADRENOCORTICISM.

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Glucose intolerance, insulin resistance and hyperinsulinemia are associated to obesity and Cushing's syndrome (CS). The aim of the study was to analyze whether the response to oral tolerance test of glucose shows differences among dogs with CS, obese and with normal weight. Materials and methods: 6 healthy normoweight dogs (controls), 6 obese without concurrent endocrine disease or any other disease and 6 dogs with CS were studied. All dogs were subjected to test of oral glucose tolerance (4g/kg) measuring blood glucose and insulin in the basal (0), 15, 30, 60 and 120 minutes. Also the HOMA-a (insulin resistance) and HOMA-b (cell function-β) index were calculated taking for this the baseline glucose and insulin values. The results were analyzed using the nonparametric ANOVA test followed Dunn’s test of multiplecomparison of medians. Results: blood glucose and insulin concentrations’ were significantly higher in dogs with CS at times 0 (p <0.05), 15, 30 (p <0.001) and 60 (p <0.05) vs. obese and controls. HOMA-a HOMA-b were significantly higher (p <0.01) in dogs with CS than obese and controls. Among the obese and controls did not show significant differences. Conclusion: The hypercortisolism is a key factor to determine more insulin resistance and glucose intolerance, taking the dogs with CS vs. Obese greater possibility of rapidly deplete the β cell and develop diabetes mellitus.
The most common complication of cirrhosis is ascites, and occurs at the final circuit of the diseases of severe portal hypertension and hepatic failure. In humans, it is associated with a poor survival, for these reason, both determining the prognosis and early diagnosis of the disease various studies carried out nowadays. However, there aren’t adequate studies in veterinary field.

In this study, the 10 dogs with ascites consisted the study group and the 10 healthy dogs consisted the control group which were brought to our clinic. As a result of the laboratory analysis T, protein and albumin levels were decreased and serum ALP and Urea levels were increased in all dogs with ascites, (p<0.01). Serum Creatinin, AST and ALT levels were increased too, but these changes were not statistically significant.

At the ultrasonographic controls, 6 dogs with ascites had smaller liver size and hyperechoic areas, 1 dog had tumour structure on the liver and dilated cardiomyopathy were detected in 3 dogs. Portal blood velocity value at the right intra hepatic brunch of the portal vein were below from the reported normal range (<10 cm/s), that indicated to the portal hypertension, also renal RI and PI values were increased in 6 dogs with ascites, but these values weren’t statistically significant.

In conclusion, the doppler ultrasonographic findings of the liver and kidney in dogs with ascites will help both determination of the clinical situation and implementation of effective treatment plans, however, for better understanding of the disease more studies should be perform.
To determine the efficacy and reliability of cabergoline and pregnant mare’s serum gonadotrophin (PMSG) for induction of oestrus in bitches with primary or secondary anoestrous. We studied 39 healthy bitches of various breeds aged 2–6 years and in primary or secondary anoestrous: 20 bitches were administered 5 mg/kg/day cabergoline orally until day 2 after the onset of pro-oestrus or for a maximum of 42 days, and 19 bitches were administered 20 IU/kg/day PMSG intramuscularly for 5 consecutive days, followed by an additional single injection of 25 IU/kg of human chorionic gonadotrophin on the fifth day. The rates of oestrus induction in the primary and secondary anoestrous bitches treated with cabergoline and PMSG were found to be similar. Pregnancy and whelping rates in the cabergoline group were statistically different from the rates in the PMSG group (P < 0.001). Cabergoline is more effective and reliable for the induction of a fertile oestrus in bitches with primary or secondary anoestrous.
Probiotic therapy has been recommended for the treatment or prevention of a variety of conditions in different species. The advantages of probiotic consumption in human beings have been recognized for centuries. However, their application and efficacy in domestic animals have only recently been investigated. The aim of this study was to evaluate the efficiency of probiotic administration on the blood chemistry of Persian shepherd dogs. 10 male Persian shepherd dogs were divided into two groups of control and treatment. The control group was fed by healthy food; whereas the treatment group was fed by healthy food containing probiotics (9 gr/10kg of food). The results showed insignificant changes in $\alpha_1$ globulin ($P>0.05$), however $\alpha_2$ globulin showed a significant decrease ($P<0.05$). Overall, in the total hemograms of both groups significant changes were observed in WBC, lymphocyte and neutrophil ($P<0.05$). The results indicate that oral administration of probiotic can improve the function of immune system.
THE EFFECTS OF PROBIOTICS IN PREVENTING GASTROINTESTINAL DISORDERS OF PERSIAN SHEPHERD DOGS

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Topic: 4. Canine and Feline Medicine / Feline Medicine

The present study was conducted to evaluate the effects of probiotics on the prevention of food poisoning and bacterial diarrhea in dogs. 15 male dogs from persian sheep dog breed, aging 1 to 2 years and 20 to 25 kg of weight were selected. After thorough physical examination, they were randomly divided into one control and two treatment groups which were fed by healthy, poisoned food containing probiotics (9 grams of Primalac® per 10 kg of food) and poisoned food, respectively. In addition to the examination of general symptoms, starting from the 2nd day of the study, the feces of each dog were collected with 12 hour intervals and were examined for the total number of aerobic microbial count. The result of the present study indicated that probiotics have an effective role on the reduction of digestive problems and their addition to the diet of the 1st treatment group significantly decreased the occurrence of food poisoning.
STRUCTURE AND SNP DISCOVERY OF DOG UCP2 AND 3 GENES AND THEIR GENETIC ASSOCIATION WITH CLINICAL CHARACTERISTICS


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Uncoupling proteins (UCPs) are members of an anion-carrier protein family located in the mitochondrial inner membrane and play an important role in energy homeostasis. Both UCP2 and UCP3 have been found to decrease membrane potential and increase thermogenesis. They are regarded as inducers of obesity and type 2 diabetes in human. Here, we focused the molecular genetic characterization of dog UCP2 and UCP3 genes. We determined the open reading frame of dog UCP2 (930bp:AB611704) and UCP3 (936bp:AB611705), respectively. It was revealed that UCP2 consists of exons 1 to 8 and dog UCP3 consists of exons 1 to 7 by comparison of published dog draft genome sequences. Furthermore, we demonstrated the SNP discovery using 119 dogs (12 breeds) by direct sequencing of exon encompassing regions. Then, we identified 10 SNPs (9 iSNPs, 1 uSNP) and 4 INDELs polymorphism (intron) in dog UCP2 and 13 SNPs (11 iSNPs, 1 cSNP, 1 sSNP) and a INDEL polymorphism (5' UTR) in dog UCP 3. We also investigated the genotype distribution of SNPs and INDELs in two pure breed, and showed that several SNPs revealed a significant difference between Shetland Sheepdog (N=30) and Shiba (N=30). Finally, we examined whether SNPs and INDELs were associated with clinical characteristics in dogs. Then, 4 SNPs of dog UCP3 were association to total cholesterol level in Labrador Retriever (N=50). The first evidence showing an association between dog UCP3 gene and total cholesterol level may be useful for animal care to prevent of disease in the future.
PERIODONTAL DISEASE OR CEMENT DISEASE? NEW FRONTIER IN THE TREATMENT OF PERIODONTAL DISEASE IN DOGS.

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Topic: 4. Canine and Feline Medicine

A group of 10 dogs (group A) with Periodontal Disease in the third stage, were subjected to regenerative therapy of periodontal tissues, by use of nano hydroxy apatite (NHA). These animals induced by general anesthesia, where treated by ultrasonic scaling, root planing and at the end by a mucogingival flap in which it was applied NHA. The flap was closed and sutured with simple steps. Another group of 10 dogs (group B), control group, was treated only by scaling and root planing. No patient was subjected to antibiotic therapy. After three months, a check was made by inspection of the oral cavity, radiography and bone biopsy at the alveolar level. Group A showed a total restitutio ad integrum of the periodontal structures, and in group B still mild gingivitis in 70% of cases and 30% of the state remains unchanged. Numerous experimental studies both in animals and humans have documented that the grafts of porous hydroxyapatite are rapidly invaded by fibrovascular tissue which is subsequently converted into mature lamellar bone tissue by activating osteoblast. Since we acted on the removal of necrotic cementum and rehabilitating the root tissue by polishing without intervention in the ligament but only on anatomical functional interface of cement-blasts, we can connect the positive evolution of the clinical-only component of the cement that could represent this perspective, the only reason that Periodontal Disease become a Cement Disease, while all other clinical elements as nothing more than a clinical pathological accompanying.
Canine papillomatosis is a benign cosmopolitan tumor disease, characterized by the appearance of papillomas in the oral region. It is caused by *Papillomavirus* from the *Papovaviridae* family. Tumors develop in one to five months and regress spontaneously in a great number of animals, but in some cases have a tendency to remain chronic. This work has as objective to describe a case of canine chronic oral papillomatosis treated with chlorobutanol and auto-hemotherapy. A dog of six years, 5kg, cross-breed, with tumors in the oral cavity and lips was referred to the veterinary hospital of the school of Veterinary Medicine – FIO, Ourinhos/SP, Brazil. Macroscopically the papillomas presented well defined color, aspect and shape. Was performed a biopsy of the cutaneous lips lesions. At the histopathological analysis had shown epithelial and conjunctive hyperplasic alterations with extensive vegetative growth of the epithelium, with wide and deep epidermal crest, characterize the papillomatosis. The selected treatment was auto-hemotherapy and chlorobutanol, both once a week totaling four weeks. In each session of therapy were used 5mL of blood from the jugular vein and immediately was applied intramuscular, the chlorobutanol was applied around the affected region. The treatment resulted in very fast regression of lesions, with darkening of tumors followed by necrosis and detachment of papillomas with full resolution by the fourth therapy application. The use of auto-hemotherapy to stimulated the immune system against this viral agent and the chlorobutanol acting to preventing the viral replication were the key for the treatment success.
A 3.5-year-old non-castrated male cross-breed cat weighing 3.6 kg was referred to the Small Animal Internal Medicine Clinic at the Uludag University (Bursa–Turkey) with the history of respiratory distress for 1 week. At admission, clinical examination showed a tachypnea (44 breath/min), dyspnea and cyanosis when increased activity, mild dehydration, and poor broncho-vesicular sounds at auscultation. ECG revealed normal sinus rhythm and regular R-R intervals as well as P and QRS complexes in normal configuration. Thoracic radiographs showed pleural effusion. Diagnostic thoracocentesis was performed, and physical appearance of fluid (turbit and opaque) was consistence of chyle. To avoid respiratory distress thoracic drainage was performed, and 250 fluid was withdrawal. Based on the fluid chemistry profile (high triglyceride and low cholesterol contents as compared to their serum levels) and cytological evaluation (predominantly lymphocyte), chylothorax was confirmed. Echocardiography demonstrated increased IVS diameters at diastole (0.65 cm) and systole (0.82 cm), with LVPW thickness (0.60 cm and 0.86 cm, respectively). Systolic anterior motion (SAM) was also observed. Haematology and biochemistry were non-specific. Treatment included diltiazem and furosemide for HCM, and routine for chylothorax.

To date only few cases of this condition have been reported in human and veterinary medicine. Accumulated evidence show that chylothorax may be relating with thyrotoxic cardiomyopathy, restrictive cardiomyopathy, congestive cardiomyopathy, and right-sided cardiomyopathy in cats. In this case asymmetrical hypertrophy of IVS and LVPW (idiopathic hyperthrophic cardiomyopathy) was recognised because of diastolic thickness of 0.55 cm. The cat is still alive and monitored by one week interval.
Progressive loss of renal function is a part of aging in dogs leading to structural and anatomical changes within kidneys. Renal insufficiency is one of the four major causes of death in geriatric animals. Some biochemistry evaluation, specially serum concentration of urea and creatinine, associated with urinalysis are used to evaluate renal affections. The goal of this paper is to evaluate the importance of renal profile in geriatric dogs. There were evaluated 142 dogs with more than 7 years old. Venipuncture was performed followed by dosage of serum creatinine and urea and by clinical examination that could show data compatible with renal lesions. Thus, 36 animals (25,4%) shown high rates of urea, 29 (20,4%) dogs presented elevation of creatinine, and in 22 samples (15,5)% both nitrogen biomolecules were augmented. Only 9 animals (6,3%) presented clinical data compatible with kidney lesion, and 100% of this dogs shown serum urea and creatinine increased. The biochemical alteration preannounces the beginning of symptoms, becoming a crucial instrument to a early diagnosis, that directs an adequate treatment. We conclude that analyses of urea and creatinine profiles in dogs older than 7 years old should be performed even in patients whom are still assymptomatic for renal failure.
SUPPLEMENTATION OF POLYUNSATURATED FATTY ACIDS, MAGNESIUM AND ZINC IN DOGS WITH BEHAVIOR PROBLEMS: RESULTS OF A PILOT STUDY

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Topic: 4. Canine and Feline Medicine

In the present study we assessed the efficacy of supplementation of polyunsaturated fatty acids, magnesium and zinc in a population of Iranian domestic dogs with behavior problems. Study objective was to evaluate the nutritional effects of the polyunsaturated fatty acids, magnesium and zinc combination on the severity of six common behavior problems: excessive activity, inappropriate elimination, fearfulness, destructiveness and aggression towards unfamiliar people and dogs. Assessment was performed by a Likert degree-based questionnaire (grade 1: mild to grade 4: severe). After six weeks daily use of the combination supplement, a statistically significant reduction was observed in dogs with destructiveness (P = 0.002), fearfulness (P = 0.005) and inappropriate elimination (P = 0.000). In addition, the combination supplement had no effects on excessive activity and aggression towards unfamiliar people and dogs. Regarding safety, no serious adverse events occurred. Our results suggest a beneficial effect of a combination of polyunsaturated fatty acids, as well as magnesium and zinc consumption on destructiveness, fearfulness and inappropriate elimination problems in a population of Iranian domestic dogs. Thus, considering the behavioral benefit in combination with the low risk due to a good safety profile, the dietary supplementation with polyunsaturated fatty acids in combination with zinc and magnesium can be recommended. Further studies on larger sample sizes are warranted to shed more light on this important issue.
A HOLISTIC APPROACH TO CANINE RABIES CONTROL

B. Mutonono-Watkinson, F. Abson, M. Kennedy


Rabies kills an estimated 55,000 humans annually and in more than 99% of all human rabies cases, the virus is transmitted from dogs (WHO, 2005). A holistic approach that integrates human and animal sectors is becoming increasingly vital to disease control efforts.

Unfortunately, misconceptions of the best methods to control rabies can, and often do, result in suffering through inhumane dog culling. Not only is animal welfare compromised, but such methods are not scientifically proven to be effective. For example, in 2005, the WHO stated that “there is no evidence that removal of dogs alone has ever had a significant impact on dog population densities or the spread of rabies”.

However, many regions, such as Latin America, are already leading on an effective solution: cross-sector integrated mass canine vaccination campaigns. Achieving over 70% herd immunity in numerous cases has been the most effective measure for controlling rabies in the dog population and hence the main risk to humans. To ensure this is achieved, programmes require political support that actively integrates public health, animal health and animal welfare agencies.

Additionally, WSPA, respecting knowledge gained from regions such as Latin America, have supported various projects around the world that promote an integrated approach and include mass canine vaccination at the centre of control efforts. Whilst in some of these programmes implementation is at an early stage, the prospect of longer term elimination of the disease is now an achievable goal in many cases.
CLASSIFICATION OF HEART FAILURE IN DOGS, COMPARATIVE RESEARCHES ON EFFECTIVENESS OF ENALAPRIL AND PIMOBENDAN IN TREATMENT OF ATRIOVENTRICULAR VALVE INSUFFICIENCY

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Topic: 4. Canine and Feline Medicine / Feline Medicine

In this study the therapeutic effectiveness of two different active ingredients such as enalapril and pimobendan was investigated in the dogs with atrioventricular (AV) valve insufficiency on different time points (day 0, 7, 28 and 56) on the basis of clinical and laboratory findings as well as electrocardiography (ECG), radiography and echocardiography (ECHO). A total of 12 dogs with AV valve insufficiency of different sex, age and breed were allocated into 2 groups, Group A (n:6) and Group B (n:6), subjected to treatment with enalapril and pimobendan for 56 days, respectively. All patients received furosemide due to congestion. The degree of cardiac failure was classified between I-IV according to the NYHA Schema. Both groups responded to the therapy yet no statistical significances were noted between the groups in terms of the laboratory findings except for a significant reduction in Na levels in pimobendan group (PIMO) (p≤0.05); and a difference in LA/Ao ratios in enalapril group (ENA) (p≤0.05) and also an increase with respect to EF% values in PIMO group (p≤0.05). Radiographs revealed prominent resolution in pulmonary parenchyma beginning from day 7. In conclusion, enalapril and pimobendan proved to be effective in the treatment of AV valve insufficiency. The combined use of furosemide with these agents was required in NYHA II-III cases and finally it was essential to monitor the electrolyte changes at different time points during the study.
A TRACE OF OCT-4A TRANSCRIPT VARIANT IN A LOW-GRADE MAST CELL TUMOR: THE FIRST REPORT

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As in normal stem cells, putative cancer stem cells (CSCs) have an ability to do self-renewal although the regulatory mechanism is not absolutely understood. Embryonic transcription factors (ETFs) such as Oct-4, Nanog, Sox-2 and Klf-4 are recently known to involve in self-renewal control. Among these, Oct-4 seems to be the most indispensable element over the others.

In human, at least 3 mRNA-isoforms of Oct-4 have recently been reported; Oct-4A, Oct-4B and Oct-4B1. These transcript variants are distinguished from one another by their molecular structures. Accordingly, only Oct-4A transcript variant contains exon-1 and consistently involves in the regulation of putative CSC self-renewal. Moreover, this transcript variant has never been reported in any veterinary literatures before.

The objective of this study was to determine the existence of Oct-4A transcript variant in a MCT specimen and a normal skin, using RT-PCR with the primers designed in our laboratory which are specific to exon-1 (Forward exon-1; 5′-CTT CCG ACT TGG CCT TCT-3′ and Reverse exon-4; 5′-AAG GAG AAG CTG GAG CAA-3′). The consequence of study has substantially demonstrated the existence of Oct-4A in the MCT specimen but not in the skin. Nonetheless, we have also demonstrated the other Oct-4 isoforms were detected by another set of Oct-4 primers which can assess all Oct-4 transcript variants at exon-4. Therefore, the study result may provide the first clue of Oct-4A existence in MCT-putative CSCs. Nevertheless, the result may alert us to the caveat in Oct-4 interpretation when a non-specific Oct-4A primers is not used.
PROTEIN/CREATININ EXAMINATION OF ASCITES FLUID IN A 7 MONTH OLD FEMALE CAT WITH RUPTURED BLADDER

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Topic: 4. Canine and Feline Medicine / Feline Medicine

A 7 month old female, mix breed cat with complaint of fall from height before 5 days ago was brought to clinic and in the clinical examination ascites was found. In general examination; hypothermia (36.3°C), severe dehydration, icteric mucous membranes, and mild lymphadenopathy was detected. In biochemical blood analysis; severe uremia (520 mg/dl), high level of creatinine (6.8 mg/dl), total bilirubin (5.1 mg/dl) and GGT (16 IU/L) and hyperglobulinemia (5.7 g/dl) was determined. Ascites fluid characterized as modified transudat and PRO/CREA measurement was 2.56/0.16 = 16 g/L. After removal of ascites fluid, fluid replacement was applied on the other hand although formation of urine was not occured and ascites fluid rapidly proliferated. In the ultrasonographic examination anechoic ascites fluid and some changes which is evocative of spleen torsion has been seen. However, for this posttraumatic ascites case, in spite of high level of PRO/CREA measurement, with suspicion of bladder rupture, as an emergency diagnostic laparatomy was applied. Abdominal ascites fluid, which was formed due to spleen trauma, was completely emptied with an aspirator but within a short time it was began to occur again quickly. Ruptur was found on ventral of the bladder neck about 1 cm length. After two Penrose drains being placed in the ventral abdomen. Based on PRO/CREA measurement of ascites fluid was very high, at the pre-diagnose, bladder rupture was not considered. In this case, we have been emphasized that, PRO/CREA assessment on ascites fluid contain analysis is insignificant.
THE PATHOLOGY AND BEHAVIORAL CHANGES IN AN AGING DOG’S BRAIN

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Topic: 4. Canine and Feline Medicine

Alzheimer’s disease (AD) in human and Canine cognitive dysfunction (CCD) are progressive neurodegenerative diseases expressed as cognitive dysfunction. These diseases have a same clinical symptoms – age-related decline a cognitive function. The Behavior of affected individual is characterized by main behavioral changes as disorientation, socio-environmental interaction, alterations sleep-wake cycle, hygienic habits and changes in level of activity.

Therefore we expected that both diseases have the same pathological ground. The brains of AD patients include the formation of senile plagues, neurofibrillary tangles and granulovascular degeneration, aberrant folding of the protein tau and the deposition of amyloid-beta (Aβ).

We collected samples, cerebrospinal fluid (CSF) and a brain tissue, from nine aged dogs with a different level of cognitive impairment (questionnaire DISHA). CSF was taken from a spinal cord – cisterna magna and caudal spinal cord L4-L6. This one was testing ELISA for detection tau protein and Aβ. There was demonstrated relationship between tau protein in CSF (L4-L6) and score in DISHA (p˂0,01). The immunohistochemic analysis of brain tissues showed diverse forms of Aβ. Tau protein was presented only in soluble form, but we found out the neuroinflammation is an important indicator. On the basis of our results we suppose that molecular changes in the dog brain affected of cognitive deficit have a similar neurobiological manuscript as molecular changes in a human brain.

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CANINE COGNITIVE DYSFUNCTION – THE CLINICAL STUDY

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Canine cognitive dysfunction (CCD) is a neurodegenerative disorder develops in some old dogs. CCD is a breakdown in cognitive abilities, it’s also known as „doggy Alzheimer“. The Alzheimer-like behavior of dogs is characterized by main behavioral changes as disorientation, altered interaction with people or other animals, alterations Sleep-wake cycle, house-soiling and changes in level of Activity (acronym DISHA). A questionnaires type DISHA is used for identified main behavioral changes.

In our clinical study included 134 dogs over 8 years of age (8 - 17), different breeds and different genders (72 females - 14 castrated, 62 males - 13 castrated). Each subject underwent baseline clinical, neurological, cardiological and ophthalmological examination with was taking blood for hematology and biochemistry, to the exclusion of organ failure, manifested to me in similar clinical symptoms as CCD. An interview with the owner of the dog has been completed questionnaire type of DISHA. On this basis, we found that 17.91% of the population of geriatric dogs is cognitively dysfunctional and that significant risk factor CCD as age (P < 0.001), diet (P < 0.01) and weight of body under 15kg (P < 0.001), over 15kg (P < 0.05).

Acknowledgement: This work was supported by the grant APVV-0206-11.
ANALYSIS OF THE ANTIMICROBIAL EFFICACY OF A NEW TOPICAL PHOTOSENSITIZER (FOTODITAZIN) AGAINST STAPHYLOCOCCUS PSEUROINTERMEDIUS IN NORMAL DOGS

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*Staphylococcus pseudointermedius* is one of the most common pathogen in veterinary dermatology. Antimicrobial photodynamic therapy (aPDT) is one of new rising modalities for management of bacterial infections including skin and periodontal diseases. aPDT could kill microorganisms by activation of non-toxic photosensitizers with the specific wavelength of light. This study aims to establish the antimicrobial activity of topical application with a newly developed photosensitizer (fotoditazin) in normal dogs with Staphylococcus pseuintermedius infection.

3 adult normal beagles were wounded by multiple punch biopsy and infected by *Staphylococcus pseudointermedius* for 24 hours. And all dogs were received the topical application of the new photosensitizer solution and were excluded from light for post 30 minutes. The negative control was selected by sterile normal saline and the positive control by an antibiotic ointment. The photosensitizer was activated by 660-nm ultraviolet (UV) light with three different electricity and duration time. The dogs were monitored vital signs, complete blood count (CBC), gross findings and bacterial culture of skin wounds at before infection (day -1), before aPDT (day 0), after 1, 3, 7, and 10 days.

On physical examination and CBC, all parameters were within normal ranges. Gross findings and bacterial culture of wounds revealed that the photosensitizer had similar antibacterial activity to the antibiotic ointment post 3 to 10 days. It was the best effect at light activation with 0.5 watt for 400 seconds. This study suggests that topical application of fotoditazin had antimicrobial efficacy with specific condition with UV light.
THE EFFECT OF AUTOLOGOUS PLATELET-RICH PLASMA ON THE SURVIVAL OF LONG SUBDERMAL PLEXUS SKIN FLAPS: EXPERIMENTAL STUDY IN DOGS

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Background: In subdermal plexus (random) skin flaps, peripheral flap necrosis remains a serious complication. Platelet-rich plasma (PRP) is rich in growth factors essential for tissue repair and has demonstrated ability to improve skin flap survival.

Objective: To evaluate the effect of locally injected autologous PRP on the survival of long (length-to-width ratio 5:1) subdermal plexus skin flaps, in dogs.

Methods: In six purpose-bred beagle dogs, one dorsally based 2x10 cm skin flap was created on the abdominal wall, bilaterally. In each dog, one randomly selected flap received PRP treatment, whereas the other side flap served as control. Autologous PRP (2.5 ml), prepared using the Magellan-Medtronic platelet separator system, was immediately and equally distributed beneath the flap, through the sutures. Skin flap survival was evaluated macroscopically and by survival rate calculation on day 10 postoperatively, by Laser Doppler Flowmetry measurements of tissue perfusion on days 0, 2, 4, 6, 10, and histologically on days 4, 10.

Results: PRP-treated flaps had a survival rate of 96.3%, whereas controls had 79.7% (P > 0.05). Tissue perfusion was significantly higher in PRP-treated flaps than in controls on days 4, 6 and 10 (P = 0.036, 0.013 and 0.003, respectively). Histologic evaluation revealed lesser edema and greater collagen production on day 10 (P = 0.01 and 0.011, respectively) in favor of PRP. The number of new vessels did not differ significantly between the two groups.

Conclusion: The use of locally injected autologous PRP seems to improve the survival of long subdermal plexus skin flaps, in dogs.
GENERATION AND CHARACTERIZATION OF RECOMBINANT SOLUBLE FELINE
FCERIα FOR DIAGNOSIS OF ALLERGIC DISEASES IN CAT PATIENTS

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Background: Cats may suffer from IgE-mediated diseases such as flea allergy, atopy or food allergy. Associated clinical symptoms include non-seasonal dermatologic disease and pruritus, papules, miliary dermatitis, eosinophilic granuloma complex formation or alopecia.

Diagnosis of hypersensitivities, especially food allergies is extensive and cumbersome and could be largely facilitated with a reliable serological assay to detect IgE. IgE binds with extraordinary high affinity to FceRI (Ka~10¹⁰ M⁻¹) expressed on e.g. mast cells or basophils. Hence the alpha chain of FceRI could be exploited to trace the allergen-specific IgE antibodies in cat serum. The aim of this study was thus to construct a feline alpha-chain for feline IgE detection.

Method: A SV40 vector containing the FLAG-tagged fusion gene of the extracellular domain of feline FcεRIα was transfected into CHO-DUKX B11 cells. Clones were selected according to expansion and productivity, assessed by light microscopy, dot blot and ELISA. Identity and molecular mass of the gene product was controlled via SDS PAGE and Immunoblotting.

Results: 500 clones were screened in order to select the candidate with optimal growth and production properties. Integrity was confirmed in ELISA and Western Blot. Binding to IgE in feline sera was assessed in ELISA, resulting in high affinity binding of soluble FcεRIα.

Conclusion: Our study describes the generation and characterization of recombinant feline soluble FcεRIα. Production of this molecule enables to simplify, accelerate and improve allergen specific diagnosis of allergy and atopic diseases in cat patients.

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