

Topic: AS02 Anesthesia

COMPARISON OF PERFUSION INDEX AFTER INDUCTION WITH ZOLAZEPAM-TILETAMINE VERSUS PROPOFOL IN DOGS.

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Introduction:

The perfusion index (PI) derived from a pulse oximeter is calculated as the ratio of the pulsatile blood flow to the non-pulsatile blood in peripheral tissue. PI reflects peripheral perfusion dynamics due to changes in peripheral vascular tone.

Objectives:

The objective of this work was to evaluate the changes in PI after induction with opposed cardiovascular effect drugs – propofol versus zolazepam-tiletamine.

Methods:

12 adult dogs were included in this study and randomly assigned to the group P (propofol, n=6) and Z (zolazepam-tiletamine, n=6). In both groups, dogs were premedicated with medetomidine and butorphanol. After induction and instrumentation, all parameters were measured and noted through 15 minutes in 3 minutes intervals. PI was measured by pulse oximeter sensor probe placed on tongue.

Results:

Results are shown in table.

Group	Mean±SD	
	P	Z
PI	0.21±0.17	0.24±0.12
HR	99.17±33.03*	70.67±19.57
RR	15.88±5.25*	11.96±1.52
etCO2	46.44±8.48	47.90±8.89
SpO2	98.21±2.25*	99.40±1.12
SBP	114.94±21.21*	125.88±12.80
DBP	70.25±20.27*	79.56±9.82
MBP	85.92±19.41	90.67±9.94
T	37.77±0.42*	38.14±0.87

* indicates significant differences between P and Z groups p<0.05.

Conclusions:

PI did not show a difference between P and Z groups. The statistically significant differences in hemodynamic parameters between groups were observed however, all obtained values were within the reference intervals. The experiment has shown that PI does not reflect changes in HR and arterial blood pressure within the reference ranges.

P002 / #221

Topic: *AS02 Anesthesia*

REDUCTION OF THE MINIMUM ALVEOLAR CONCENTRATION OF ISOFLURANE IN DOGS USING INDUCTION WITH ZOLAZEPAM-TILETAMINE.

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Introduction:

Combination of two drugs: zolazepam and tiletamine is gaining more and more interest as an injectable anesthetic and immobilizing agent used in dogs. The combination of tiletamine with zolazepam has proved to be a safe and pharmacologically beneficial combination. Analgesic effect, fast induction time, effective myorelaxation and smooth recovery are the main advantages of this combination of drugs. The composition of these drugs was used together with isoflurane inhalation anesthesia.

Objectives:

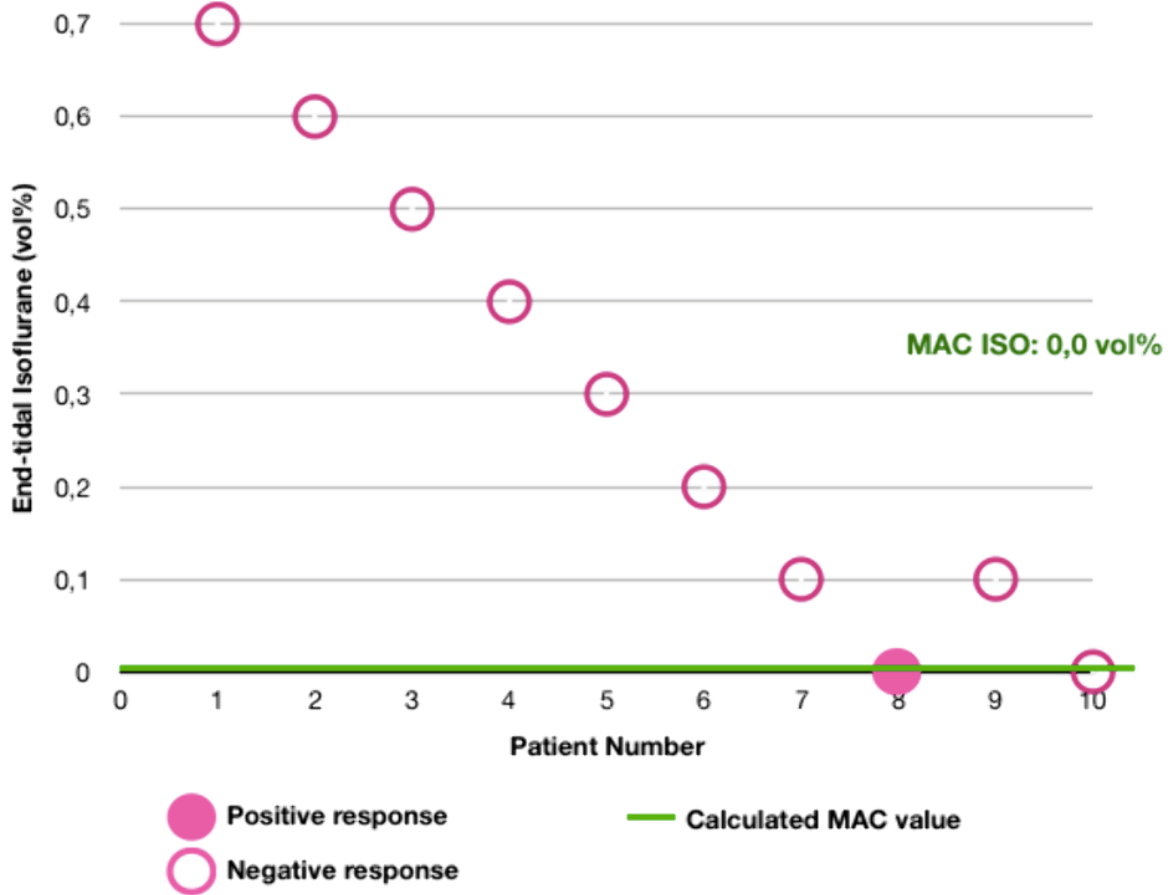
The objectives of this work was to measure the use of isoflurane in pain stimulation using the induction of tiletamine-zolazepam by the up-and-down method.

Methods:

10 dogs were selected to the group with the inclusion criteria: ASA I or II. Each dog received premedication intramuscularly with medetomidine-butorfanol (10 µg/kg, 0,1 mg/kg respectively). 15 minutes after premedication, preoxygenation lasting 5 minutes was started. Anesthesia was induced with tiletamine-zolazepam at the dose of 5 mg/kg. Then dogs were intubated and anesthesia was maintained with isoflurane. Initially, end-tidal isoflurane was set to 0.7 vol.%. After 15 minutes equilibration, MAC was determined using Dixon's up-and-down method. Painful stimulation including compressions of paw pad, phalange, groin area and clamping Backhaus on skin. Hemodynamic and ventilation parameters were measured and noted in 2 minutes intervals.

Results:

Results are shown in chart:



Conclusions:

The composition of zolazepam-tiletamine decreases the MAC ISO in dogs. This is clinically important because the side effects resulting from higher isoflurane concentrations are minimized.

P003 / #75

Topic: *AS03 Animal Welfare*

WSAVA ANIMAL WELFARE SURVEY: INFORMATION SOURCES USED BY COMPANION ANIMAL VETERINARIANS

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Introduction:

Veterinarians are expected to have expertise not only in the maintenance of health and the treatment and prevention of disease in animals, but also in matters relating to animal welfare. Issues surrounding animal welfare have become of increasing importance to veterinarians, governments, and society worldwide. How veterinarians select their resources to answer their questions regarding the various animal welfare issues may differ as a result of geographic, cultural, socioeconomic, and other factors.

Objectives:

The objective of this study was to investigate the information sources used by companion animal veterinarians worldwide regarding the following topics: client communication, animal welfare, surgical techniques, human animal bond, dentistry, animal behavior, zoonotic disease/epidemiology.

Methods:

For this purpose, a global survey containing among others the aforementioned topics was distributed via SurveyMonkey® in multiple languages. The multiple response questions contain the following answer categories: 'local continuing education', 'veterinary journals', 'veterinary conferences/meetings', 'internet' and 'I don't search for information on this topic'.

Results:

The distribution of survey responses differed by region. In general, the most frequently used information source in Europe, North America, South America and Oceania was veterinary conferences/meetings, whereas in Asia and Africa it was internet. The type of information source used was not only different across regions but also depended on the topic. Depending on the topic and region there were also gender differences.

Conclusions:

This survey-based study showed that veterinary practitioners prefer different types of information sources to answer their questions, depending on the topic, geographic region and gender.

P004 / #147

Topic: *AS03 Animal Welfare*

THE WELFARE OF DOGS USED IN HUNTING AROUND THE SOUTH WEST NIGERIA

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Introduction:

Hunting is a common vocation in Nigeria. Hunters usually use dogs to assist them in finding, pursuing, and restraining of wild animals. It is a legal activity in some states and territories of Nigeria while it is banned in areas regarded as park and game reserves though hunters still goes there illegally to hunt.

Objectives:

The main objective is to observe the welfare status of the dogs used in Hunting in the South West Nigeria.

Methods:

We conducted a survey through focal point interviews and general observation on the hunting dogs in order to determine the health and welfare risks that the hunting dogs might face.

Results:

Risks identified include breeding surplus to requirements, the early retirement of dogs due to behavioural incompatibilities, use of punishment-based training techniques including starvation, mutilation, beating, keeping dogs isolated in open kennels or non-availability of kennels, exposure to numerous infectious diseases, high rates of traumatic injuries, poor transportation methods, high mortality during hunts, poor health care attention in terms of inadequate vaccination and anthelmintic prophylaxis , exposure to drugs and suboptimal quality of life after retiring from hunting such as being sold as meat animals or abandonment till the animal dies.

Conclusions:

There are also concerns about the welfare of the wild animals being hunted by the dogs. We conclude that more research is required into the health and welfare of hunting dogs especially on the training on welfare for the hunters. The humaneness of this method of hunting and treating hunting dogs urgently requires further assessment.

P005 / #202

Topic: AS03 Animal Welfare

USE OF HIGH-RESOLUTION QUANTITATIVE PROTEOMIC APPROACH TO IDENTIFY CHANGES IN SALIVARY PROTEINS AFTER AN INDUCED EJACULATION IN DOGS

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Introduction:

The conjunction of modern proteomic diagnostic techniques, such as Tandem Mass Tags (TMT), with saliva samples allow to achieve comparative quantitative analysis of this fluid and the identification of new metabolic pathways and possible biomarkers. Individual analytes, such as alpha-amylase or cortisol, has been studied in saliva after an ejaculation in dogs. However, no complete studies about changes in salivary proteome have been reported.

Objectives:

Investigate the possible changes in salivary proteome profile of dogs during ejaculation.

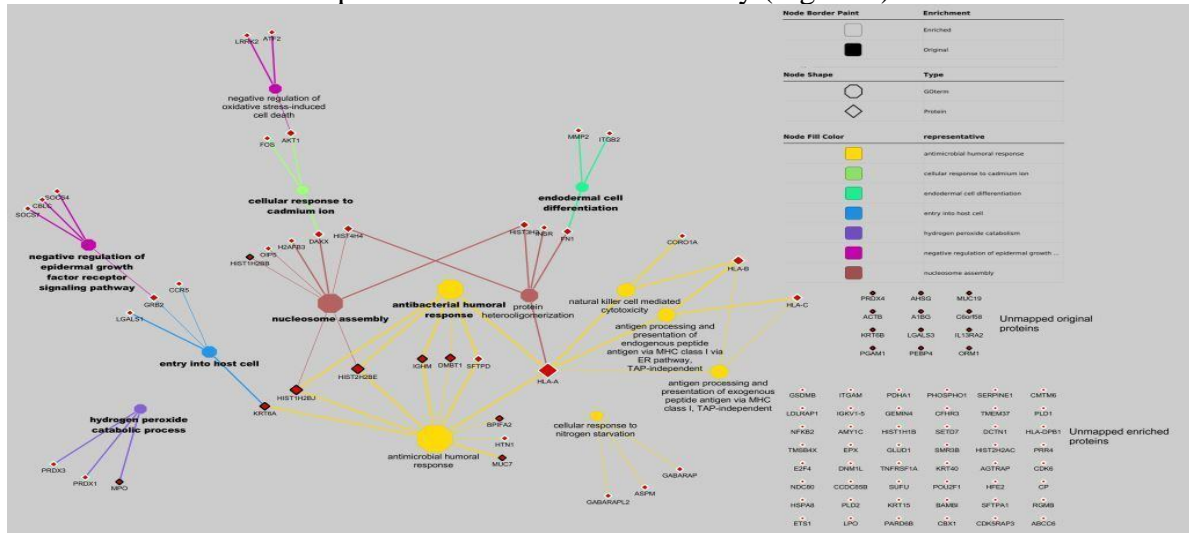
Methods:

Saliva specimens were collected from eight healthy male beagles 30 min before (pre-ejaculation) and immediately after the ejaculation (post-ejaculation) provoked by digital manipulation, using a latex semen collection cone (artificial vagina). Saliva samples were subjected to reduction, alkylation, digestion and labelled using 6-plex TMT reagents before further LC-MS/MS analysis. The results were then processed by the Gene Ontology (GO) analysis.

Results:

The TMT analysis allowed for the identification of new ejaculation-related metabolic pathways and revealed 33 of recognized peptides showed significant differences ($p < 0.05$) after ejaculation. Of those proteins, 17 were down-regulated while 16 were up-regulated. The most affected metabolic pathways significantly involved identified by GO analysis were

antimicrobial humoral response and nucleosome assembly (Figure 1).



Conclusions:

TMT-based proteomic approach allowed identification of new salivary proteins that change in concentration after ejaculation in dogs. However, further studies should be made to clarify the mechanisms of these changes and if they could be used as biomarkers.

P006 / #59

Topic: *AS04 Behavior*

THE EFFECTS OF SEX, STERILIZATION, AGE AND BREED ON DOGS PRESENTING FOR INTRA-SPECIFIC BITE WOUNDS IN PRETORIA SOUTH AFRICA

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Introduction:

Intra-specific dog aggression accounts for significant animal suffering and loss of life with costly and time-consuming veterinary care.

Objectives:

The aim of this study is to the identification, demographic-specific, risk factors to provide evidence based advice to owners, veterinarians and welfare organizations to reduce the incidence of intra-specific dog aggression in South Africa .

Methods:

16494 records of individual dogs presenting to the outpatient section of the Onderstepoort Veterinary Academic Hospital (OVAH), Pretoria, South Africa from 2016 to 2019 were examined for the effect of breed, age, sex and sterilization status on the odds of presenting for dog bite wounds.

Results:

Bite wounds were the reason for visits for 4.03% (665/15954) of all individual animals (including routine visits), where the reason was recorded.

The effect of sterilization was examined in dogs over a year old. No significant difference in odds of presenting for bite wound was found between male and female dogs or between spayed or intact bitches but male intact dogs were over-represented with an OR 1.50 (95% CI 1.14-1.98) was compared to castrated male dogs.

Breeds over-represented for bite wounds were Jack Russel Terriers OR 1.90 (95% CI 1.53-2.35) and Miniature Pinchers OR 1.99 (1.23, 3.24) and American Pitbull terriers under-represented OR 0.13 (95% CI 0.10-0.17). Dogs over one year old were sover-represented than dogs under one year old OR 2.51 (95% CI 2.02-3.11).

Conclusions:

Jack Russel Terriers, Miniature Pischers, intact dogs and older dogs had significantly higher odds of presenting for veterinary care with intra-specific bite wounds in Pretoria, South Africa.

P007 / #229

Topic: *AS04 Behavior*

THE SITUATION AT HOME: A SURVEY OF 102 INTRA-SPECIFIC DOG AGGRESSION CASES IN PRETORIA, SOUTH AFRICA

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Introduction:

Dog bite wounds represent 4.0% of the reason for presentation at the Ondestepoort Veterinary Academic Hospital (OVAH), Pretoria, South Africa.

Objectives:

The aim of this study was to better understand intra-specific dog aggression in Pretoria, South Africa to be able to identify demographic specific risk factors.

Methods:

102 owners of dogs presenting to the OVAH for bite wound completed a computer-based survey.

Results:

In 6.9% of the dog fights one of the dogs involved died or were euthanased. In 2.9% of cases there was a human injury. 84% of dog fights happened on the owners property. Mean number of dogs owned in these households was 3.79 dog (SD 2.48). A bitch was on heat at the time of the fight in 10% and a new dog was introduced to the household recently in 22.8% of cases.

In 57.6% of cases the dog had fought previously. In 60.2% of cases only one other dog was involved in the dog fight, in 28.2 there were two dogs and in 11.2% there were more than two dogs. American Pitbull Terriers were over-represented compared to hospital breed frequency 1.77(95% CI 1.13-2.76).

The sex of the dog with bite wounds was male intact, male castrated, female spayed, female intact in 30.9%,20.6%,22% 27.9% respectively and in the primary other dog male intact, male castrated, female spayed, female intact and female unknown status in 39.1%,15.1%, 28.0%, 22.1%, 4.4% respectively.

Conclusions:

The location and risk factors of intra-specific aggression seen differs from that described in other countries as with the required mitigation strategies.

P008 / #105

Topic: AS05 Clinical Pathology

MYOCARDIAL REMODELLING IN FELINE HYPERTHYROIDISM – A PRELIMINARY STUDY

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Introduction:

Feline hyperthyroidism is the most common endocrinopathy in these animals. Although it is often accompanied by heart hypertrophy, cardiac remodeling is not well described.

Objectives:

Describing heart remodeling of cats with hyperthyroidism in comparison to primary feline hypertrophic cardiomyopathy (HCM).

Methods:

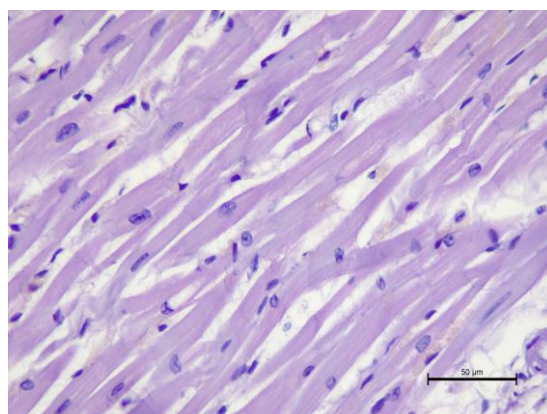
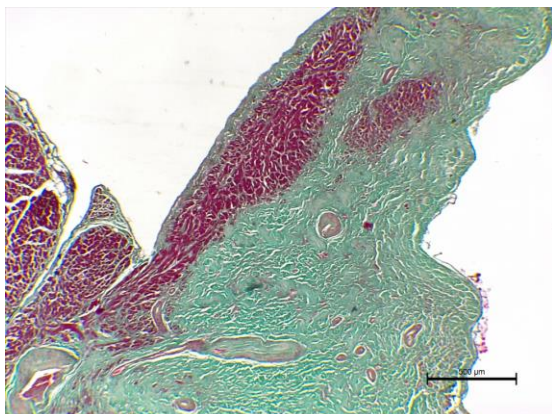
Hearts collected during autopsy of cats diagnosed with either hyperthyroidism (HT; n=7) or hypertrophic cardiomyopathy (HCM; n=7) underwent gross morphometry, samples collection and staining with hematoxylin-eosin and Masson-Goldner trichrome stain. The presence of cardiomyocyte degeneration, fibrosis, calcification, fibers disarray and coronary vessels walls hypertrophy was evaluated.

All results were analyzed using StatisticaPl 12 software.

Results:

The HT cats, as compared to HCM group, showed lower values of left-ventricular wall thickness (6.75 ± 1.46 mm and 10.09 ± 1.86 mm respectively; $p=0.009$) and interventricular septum thickness (6.31 ± 1.57 mm and 8.3 ± 0.79 mm respectively; $p=0.01$).

All the animals in both groups showed myocardial degeneration. Myocardial fibrosis was noted in 85.7% of HT animals (Fig. 1) and in 14.3% of HCM cats, while myocardial calcification was noted in only one animal in HT group. The thickening of small coronary vessels was noted in 71.4% of HT animals and 57.1% of HCM animals. All cats in HCM group showed myocardial disarray (Fig. 2), while it was noted in none of HT cats.



Conclusions:

The myocardial remodeling shows a different pattern in hyperthyroidism than in feline hypertrophic cardiomyopathy. Left ventricular walls thickening is less intense there than in HCM and is more frequently associated with myocardial fibrosis.

P009 / #108

Topic: *AS05 Clinical Pathology*

ANTIBIOGRAM OF BACTERIAL SPECIES ISOLATED FROM UTERINE FLUID OF 8 DOGS WITH PYOMETRA.

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Introduction:

Canine pyometra is commonly caused by ascending bacterial infection during oestrus, causing cystic endometrial hyperplasia and accumulation of pus in the uterine cavity. Identification of the offending organism is important for the selection of appropriate antibiotics to ensure early healing.

Objectives:

The aim of this work is to document the different types bacteria responsible in causing pyometra in female dogs and their antibiotic sensitivity.

Methods:

Uterine fluid sample was obtained post ovariohysterectomy from 8 female dogs of various breeds and age. The samples were sent for culture and sensitivity test against commonly used antibiotics in clinical practice. The diagnosis of pyometra was achieved on the basis of physical examination, haematology and serum biochemistry values, abdominal ultrasonography and vaginal cytology.

Results:

Out of the 8 samples, 4 were positive for *Klebsiella* spp., 3 samples were positive for *Escherichia coli* and 1 sample was positive for *Streptococcus viridans*. Amoxicillin clavulanate was found to be most sensitive (75%) in the results of 8 samples. Gentamicin was found to be equally sensitive to the pathogens (75%). Second and third generation cephalosporin antibiotics such as cefuroxime and ceftriazone were found to be highly sensitive (87.5%).

Conclusions:

Klebsiella spp. and *Escherichia coli* were the most common bacteria to cause pyometra in female dogs. Culture and sensitivity of uterine fluid of dogs diagnosed with pyometra is a valuable diagnostic tool in helping veterinarians choose the appropriate antibiotics to ensure fast healing. Second and third generation cephalosporins should be reserved for use only if first line antibiotics are resistant in sensitivity testing.

P010 / #109

Topic: AS05 Clinical Pathology

THE SALIVARY PROTEOME IN CANINE PYOMETRA

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Introduction:

Pyometra is the most common disease of the uterus in intact adult bitches. It consists of a suppurative bacterial infection of the uterus which may cause accumulation of inflammatory exudate and produces a variety of clinical manifestations.

Objectives:

To evaluate the changes in the salivary proteome in bitches with pyometra through a high-throughput quantitative proteomic analysis with the aims to explore whether saliva composition could reflect the physiopathological changes occurring in canine pyometra.

Methods:

Saliva samples from client-owned dogs were collected for diagnostic purposes, divided into two groups: healthy (H, n=6) and bitches with pyometra (P, n=6), and analysed using Tandem Mass Tags (TMT) - based approach.

Results:

Proteomic analysis quantified 707 proteins in saliva. Comparison of two groups revealed 16 unique proteins significantly modulated in saliva. According to Protein Analysis Through Evolutionary Relationships (PANTHER) classification tool, these proteins belong to two molecular functions: catalytic activity (80%) and binding (20%). Six different biological processes were involved, being metabolic and cellular process the majoritarian with 39.9 and 33.3% of proteins, respectively. Six biological pathways were involved, being blood coagulation, integrin signalling pathway, and plasminogen activating cascade the most represented with 22.2% of proteins each. Finally, in relation with protein class, 41% were hydrolases, followed by oxidoreductases (25%).

Conclusions:

There are changes in various proteins in saliva in canine pyometra reflecting different physiopathological changes occurring in this disease. These proteins could be a source of potential non-invasive biomarkers for this disease that should be confirmed in future studies.

P011 / #110

Topic: *AS05 Clinical Pathology*

CHANGES IN SERUM PROTEOME IN CANINE PYOMETRA

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Introduction:

Pyometra is the most common disease of the uterus in intact adult bitches after non-pregnant oestrous cycles. This disease can develop a wide range of clinical signs from subclinical to a fatal illness, which could make the early diagnostic of pyometra challenging, especially when there is no vaginal discharge.

Objectives:

To compare the serum proteome in healthy bitches and bitches with pyometra through a high-throughput quantitative proteomic analysis. The differentially expressed proteins could reflect the physiopathological changes occurring in canine pyometra and may be considered as potential biomarkers of the disease.

Methods:

Serum sample surplus left after routine serum analysis was used. In any case, additional sample was extracted from dogs for this study. Serum samples from six healthy (H) and six client-owned bitches with pyometra (P) were analysed by Tandem Mass Tags (TMT) analysis.

Results:

Proteomic analysis quantified 389 proteins in serum. When the two groups were compared, three unique proteins were modulated: keratin type I were down-regulated; while serotransferrin and immunoglobulin A were up-regulated in canine pyometra.

Conclusions:

There are changes in serum proteome in bitches with pyometra in comparison to healthy ones. Keratin type I, serotransferrin, and immunoglobulin A have potential as biomarkers of diagnosis in this disease.

P012 / #111

Topic: *AS05 Clinical Pathology*

CANINE SYSTEMIC MYCOSIS WITH SUDDEN ONSET HEART FAILURE – A CASE REPORT

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Introduction:

Heart failure can be caused by various diseases, including primary cardiologic structural diseases, endocrine disturbances, infectious agents and others. Diagnosis of primary cause of heart failure is often indispensable for proper treatment and good outcome.

Objectives:

Presentation of a case of a dog diagnosed with heart failure and ventricular tachycardia due to systemic mycosis.

Methods:

A nine-months-old male Caucasian Shepherd was referred to cardiac lab due to 4-week apathy and weakness, ascites, hydrothorax and ventricular tachycardia in ECG. During an attempt of pharmacological cardioversion a cardiac arrest occurred.

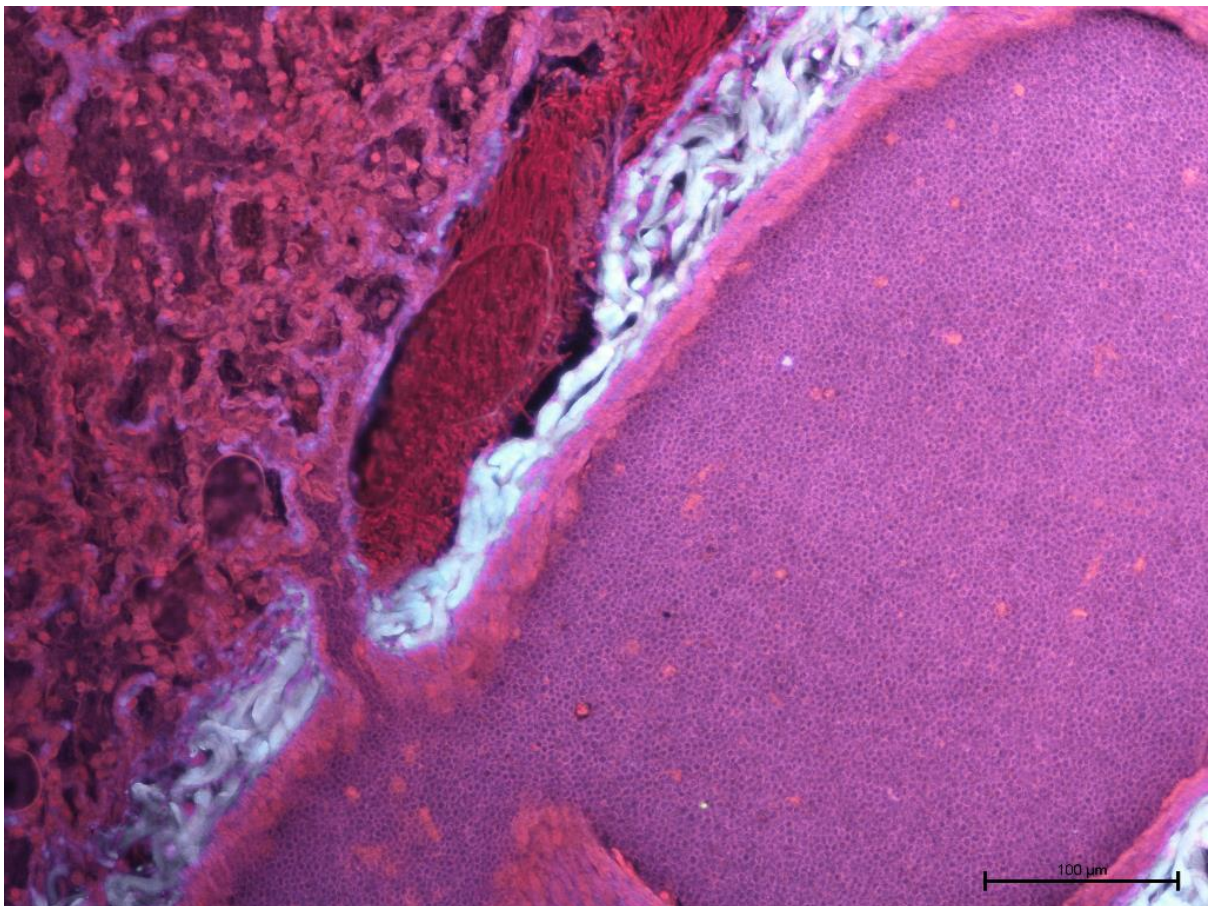
Results:

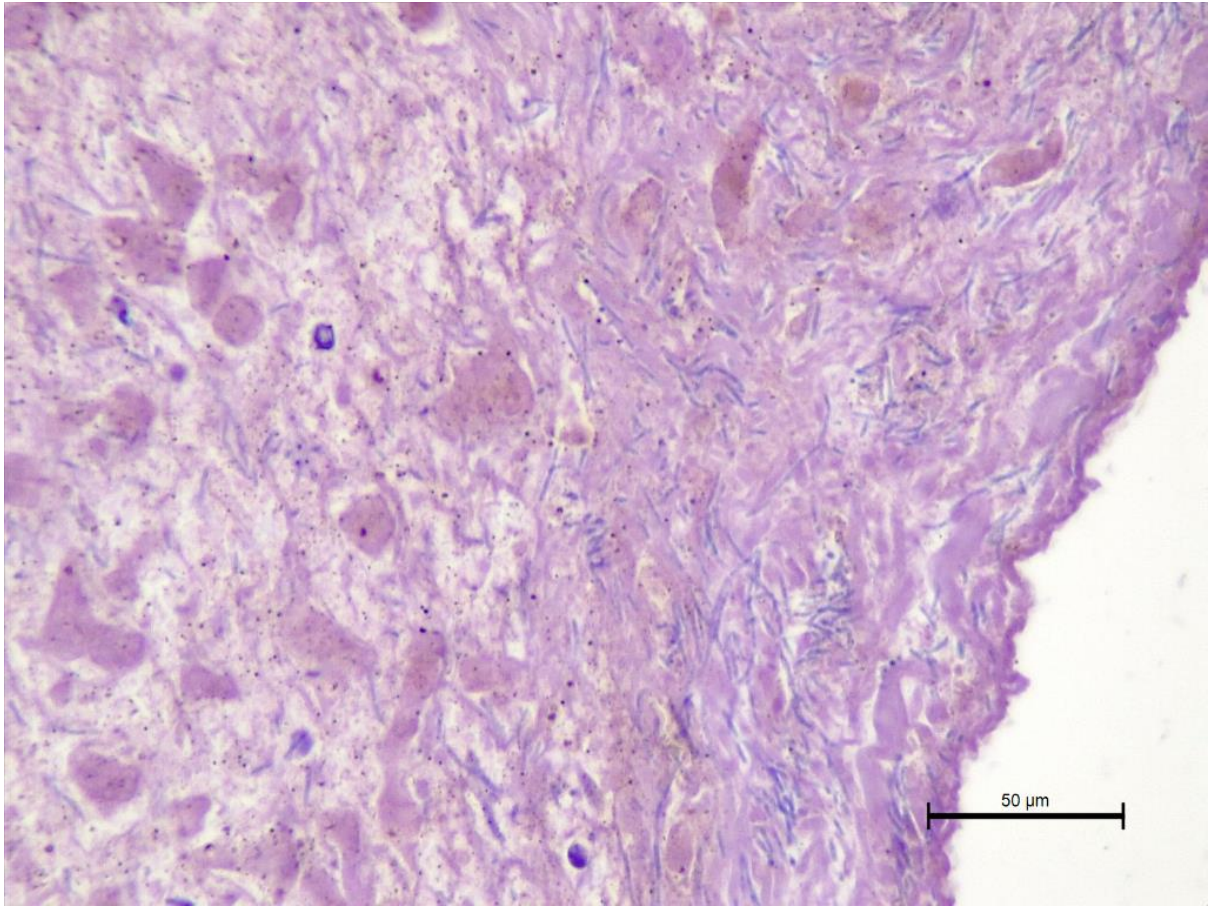
A post-mortem examination revealed pale mucous membranes and massive hydrothorax, ascites and hydropericardium with serosanguineous fluid. Lungs were severely hyperemic with foamy fluid in bronchi and trachea. The heart was severely enlarged with slack and thinned ventricular walls. The liver and kidneys were strongly congested and spleen was small and pale.

Histopathological examination revealed a severe degeneration and congestion of the liver and kidneys, depletion of lymphatic tissue in the spleen, pulmonary congestion and edema and multifocal fibrosis of cardiac muscle.

Multiple fungal non-branching, septate filaments were noted surrounding pulmonic blood vessels (Fig. 1-2); these elements were also observed under hepatic and kidney capsule (Fig. 3) and inside blood vessels in all internal organs. The presence of fungi was confirmed in fluorescence examination using propidium iodide.

In order to identify the agent, several attempts of fungal DNA extraction from formalin-fixed tissue specimens were undertaken.





Conclusions:

A systemic fungal infection was the most probable cause of the rapid heart failure and animal's death.

P013 / #132

Topic: AS05 Clinical Pathology

VALIDATION OF FAST-READ MICROSCOPIC SLIDE ON URINE SEDIMENT EXAMINATION OF DOGS AND CATS – A PRELIMINARY STUDY

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Introduction:

Although urinalysis it is an extremely useful and inexpensive tool, it is a much-neglected test in veterinary medicine because it's ponderous, time-consuming, imprecise and has wide variability.

Objectives:

This study evaluated the diagnostic accuracy and interchangeable capacity of the counting cell chamber Pentasquare slide in comparison with the traditional method of urine sediment using slide and coverslip.

Methods:

Thirty-four patients, (17 dogs and 17 cats) were included. A type II urinalysis was performed (dipsticks and urine sediment). Sediment evaluation was made with 3 preparations: one traditional method and two preparations on the Pentasquare chamber. Statistical analysis was performed using the dispersion and difference graphs of Passing-Bablok and Bland-Altman, respectively, for quantitative parameters.

Results:

Results demonstrated that the counting cell chambers can be used interchangeably with the slide and coverslip method. For qualitative parameters, sensitivity and specificity revealed high values, between 43% to 84% and 89% to 100% respectively. The agreement rate between methods was moderate to substantial (values from 0.47 to 0.77), assessed by the calculated Cohen's Kappa value. Repeatability revealed high values of correlation between observers, being the lowest value obtained of 68% and the highest of 100%. As for reproducibility, the counting cell chambers revealed correlation values of 61% to 100% for different elements, except for calcium oxalate crystals.

Conclusions:

Even though more studies are needed to evaluate the use of the Pentasquare slide as reference method for urine sediment in veterinary medicine this preliminary study verifies that counting cell chambers can be used for urine sediment evaluation in dogs and cats.

P014 / #144

Topic: AS05 Clinical Pathology

ANALYTICAL VALIDATION OF A COMMERCIAL AUTOMATED ASSAY FOR THE MEASUREMENT OF D-DIMER IN DOGS SERUM

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Introduction:

D-dimer is a peptide that comes from the degradation of blood clots, and thus it is used in dogs and cats for the detection of thrombotic disorders like pulmonary thromboembolism or disseminated intravascular coagulation (DIC). Its main advantage is that it has more specificity than other markers because it only appears when fibrinolysis occur.

Objectives:

The main objective of this work was test if an automated immunoturbidimetric assay commercialised for quantifying D-dimer in human blood could also be used for measuring this analyte in serum samples from dogs.

Methods:

It was performed the analytical validation of the method, testing its reproducibility, sensitivity and accuracy with canine serum samples. Also, a clinical validation with samples from healthy dogs and from dogs with coagulation disorders was carried out. The method (Diazyme Laboratories, California, USA) was adapted to an automated analyzer (Olympus Diagnostica GmbH AU600, Beckman Coulter, Ireland). Results were expressed in $\mu\text{g/mL}$ FEU (Fibrinogen Equivalent Units).

Results:

The D-dimer automated assay showed adequate reproducibility and sensitivity, with coefficients of variation below 10% and a limit of detection of $0.129\mu\text{g/mL}$ FEU, and a high accuracy, determined by linearity under dilution ($r=0.9663$). In addition, the healthy group showed very low concentrations of D-dimer (mean= $0.31\mu\text{g/mL}$ FEU) comparing to the group of dogs with coagulation disorders (mean= $5.06\mu\text{g/mL}$ FEU).

Conclusions:

These results indicate that this automated method can be used for the routine quantification of D-dimer concentrations in dogs serum.

P015 / #176

Topic: *AS05 Clinical Pathology*

PEDUNCULATED TRANSITIONAL CELL CARCINOMA IN TWO DOGS

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Introduction:

A non-castrated 12-year-old, cross-breed dog and a 6-year-old, castrated, female Yorkshire terrier were referred to the veterinary clinic due to haematuria and anxiety during urination which had started a few days before. The general condition of both dogs was good, however they seemed to feel severe pain during abdominal palpation.

Objectives:

Making a diagnosis and introducing an appropriate treatment.

Methods:

Ultrasound examination in both dogs revealed a well-filled urinary bladder in typical location and shape. Bladder wall was thickened. In the lumen pedunculated mass 18-20 mm in one dog and 25-30 mm in the other were found. Both dogs were referred to elective surgery.

Results:

The tumors were resected and sent for histopathological examination. In both cases transitional cell carcinoma was diagnosed. The postoperative period was uneventful. The owners refused adjuvant treatment. By now, both dogs have remained healthy for 2 and 3 years, respectively.

Conclusions:

Pedunculated transitional cell carcinoma is rare form of this type of tumor.

P016 / #181

Topic: AS05 Clinical Pathology

CAROTID BODY PARANGLIOMAS IN TWO DOGS

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Introduction:

A 9 year-old male Dachshund was referred to the veterinary clinic due to 2.5 cm in diameter deformation on the right side of the neck. The dog was in good general condition with no clinical signs. The second dog was a 9 year-old male boxer referred to the clinic due to ataxia and nystagmus. In the clinical examination, the 3 cm in diameter deformation on the left side of the neck was detected.

Objectives:

Making a diagnosis and introducing an appropriate treatment.

Methods:

An ultrasound examination, computed tomography and fine needle biopsy of the deformities were performed. Prednisolone was introduced in the Boxer dog at a dose of 1 mg/kg, after which clinical condition of the dog began to improve.

Results:

In the ultrasonography examination a 17x23x23mm, hypoechoic well marginated mass in the Dachshund and 24x34x34mm vascularized mass in the Boxer were located at the bifurcation of the common carotid artery. The computed tomography yielded the same result. In the cytological examination carotid body paragangliomas were confirmed. Both owners refused targeted treatment. The Dachshund has remained asymptomatic for over a year. The boxer's condition reverted to normal on prednisolone.

Conclusions:

Carotid body paragangliomas are rare neoplasms of dogs.

P017 / #201

Topic: AS05 Clinical Pathology

A NOVEL NMR-BASED CANINE METABOLOMICS PLATFORM OFFERS AN EXTENSIVE VIEW ON METABOLISM AND DIABETES MELLITUS

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Introduction:

Metabolomics has proven itself an invaluable research tool, providing comprehensive insight to systemic metabolism. However, the lack of scalable and quantitative methods with known reference intervals and documented reproducibility has prevented the use of metabolomics in the clinical setting.

Objectives:

To describe the development and validation of a quantitative nuclear magnetic resonance (NMR) -based metabolomics platform for canine serum and plasma samples.

Methods:

Altogether 8247 canine samples were analyzed using a Bruker's 500 MHz NMR spectrometer. Statistical approaches derived from international guidelines were used to determine reference intervals, study method precision, analyte storage stability, the effect of prolonged contact to red blood cells, differences of blood collection tubes, interference of lipemia, hemolysis and bilirubinemia and for conducting method comparison. The method's practical relevance was studied in a hyperglycemic cohort.

Results:

We determined canine reference intervals for 123 biomarkers, most of which are previously unpublished. The reproducibility of the results of the NMR platform appeared generally outstanding, and the integrity of the results is ensured by following standard blood drawing and processing practices. We identified a plethora of biomarkers with significant differences between the hyperglycemic group and the normoglycemic group, including branched-chain amino acids, glycoprotein acetyls, acetate, fatty acids, cholesterol, phenylalanine, lactate, triglycerides and lipoprotein particle concentrations and composition.

Conclusions:

Owing to the advantages of quantitative results, high reproducibility, and scalability, this canine metabolomics platform holds great potential for numerous clinical and research applications to improve canine health and well-being.

Topic: AS05 Clinical Pathology

APOLIPOPROTEIN C-III, FAM184A AND POTASSIUM CHANNEL SUBFAMILY K ARE INCREASED IN DOGS NATURALLY INFECTED WITH DIROFILARIA IMMITIS

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Introduction:

Canine dirofilariosis or heartworm disease, caused by *Dirofilaria immitis* habitually develops as a chronic affection of pulmonary arteries, lung parenchyma and heart. As the disease progresses, other organs such as liver and kidney could be also affected. To the author's knowledge, there are limited data of serum proteome on these clinical animals.

Objectives:

The aim of the present study was to identify potential serum biomarkers of diagnosis in canine dirofilariosis.

Methods:

For this, serum surplus samples from client-owned dogs were collected, pooled into two groups: naturally infected dogs with severe clinical signs of dirofilariosis (dirofilariosis, n=3) and healthy dogs (control, n=3), and analysed using Tandem Mass Tag (TMT) proteomics.

Results:

Sixty-eight proteins were identified in both groups. Of those, three proteins not previously described in canine dirofilariosis showed high difference in abundance between the groups: Apolipoprotein C-III, FAM184A and potassium channel subfamily K. Apolipoprotein C-III (5.12-fold higher in dirofilariosis) is a major component of triglyceride-rich lipoproteins and HDL and increases in this protein have been considered as predictor of risk of coronary disease in humans. The function of protein FAM184A (9.17-fold higher in dirofilariosis) remains still unknown. In humans, FAM184A is described in 27 tissues, being lungs high expression. Potassium channel subfamily K showed 9.44-fold higher abundance in dirofilariosis. Expression and activity of this protein are strongly reduced in pulmonary artery smooth muscle and endothelial cells in humans with pulmonary arterial hypertension.

Conclusions:

These proteins could be considered as potentially suitable diagnosis biomarkers for the diagnosis of canine dirofilariosis.

P019 / #228

Topic: AS05 Clinical Pathology

IDENTIFICATION OF SERUM BIOMARKERS OF TREATMENT RESPONSE IN DOGS NATURALLY INFECTED WITH *DIROFILARIA IMMITIS*.

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Introduction:

Canine dirofilariosis is caused by the nematode *Dirofilaria immitis* and habitually causes chronic affection of pulmonary arteries, lung parenchyma and heart. In case of disease progression, other organs such as liver and kidney could be also affected. To the best of our knowledge, there is no data regarding the possible changes in serum proteome after treatment.

Objectives:

The aim of the present study was to identify potential serum biomarkers of treatment response to dirofilariosis using a proteomic approach.

Methods:

Serum samples of five naturally infected and clinical dogs were collected before and after an effective treatment against dirofilariosis based in ivermectine, doxycycline and melarsomine. Two-dimensional electrophoresis gels (2DE) of the pooled samples were run in triplicate.

Results:

2DE image analysis showed 38 differentially expressed spots between the groups. Of those, 15 proteins were identified by mass spectrometry as they were differentially expressed in the serum proteome of clinical dogs before and after treatment. The functions of these proteins are mainly related to metabolite transport (Apolipoprotein-A1 and vitamin-D-binding protein) and immune response (Immunoglobulin G fractions, complement, haptoglobin and alfa-1 glycoprotein).

Conclusions:

Serum proteome showed changes after an effective treatment against dirofilariosis. These differentially modulated proteins could be considered as potentially suitable biomarkers of response to treatment in this disease.

P020 / #236

Topic: AS05 Clinical Pathology

EVALUATION OF BLOOD LACTATE IN VARIOUS SURGICAL CONDITIONS IN DOGS AND CATS

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Introduction:

The concentration of blood lactate reflects the level of cellular anaerobic metabolism being a primary indicator of tissue hypo-perfusion. Elevated lactate levels and the rate of lactate clearance strongly correlates with the risk of multi-organ dysfunction and survival following traumatic injury, and lactate clearance could serve as an endpoint to guide resuscitation.

Objectives:

Our study aimed to evaluate the variation and dynamic of blood lactate levels in different surgical conditions, over a period of 24 hours, in dogs and cats with various traumatic surgical conditions.

Methods:

A prospective cohort study was conducted on 12 patients that met the criteria of inclusion in the study. The blood sample was collected from the cephalic vein or the saphenous vein. We used the Arkray Lactate Pro™ analyzer for the seriate measuring of lactate levels at T0 (initial blood lactate level), and T24 (mmol/L).

Results:

In the dogs evaluated, from the total of seven patients (58%), at the time of T0, two patients had normal values, respectively five patients had abnormal values; at T24 - three patients had normal values, respectively four patients had abnormal values. Blood lactate values considered normal for these species are 2 mmol/L. In the cats evaluated, of the total of five patients (42 %.), all patients had abnormal values at T0; at T24 - four patients had normal values, respectively, one patient had a value above the limit.

Conclusions:

Our results concluded that from a clinical point of view, blood lactate is a valuable marker of primary triage and an important prognostic indicator.

P021 / #245

Topic: AS05 Clinical Pathology

HYPERGAMMAGLOBULINEMIA AND ENCEPHALITOZOON CUNICULI INFECTION IN PET RABBITS

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Introduction:

Diagnosis of subclinical *Encephalitozoon cuniculi* (EC) infections is often difficult in pet rabbits due to high seroprevalence and intermittent elimination.

Objectives:

Aim of this study was to validate serum electrophoresis as an additional tool in diagnosis of *Encephalitozoonosis*.

Methods:

19 rabbit samples suspicious for EC were included in this study. Antibodies against EC were detected by indirect immunofluorescence (MegaFLUO ENCEPHALITOZOON, Megacore), total protein was measured by Biuret method (Cobas 8000, Roche), electrophoresis was performed by CZE (MINICAP, Sebia).

Results:

84.2% of the samples were positive for EC antibodies. 81.3% of these animals showed a polyclonal hypergammaglobulinemia (23.1% of these with an EC titer of 1:320, 76.9% of $\geq 1:1280$). In one third of those, the gamma globulin fraction was above 20% (reference interval 1 – 12%). More than 2/3 of samples with EC titers $\geq 1:1280$ showed both, polyclonal hypergammaglobulinemia and hyperproteinaemia.

Conclusions:

As described in literature, a considerable percentage of animals with positive titers against EC showed a hypergammaglobulinemia similar to pet rabbits infected experimentally with *Trypanosoma evansi*. A positive antibody titer reflects contact with the pathogen. It is no proof of an existing infection and no proven cause of existing clinical symptoms. A reliable diagnosis in living animals is challenging due to diverse clinical symptoms (CNS symptoms, renal insufficiency, uveitis) and the difficulty of PCR examination. Polyclonal hypergammaglobulinemia is characteristic for acute antibody production, therefore supports the possibility of an EC infection in animals with high EC titers. Further studies with more animals and results from clinical examinations are necessary.

P022 / #12

Topic: *AS07 Dentistry*

COMPARISON OF TWO DIFFERENT GINGIVECTOMY TECHNIQUES IN DOGS: CLASSIC VERSUS LASER ASSISTED

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Introduction:

Gingival enlargement is an increase in the size or thickness of the gingiva. It may be due to gingival hyperplasia or gingival hypertrophy. Accurate diagnosis is ensured by microscopic analysis of the harvested gingival tissues. Possible causes for gingival enlargement are multiple: breeds' susceptibility, medications, local conditions. When performing gingivectomy the aim is to remove the gingival wall of the resulted pseudopockets and restore normal gingival architecture.

Objectives:

There are known multiple techniques, all of them with their pros and cons. We wanted to compare gingivectomy made with a scalpel blade versus soft tissue laser surgery.

Methods:

Two dogs were diagnosed with gingival enlargement. After establishing the physiologic height and contour, we performed the most widespread procedure for gingivectomy, the one made with a scalpel blade and the most innovative one, laser-assisted.

Results:

Cold steel incision is a cheap and accessible method. However, a considerable intraoperative bleeding results, thus limiting the surgical field view, requiring frequent swabbing. Cold blades dull quickly, so we had to replace the scalpel blade twice.

Diode lasers are best absorbed by the melanin and hemoglobin, present in gingival tissues. Thus, we achieved hemostasis while performing the gingivectomy. A clean, nice cut resulted, offering a clear view of the surgical field. Working time was noticeably shorter.

Conclusions:

Choosing the method for gingivectomy is a matter of availability in the office. Both methods, used properly will perform the needed result.

P023 / #23

Topic: *AS07 Dentistry*

**INFRAORBITAR CUTANEOUS SINUSES, SECONDARY TO DENTAL INFECTIONS IN DOGS:
TWO DIFFERENT THERAPEUTIC APPROACHES**

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Introduction:

Dental abscesses are an acute exacerbation of a periapical granuloma. Enlarged dentoalveolar abscesses burrow along the path of least resistance in hard and soft tissues, resulting in the formation of sinuses. In some instances, the path of the least resistance leads to the skin forming cutaneous sinuses. Maxillary fourth premolars have their root tips localized caudal to infraorbital foramen. Any dental abscesses involving them will be cutaneously expressed in the infraorbital topographical region.

Objectives:

The resolution of the cutaneous sinuses follows the identification and elimination of the source of infection by surgical endodontics or removal of the causal tooth or teeth.

Methods:

Two cases of infraorbital cutaneous sinuses secondary to dental infections of the fourth premolars were presented to us. After performing cone-beam computed tomography and identifying the offending teeth, maxillary fourth premolars, the decision was made to accomplish clinical and radiological healing one by surgical extraction and one by surgical endodontics.

Results:

Both cases achieved clinical and radiological healing, but the healing time was significantly shorter in surgical endodontics. Inflammation has decreased more quickly and the fistula has closed significantly faster in surgical endodontics.

Conclusions:

Long term radiological surveillance, once per year, is imperative for surgical endodontics, but a yearly check-up is required even in ordinary dental maintenance. Both methods are reliable and acquire the needed results. When choosing surgical endodontics one should consider multiple factors like precise diagnosis, surgeon's experience and willingness of the owners to invest time and money for their pet.

P024 / #44

Topic: *AS07 Dentistry*

EFFECTIVENESS OF A VEGETABLE-BASED DENTAL CHEW TO REDUCE DENTAL PLAQUE AND CALCULUS FORMATION AS WELL AS GINGIVITIS IN DOGS - COMPARISON WITH REFERENCE CHEWS.

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Introduction:

Giving dental chews to dogs is part of the passive homecare that helps prevent the formation of plaque and tartar.

Objectives:

The objective of the two studies was to assess the effectiveness of a vegetable-based dental chew to reduce plaque and calculus formation and gingival bleeding in owner's dogs, and to compare it to reference chews that have a proven effectiveness on both plaque and calculus.

Methods:

The first study (trial 1) was conducted on 45 small dogs (< 10 kg) and the second (trial 2) on 60 large dogs (15-30 kg). In both studies, dogs were randomly assigned to three different groups. During 30 days, one group received no chew (control), the second received one reference chew (RC) per day (RC1 in the trial 1 and RC2 in trial 2) and the last one received one vegetable chew (VF) per day, adapted to body size. All dogs were fed the same diet during the trial and had their teeth scaled and polished on Day 0.

Results:

The 3 types of chews (RC1 and RC2 and VF) were found to be efficacious to reduce plaque and calculus formation. There was no significant difference between RCs and VF in both trials except for the GBI which was lower in the VF groups. The difference between RC2 and VF in trial 2 concerning the calculus score was also close to significance.

Conclusions:

Daily administration of the vegetable dental chew is efficient to reduce plaque and calculus formation and gingival bleeding and has a better efficacy on gingival bleeding than 2 other reference products. It can therefore be used with confidence at home for dental care prevention.

P025 / #71

Topic: AS07 Dentistry

LASER ASSISTED OPERCULECTOMY IN THE MANAGEMENT OF AN IMPACTED INCISOR IN A DOG

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Introduction:

A missing tooth on the dental arch by the age of 14 months in dogs, rises up a lot of questions. An X-ray investigation is imperative to establish the presence/absence of the tooth, any accompanying lesions and the localization of the tooth, if present. Treatment options may vary from the most spread procedure: exodontics to surgical-orthodontic management.

Objectives:

Our goal was to achieve the optimal morpho-functional results with minimally invasive procedures.

Methods:

Preoperative radiographic imaging revealed a shallow impaction. 401 was localized mesial and rostral to 402, resting with the disto-incisal angle underneath the crown of 402. Operculectomy was decided based upon the radiographic findings. Exploring the gingiva with the dental probe allowed the accurate localization since tooth enamel has a different consistency than the bone. Exposure of one half of the crown was performed with the aid of lasers, wavelength 940nm. An eruption impulse was given by gently luxating the tooth following laser-assisted exposure.

Results:

The procedure was made with no bleeding, ensuring rapid recovery and zero risks of damaging the impacted tooth. 940nm wavelength is not active on hard tissues. At the 5 days recall the tooth showed signs of eruption, and epithelization of the surgical cut was complete. The full eruption of the involved tooth was achieved in one month.

Conclusions:

Operculectomy performed with the aid of lasers for impacted teeth ensures a clean surgical field, decreases the risk of intraoperative and postoperative complications.

P026 / #251

Topic: AS07 Dentistry

INVESTIGATION INTO THE ROLE OF INFLAMMATORY CYTOKINES AND VITAMIN D IN FELINE TOOTH RESORPTION

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Introduction:

Tooth resorption (TR) is a common dental problem in cats. The aetiology remains unknown, but TR lesions show evidence of odontoclast dysregulation. Inflammatory cytokines, vitamin D and vitamin D metabolites have been frequently reported to play important roles in both periodontal disease and tooth resorption in cats.

Objectives:

To investigate the involvement of inflammation and vitamin D in progression of TR, expression of the inflammatory cytokines, the nuclear vitamin D receptor (VDR), and the effect of vitamin D on feline osteoclast formation were investigated.

Methods:

TR status were confirmed by dental radiographs (n=24). Expression of the inflammatory cytokines and VDR were performed by qPCR. *In vitro* feline osteoclast culture model system was used to test vitamin D effect on feline osteoclasts.

Results:

Twenty one cats were diagnosed with at least one TR lesion (21/24, 87.5%) and 17 cats presented multiple TR lesions (17/24, 70.8%). There was no statistically significant difference in mRNA expression of any of the inflammatory cytokines (e.g. IL1B, IL6, P2X7R, TNF and IFNG) and VDR between TR -ve and TR +ve teeth samples by qPCR. The active form of vitamin D3 (1,25(OH)₂D₃) induced osteoclast formation and resorption activity at physiological levels (0.1 - 1 nM), but osteoclast formation and resorption activity were inhibited at a higher dose (5 - 10 nM).

Conclusions:

There was no local difference of mRNA expression of inflammatory cytokines and VDR between TR unaffected and affected teeth. Feline osteoclast formation and activity responded in a concentration dependant manner to the active form of vitamin D3 (1,25(OH)₂D₃).

P027 / #86

Topic: AS08 Dermatology

STUDY OF FACTORS ASSOCIATED WITH CANINE SKIN EXTENSIBILITY

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Introduction:

We have heard some veterinarian's empirical reports that low dermal collagen was seen in toy poodles with diluted coat color more frequently than in toy poodles with non-diluted coat color. Our hypothesis is that gene polymorphisms related to coat color are also related to dermal collagen.

Objectives:

Our objective was to investigate associations between the dogs' skin extensibility and coat color-related gene polymorphisms, age, body weight, and neuter status.

Methods:

We collected swab samples from 68 toy poodles, performed DNA extraction according to standard protocols, and selected Melanocortin 1 receptor c.916C>T, Tyrosinase-related protein 1 c.991C>T, c.121T>A, c.1033_1035del (Schmutz et al. 2002) and Melanophilin c.-22G>A (Drögemüller et al. 2007) as candidate genes. The skin extensibility index of the hips was measured using following formula : vertical height of the skin fold divided by body length multiplied by 100. The value is 14.5% or less in normal dogs. We also recorded the dogs' age, body weight, sex and neuter status.

Results:

There was a meaningful association between hip skin extensibility and both sex and age ($P=0.000542$, $P=0.028$, respectively), but there was no association with either coat color-related gene polymorphisms or body weight or neuter status ($P>0.05$, respectively).

Conclusions:

The correlation between sex and skin extensibility suggests that secretion of cortisol or steroidal hormones might affect skin extensibility. In future, we will investigate if males and females have different quantities of these hormones. In addition, we will investigate polymorphisms on collagen genes and determine correlations between skin extensibility and the polymorphisms.

Topic: AS09 Diagnostic imaging

COMPLEX CONGENITAL HEART DISEASES IN TWO DOGS

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Introduction:

Tricuspid valve dysplasia (TVD) includes congenital malformations of the tricuspid valve leaflets, chordae tendineae or papillary muscles, incomplete separation of valve leaflets and focal agenesis of valvular tissue. Echocardiography is a diagnostic method of choice. We present two cases of dogs with TVD and other accompanying congenital heart diseases such as atrial septal defect (ASD) in one and pulmonic stenosis (PS) in the other one.

Objectives:

Assessment of the need to introduce therapy and selection of the appropriate one.

Methods:

Echocardiographic and electrocardiographic examination was performed in both dogs: an asymptomatic 2 year-old female Yorkshire terrier with severe heart murmur and a 2 year-old male French bulldog with advanced ascites and exercise intolerance.

Results:

In the Yorkshire terrier echocardiography showed TVD with ASD which was confirmed with saline contrast (bubble) study. For non-cardiac reasons the patient required anesthesia which was uneventful. Pimobendan was introduced due to significant enlargement of the right ventriculum. Currently, the dog remains asymptomatic. In the French bulldog echocardiographic examination showed advanced TVD and PS with severe right ventriculum enlargement. ASD and VSD were excluded on the basis of the bubble study. Due to ascites furosemidum was introduced. The dog's clinical condition improved significantly and his condition has remained stable thereafter.

Conclusions:

These are two rare cases of complex congenital heart diseases affecting tricuspid valve.

P029 / #240

Topic: *AS09 Diagnostic imaging*

THE VISUALIZATION OF THE SUPERFICIAL AND DEEP DIGITAL FLEXOR TENDONS BY ULTRASOUND IMAGING OF CARPAL JOINT IN DOGS

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Introduction:

Ultrasonography is a quick, widely available, and cheap method of diagnostic imaging in veterinary medicine. Ultrasonography is especially well studied in the evaluation of soft tissue structures in small animals.

Objectives:

The aim of the study was to determine the possibility of ultrasound imaging the superficial and deep digital flexor tendons in dogs. Visualization of these structures could become useful in diagnosing injuries.

Methods:

Eight healthy crossbreed dogs, 5 females, and 3 males, weighing on average of 27.8 kg were used in this research. The mean age of studied dogs was 10 years. Animals were placed in right lateral recumbency, the left carpal joint of each dog was examined in a neutral position.

The hair around the left carpal joint was clipped, and the sagittal and transverse ultrasonographic scans were received. Ultrasonographic examination was performed with a 7.5-12 MHz linear probe (MyLabTMFive, Esaote). The transducer was placed on the palmar side of the carpal joint between the two rows of the carpal bones.

Results:

The superficial and deep digital flexor tendons were visualized on sagittal and transverse sonograms in each examined dog. These tendons were seen as intermediate-grade echogenic structures with inhomogeneous areas. On the transverse sonograms, the deep digital flexor tendon was seen as a comma shape, while the superficial digital flexor tendon was an oval shape.

Conclusions:

The results showed that the ultrasonographic examination was an easily adequate technique for visualized normal tendons. It can be suggested that ultrasound will detect abnormalities associated with damage and diseases of these structures.

P030 / #116

Topic: AS10 Endocrinology

THE NOVEL INFLAMMATORY MARKER GLYCA IS ELEVATED IN CANINE HYPOTHYROIDISM AND ASSOCIATES WITH LIPID ABNORMALITIES

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Introduction:

Hypothyroidism is characterized by the diminished formation of thyroid hormones, predominantly caused by immune-mediated destruction of the thyroid gland. It is associated with multiple metabolic derangements including dyslipidemia, lowered metabolic rate, and obesity. Glycoprotein acetyls (GlycA) is a novel inflammatory marker, which has been linked to risk of severe infection and mortality in humans.

Objectives:

To determine the metabolic changes occurring in dogs suffering from hypothyroidism and to evaluate the factors correlating with the levels of the inflammatory marker GlycA in these patients.

Methods:

The case group consisted of samples ($n = 27$) with very low concentrations ($<1,3 \mu\text{g/dl}$) of the thyroid hormone thyroxine. The control group consisted of 25 samples with normal biochemistry. All samples were analysed by a canine-specific NMR metabolomics platform. Wilcoxon's test's Bonferroni-corrected p -values and partial least squares discriminant analysis were used to determine the metabolites with the highest discriminative ability between the groups. The correlation of these biomarkers, as well as age and gender, to GlycA levels in hypothyroid dogs was assessed using Pearson's correlation.

Results:

The metabolites with the highest discriminative ability ($p < 0,05$, $\text{VIP} > 1,5$) between the groups were GlycA, VLDL lipids, L-LDL lipids and LDL diameter. All of these lipid biomarkers, as well as age, correlated with GlycA ($p < 0,05$) in hypothyroid dogs.

Conclusions:

Concentrations of the novel inflammatory marker GlycA are higher in hypothyroid dogs than controls and correlate with age and lipid levels. The significance of GlycA levels on disease management and prognosis require further study.

P031 / #149

Topic: *AS10 Endocrinology*

CONCURRENT HYPERCORTISOLISM AND DIABETES MELLITUS: RETROSPECTIVE EVALUATION OF 32 DOGS.

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Introduction:

In dogs with concurrent hypercortisolism (HC) and diabetes mellitus (DM) the role of trilostane treatment in improving glycemic control is controversial.

Objectives:

This study aims to evaluate the influence of HC treatment over DM control.

Methods:

Thirty-two dogs affected with HC and DM were retrospectively selected. Eighteen (56%) dogs were first diagnosed with DM and 14 (44%) with HC. Good control of DM was defined when clinical signs (polyuria, polydipsia, weight loss) were absent and in 2 consecutive evaluations insulin dose remained unchanged because of appropriate blood glucose curve; dogs with HC were considered well controlled when specific clinical signs (polyuria, polydipsia, worsening of dermatological abnormalities, panting) were absent and 1-hour post-ACTH-stimulation or “pre-trilostane” serum cortisol concentration was < 5 µg/dL.

Results:

All dogs were receiving trilostane orally, once daily (18/31; 58%) or twice daily (13/31; 42%) and insulin (22 lente, 7 glargine and 3 NPH) subcutaneously, twice daily. Good control was achieved for both DM and HC in 13/31 (42%) dogs. Dogs achieving good control of HC resulted significantly associated with good control of DM (P=0.001), with OR 17.33 (95% confidence 2.9-103.1). After a 9 months minimum of trilostane and insulin treatment, good control of DM was achieved in 11/13 (85%) of dogs receiving trilostane twice daily and in 3/6 (50%) receiving trilostane once daily (P=0.2). Median insulin dose was 0.95 U/kg and 0.91 U/kg twice daily in dogs with good control of HC and DM, respectively.

Conclusions:

Based on results obtained, reaching a good control of HC positively affects DM management.

P032 / #122

Topic: *AS11 Exotics*

INTRAMEDULLARY INTERLOCKING TITANIUM NAIL REPAIR OF FRACTURED HUMERUS IN A COMMON BUZZARD (BUTEO BUTEO) – CLINICAL CASE REPORT.

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Introduction:

Avian orthopedic injuries are common and challenging in veterinary practice. Osteosynthesis is a treatment of choice in most cases. The surgery is aimed at improving or returning to full functionality of the damaged limb.

Objectives:

This report describes the repair of a fractured humerus in a common buzzard using a titanium interlocking nail (IN).

Methods:

A wild, adult common buzzard was presented with an open, short oblique, midshaft right humeral fracture. At presentation an extensive swelling, crepitus and associated open wound of the proximal right wing was found. Series of radiographs confirmed the initial diagnosis of right humeral fracture. The debridement of necrotic tissue was performed and after reaming of the medullary canal the 6-mm-diameter, 92-mm-long, titanium IN (MEDGAL-VET, Poland) was placed from the larger humeral tubercule approach. Single 2-mm-diameter, 10-mm-long transcortical screws (MEDGAL-VET, Poland) were placed through the proximal and distal holes of the IN.

Results:

Postoperative radiographs showed satisfactory fracture reduction and proper limb alignment. The bird went to a rehabilitation center where, 14 days after the surgery, as a result of poor general condition, cardiopulmonary action was stopped. The necropsy showed numerous petechiae on the liver and kidneys which could suggest generalized sepsis. Beginnings of callus formation were noticed macroscopically in the site of fracture line.

Conclusions:

The used method allows for stable osteosynthesis protecting against action at the fracture site of rotational, torsional and compression forces. The IN implantation causes less trauma to soft tissues and skin as in the case of using bone plates in birds.

P033 / #125

Topic: AS11 Exotics

MANAGEMENT AND EVOLUTION OF INTRAOSSEOUS ABSCESES AND OSTEOMYELITIS IN THE HUMERAL BONE CAUSED BY STAPHYLOCOCCUS SPP. IN A EUROPEAN HEDGEHOG (ERINACEUS EUROPAEUS)

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Introduction:

This study presents a case of intraosseous abscess formation in the humeral bone of a hoglet, caused by *Staphylococcus* spp.

Objectives:

Our objective was to evaluate this case using multiple imaging techniques and to establish treatment based on antibiotics sensitivity test.

Methods:

The hoglet was brought into our clinic with an open wound on the forelimb presenting purulent drainage. During the physical examination, changes in the volume of the humerus were found, and the proprioceptive reflex was absent, the examination was followed by performing imaging techniques. The radiography revealed aspects of osteolysis, a humeral pathological fracture and intraosseous abscesses were suspected, the CT scan confirmed the diagnosis. Bacteriological examination showed infection with *Staphylococcus* spp. The antibiogram revealed that the bacteria was sensitive to fluoroquinolones and cephalosporins. The treatment consisted of a fluoroquinolone, gastric protectors, probiotics and calcium supplement orally. The forelimb was immobilised and the wound was cleaned daily. A sterile gauze was used as drain. In 10 days, the wound started to shrink, but the purulent drainage was still present, subcutaneous abscesses appeared. Under mild sedation, these were drained and ointment with silver sulfadiazine was introduced into the cavity.

Results:

After 3 weeks CT and radiography were repeated, showing that the fracture healed and the bone was more dense. The hedgehog was released after 1 year of rehabilitation.

Conclusions:

This case indicates that diagnostic imaging and evidence based medicine is very important for treating wildlife. Given the fact that the antibiogram revealed multiple antibioresistance we should never neglect sending samples for culture and sensitivity test.

P034 / #65

Topic: AS12 *Feline medicine*

BEHAVIOURAL SIGNS OF PAIN IN MALE CATS WITH FELINE LOW URINARY TRACT DISEASE (FLUTD)

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Introduction:

Assessing the chronic pain is a challenge in feline practice since cats are usually hiding the pain. However, in the past years a pain scales have started to be used by both veterinarians and owners. The wide usage of these should help to increase the quality of life in affected animals.

Objectives:

The aim of this study was to assess the pain experienced by tomcats with obstruction of the urinary tract (FLUTD) using a Glasgow Feline Composite Measure Pain Scale (CMPS-F).

Methods:

This prospective study was conducted on 27 male cats (age 4 ± 2 years, BCS 4 ± 0.3) with clinical signs consistent with urinary tract obstruction. The results were collected for 16 months. The male cats were assessed using the modified Glasgow CMPS-F, and additional urea and creatinine measurements were performed in 11 cats. The characteristics used to assess the patients were ranked by severity in the individual sections of the questionnaire.

Results:

Our work shows that the resulting pain intensity prevalent in patients with FLUTD is at a level of moderate pain. In 26 out of 27 examined male cats, we determined a score higher than 5 points, which indicates the use of analgesics.

Conclusions:

Our study highlighted the importance of assessing pain in feline patients. In cats with lower urinary tract obstruction the pain is often moderate to severe and thus, the cats should receive appropriate analgesia.

P035 / #78

Topic: AS12 *Feline medicine*

DILATED CARDIOMYOPATHY IN A RAGDOLL MIXED CAT

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Introduction:

A 2 year 11 month old Ragdoll mixed female spayed cat was presented to Petvet Animal Hospital with the history of abdominal distension, breathing difficulty and lethargy. The cat was fed a mix of home cooked and commercial cat food.

Objectives:

Clinical findings were gallop rhythm upon cardiac auscultation and exercise intolerance. Thoracic (Figure 1) and abdominal radiograph revealed cardiac enlargement and severe ascites. Echocardiography (Figure 2) revealed dilatation of all four chambers of the heart, prominently the left atrium. Regurgitation pattern was noted at the level of the mitral valve. Haematology and serum biochemistry values were within normal levels.



Figure 1: Ventrodorsal thoracic radiograph showing cardiac enlargement.

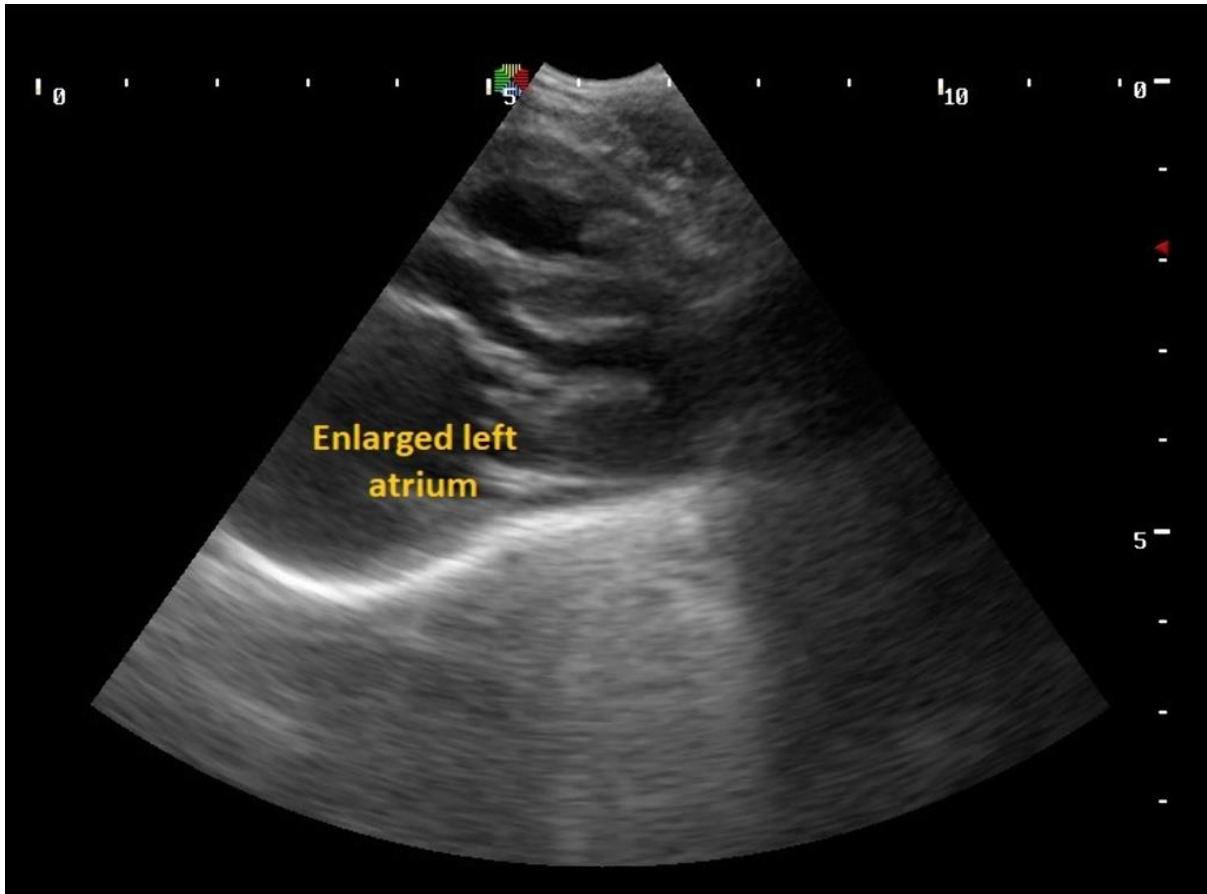


Figure 2: Echocardiography showing dilated left atrium.

Methods:

Abdominocentesis was performed and straw coloured transudate was obtained. The patient was managed with furosemide at 2mg/kg orally twice daily tapered to 1mg/kg orally twice daily. The patient was also given commercial veterinary formulations of taurine as dietary supplementation. Electrolyte level was monitored on monthly basis. Abdominocentesis was performed once every 2 months to improve quality of life.

Results:

Despite treatment, the patient died naturally 6 months after diagnosis of dilated cardiomyopathy.

Conclusions:

The life expectancy of cats with dilated cardiomyopathy depends on the severity of myocardial lesions and carries often a less favourable prognosis. Taurine supplementation may aid the treatment of cats with dilated cardiomyopathy secondary to taurine deficiency. Although diuretics may provide temporary management to improve quality of life, there are no available treatment protocols that have convincingly increased survival time in feline cardiomyopathies.

P036 / #255

Topic: AS12 *Feline medicine*

DIAGNOSTIC APPROACH TO HYPOADRENOCORTICISM IN CATS - CASE REPORT

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Introduction:

Hypoadrenocorticism is a rare endocrine disease in cats. With a low Na:K ratio, the prevalence is <4%. If adequate therapy is selected the prognosis for long term survival is very good.

Objectives:

This case report demonstrates unsuccessful diagnostic approach to a cat with clinical findings typical for hypoadrenocorticism.

Methods:

15-year-old male cat was scheduled for preventive dental hygiene. The owner referred lethargy, intermittent vomiting, and Pu/Pd. The clinical examination showed: BCS 3/9, dehydration, weak femoral puls, and symmetric alopecia. Blood examination showed normal concentration of tT4, mild azotemia, lower concentration of sodium (144 mmol/l) and chloride (108 mmol/l), and high concentration of potassium (7 mmol/l). Sodium:potassium ratio was 21.

Results:

Due to the clinical signs and electrolyte disbalance, the additional tests were performed. Significant decrease in both urine cortisol concentration (27.7 nmol/l) and basal morning value of cortisol in plasma (43 nmol/l) led us to think of the diagnosis of hypoadrenocorticism. Nevertheless, the ACTH stimulating test did not approve our suggestion, since the repeated basal level of cortisol and the level after the stimulation were within the normal ranges. There were no specific roentgenologic or ultrasonographic findings which could explain the electrolyte disbalance.

Conclusions:

Our findings indicate, that diagnosing of the hypoadrenocorticism is challenging, especially in old cats with other possible comorbidities. Also, the secretion of cortisol is fluctuating during the day and the values may be influenced by other factors. In our case the additional tests (e.g. aldosterone concentration) could help to find the cause of mineral disbalance.

P037 / #88

Topic: *AS13 Gastroenterology and hepatology*

ULTRASONOGRAPHIC APPEARANCE OF GALLBLADDER MUCOCELE IN A 7-YEAR-OLD SHIH-TZU

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Introduction:

Gallbladder mucocele (GBM) is an increasingly recognized extrahepatic biliary (EHB) disease in canines with some cases being found to be asymptomatic. GBM often is an incidental finding on abdominal ultrasound.

Objectives:

To investigate cases of GBM, to describe clinical and laboratory findings, and identify variables associated particularly in asymptomatic dogs.

Methods:

The dog had undergone abdominal ultrasonography with 8,5Mhz convex transducer and changed to 9Mhz linear transducer for a more vivid image.

Results:

On ultrasound, mucoceles are characterized by the appearance of an echogenic organized structure in the gallbladder lumen. The echogenic materials appear like a stellate or finely striated bile pattern which is not gravity-dependent. A prominent hypoechoic rim is seen between the mucocele and the gallbladder wall. Gallbladder wall thickness and appearance were variable and nonspecific. Hyperlipidemia diagnosis was made based on the clinicopathology changes. The dog showed no clinical symptoms related to GMB.

Conclusions:

The development of GMB in our study dogs is closely associated with hyperlipidemia that occurred before. This may be due to increased conversion of cholesterol into bile acids as part of a catabolic escape pathway.

P038 / #101

Topic: AS13 Gastroenterology and hepatology

EVALUATION OF THE EFFECTIVENESS OF THE NITAZOXANIDE SINGLE-DOSE FOR NATURALLY ACQUIRED GIARDIASIS IN DOGS

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Introduction:

Giardiasis is a zoonosis caused by the protozoan *Giardia duodenalis* transmitted by water flow, and its enormous versatility optimizes its spread in the environment and assures its high incidence. The main clinical sign is diarrhea, but some animals may present a complex syndrome resulted from the small intestine inflammation. The morbidity and lethality change according with the agent's and the host's characteristics and the chosen treatment.

Objectives:

Evaluate the therapeutic effectiveness of the oral use of Nitazoxanide in dogs treated for *Giardia* sp., since, currently there are few treatments still effective for those dogs.

Methods:

25 dogs older than 4 months, naturally infected by the parasite, were treated with a single dose of 50 mg/kg of Nitazoxanide via mouth. The confirmation of the disease was through previous fecal exam. Blood tests (urea, creatinine, alkaline phosphatase and alt aminotransferase) were performed before treatment and repeated 3-5 days after treatment and the side effects were monitored.

Results:

21 treated animals (84%) showed negative exams and full remission of the clinical signs. Signs of liver and renal toxicity were not observed. The side effects were: emesis (12 animals), changes in the color and odor of urine (25 animals) and a discrete decrease of appetite (5 animals). All of the signs were self-limiting.

Conclusions:

The treatment with Nitazoxanide single dose, was safe and effective, besides that, allowed a safe handling of the dogs infected with *Giardia* sp.

P039 / #104

Topic: *AS13 Gastroenterology and hepatology*

SEVERE WEIGHT LOSS AND SKIN ULCERATION IN A GREYHOUND RESULTING FROM CHRONIC HEAVY METAL INTOXICATION FOLLOWING INGESTION OF FOREIGN BODY

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Introduction:

Heavy metals are often a cause of intoxication in companion animals, but the number of metals that cause toxicosis is low. Intoxications that might be seen in clinical practice include arsenic, copper, lead, mercury and zinc. Cadmium is often seen in association with zinc in galvanized metals, but rarely causes acute problems in animals.

A five year old, male greyhound was presented for severe weight loss and lethargy for a period of 5 months. He did not present with anorexia or other gastrointestinal symptomatology. Skin ulcers on the back legs appeared a few weeks prior to presentation and didn't respond to routine treatment.

Objectives:

Prove that weight loss with no gastrointestinal, hematologic or neurological symptoms can be caused by chronic heavy metal intoxication.

Methods:

Radiology, ultrasound, biochemistry and haematology blood tests, and exploratory laparotomy.

Results:

All parameters within normal range on blood tests. Ultrasound showed hyperechogenicity inside stomach and severe amount of gas in gastrointestinal tract. Radiograph showed radiopaque material in gastric cavity as well as a considerable amount of gas in the duodenum, jejunum and ileum. Exploratory laparotomy produced a broken battery inside stomach.

Patient showed a significant improvement in clinical signs following removal of heavy metal foreign body (battery).

Conclusions:

Chronic intoxication of heavy metals can not only cause coagulation, haemorrhagic or gastrointestinal issues, but also can be responsible for weight loss and skin ulcers.

P040 / #131

Topic: AS13 Gastroenterology and hepatology

BIOAVAILABILITY OF A VETERINARY FORMULATED S-ADENOSYLMETHIONINE (SAME) SUPPLEMENT IN DOGS

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Introduction:

S-adenosylmethionine (SAME) is a versatile molecule, key in many biological processes: metabolism, proliferation, differentiation, apoptosis and cell death. Use of SAME supplements is well established for supporting liver health in humans and animals. Formulation of products may influence the bioavailability of SAME; hence, there is a need to demonstrate bioavailability.

Objectives:

To determine the pharmacokinetics of SAME following oral administration of one dose of Samylin® to fasted and fed dogs.

Methods:

Samylin® (VetPlus, Lytham, UK) was administered according to manufacturer's recommendations to six male and six female purebred adult beagle dogs. For the fasted study, animals were fasted for a minimum of 12 hours.

1 ml of blood was collected pre-dose and at 0.5, 1, 2, 4, 6,8, and 24 hours post-dose. Samples were analysed for SAME concentrations using an established liquid chromatography/mass spectrometry method. Pharmacokinetic parameters were calculated.

Statistical analyses utilized Paired T Test and/or Wilcoxin Signed Rank Test. Data is expressed as mean ± standard deviation.

Results:

SAME was shown to be bioavailable after Samylin™ administration. SAME plasma levels were seen from 30 minutes after oral administration of Samylin® in both fasted or fed dogs, with peak levels seen between 2-3 hours post administration (Figures 1 and 2). A decrease in plasma SAME was seen with feeding – on average a 20% reduction in C_{max} and 12% reduction in AUC₀₋₂₄ (Table 2); however, these decreases were not statistically significant.

	Fasted Dogs	Fed Dogs
C _{max} (ng/ml)	943±377	751±356
T _{max} (hours)	2.25±0.87	2.83±1.53
AUC ₀₋₂₄ (ng*hour/ml)	6110±1740	5360±2400
T _{1/2} (hours)	5.78±0.76	6.34±1.35

Table 1: Pharmacokinetic parameters for SAME following administration of Samylin™ to dogs. Data shown as mean ± standard deviation.

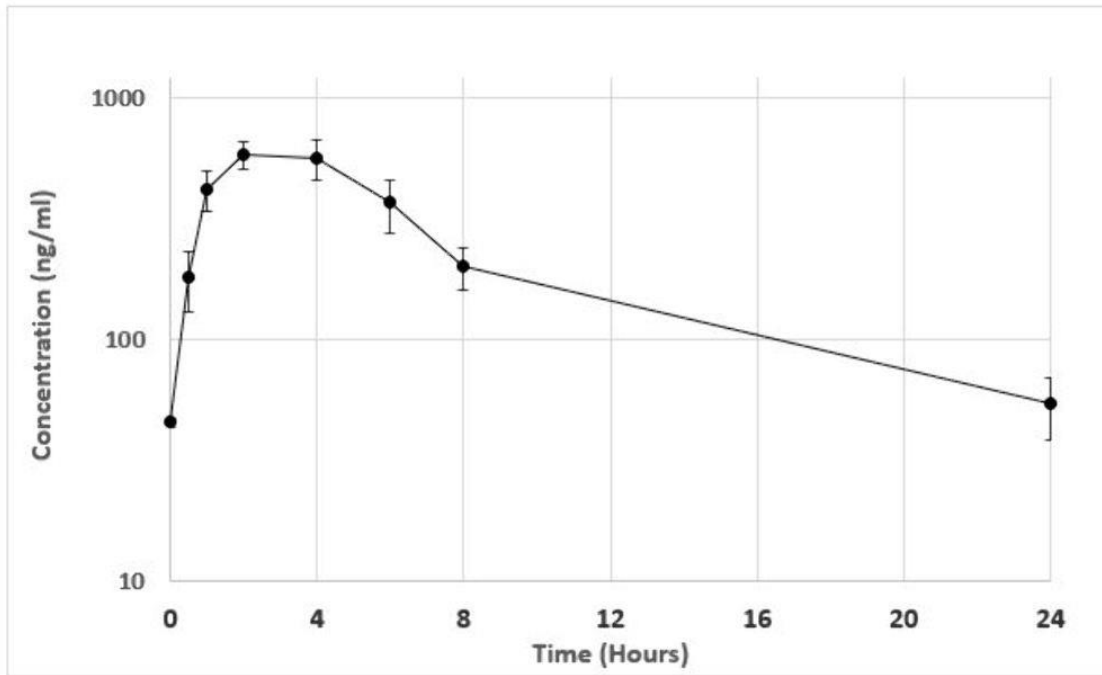


Figure 2: SAME plasma concentration over time following administration of Samylin™ to fed dogs. Data shown as mean \pm standard deviation.

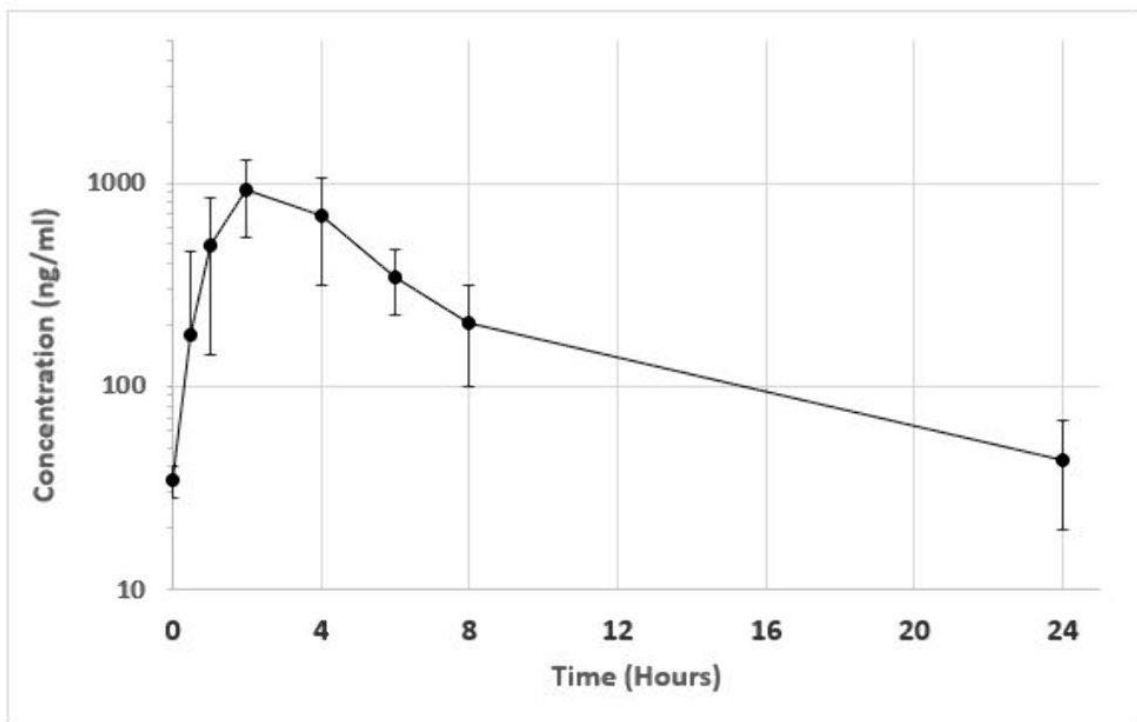


Figure 1: SAME plasma concentration over time following administration of Samylin™ to fasted dogs. Data shown as mean \pm standard deviation.

Conclusions:

In conclusion, this study has demonstrated that SAME has good bioavailability following oral administration of Samylin® in both fasted and fed dogs.

P041 / #145

Topic: *AS13 Gastroenterology and hepatology*

PURULENT HEPATITIS WITH HEPATIC EMPHYSEMA IN A 3 YEAR-OLD GRATE DANE

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Introduction:

A 3 year-old female Great Dane has been unsuccessfully treated for 6 previous weeks in a local veterinary clinic due to progressive weight loss and ascites. On admission the dog was in poor general condition, with advanced cachexia, ascites and dyspnea.

Objectives:

Making a diagnosis and introducing an appropriate treatment.

Methods:

An echocardiographic examination was normal. An abdominal ultrasound examination revealed deformation of the liver left medial and quadrate lobe with caverns and hyperechoic foci consistent with gas in lobe. The differential diagnosis included liver abscess, hematoma or tumor. An ultrasound-guided biopsy under general anesthesia was performed. The pus was aspirated and sent for microbiological tests, and the combination of ceftriaxone and metronidazole was introduced.

Results:

In the microbiological study, *Escherichia coli* susceptible to the third generation cephalosporins was cultured. After 24 hours the dog's clinical condition improved significantly. A follow-up ultrasound after 5 days revealed only a trace amount of fluid and a considerable improvement of liver appearance. Antimicrobial therapy with ceftiofur was continued for next 6 weeks and the control ultrasound examination confirmed recovery.

Conclusions:

Purulent hepatitis with hepatic emphysema caused by *E. coli* is a rare cause of ascites in dogs.

Topic: AS13 Gastroenterology and hepatology

ULTRASOUND IMAGE OF GALLBLADDER RUPTURE

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Introduction:

Gallbladder perforation is a rare life-threatening complication of acute cholecystitis. Perforation results in lost gallstones and bile in the peritoneal cavity, and eventually leads to biliary peritonitis. Early detection of gallbladder perforation improves prognosis, however preoperative identification of the rupture is challenging. Ultrasound examination and computed tomography are diagnostic method of choice.

Objectives:

Evaluation of the ultrasound appearance of the gallbladder perforation in dogs.

Methods:

Ultrasound examination was performed in five dogs with an acute abdominal pain.

Results:

In the first case wall thickening and compressed gallbladder lumen were observed. In the second the thickening of gallbladder wall with blurred layering, hyperechoic inflammatory fat and free fluid around the gallbladder and conglomerates indicative of gallbladder mucocele were observed. In the third case the gallbladder was imperceptible, replaced by the irregular formation. The hyperechoic mesenteric fat and air around the gallbladder were found. In the fourth case the wall was thickened and deformed. In the lumen conglomerates were observed and reactive fat suggestive of peritonitis was present around the gallbladder. In the fifth case thickened, gallbladder wall with free margins floating in a large volume of peritoneal effusion, reactive peritoneum and pancreatitis were observed. All cases were then confirmed in exploratory laparotomy.

Conclusions:

Ultrasound examination is an accurate diagnostic method of gallbladder perforation. Early diagnosis and emergency surgical treatment of gallbladder perforation are crucial.

P043 / #99

Topic: AS15 Infectious and emerging diseases

TRAVELLING DOG AS A CARRIER OF HEPATOZOON CANIS– CASE REPORT FROM POLAND

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Introduction:

Hepatozoon spp. infect a wide variety of amphibians, reptiles, birds, and mammals. *H. canis* is transmitted by the ingestion of ticks containing mature oocysts. The main vector of *H. canis* is *Rhipicephalus sanguineus*. Following the ingestion of infected ticks, sporozoites spread via the bloodstream and lymph to several organs where meronts are formed and undergo several cycles. This protozoan usually causes a chronic infection with relatively mild or no clinical alterations to its host.

Objectives:

A two-year-old male mixed-breed dog was presented to the clinic with a history of apathy and weakness since 3 days. The dog was born in Poland and had been abroad for 28 days in Greece peninsula.

Methods:

In the following case report, the symptoms, diagnostic approach, and therapy of *H. canis* infections are described and the epidemiological data reviewed.

Results:

Clinical examination revealed high rectal temperature (39,8C), enlargement of popliteal and submandibular lymph nodes, pale mucous membranes and body weight loss. Blood smear examination revealed the presence of gamonts of *H. canis* organisms in neutrophils. The dog was treated with imidocarb dipropionate, and oral doxycycline for 21 days.

Conclusions:

Hepatozoon canis has been identified worldwide, probably due to its close association with *R. sanguineus* and the cosmopolitan distribution of this tick species. A number of reports suggest that *H. canis* infects dogs globally. Infections have been reported from Asia, Europe, the Mediterranean Basin, the Middle East, South and North America. Veterinarians in Poland should be aware of *H. canis* as a potential infection in imported or traveling dogs.

Topic: AS16 Internal medicine (other)

EVALUATION OF LEFT VENTRICULAR FUNCTION BEFORE AND AFTER RADIOFREQUENCY CATHETER ABLATION OF PREMATURE VENTRICULAR COMPLEXES IN DOGS: RAPORT SERIES.

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Introduction:

Premature ventricular complexes (PVC) are a relatively common electrocardiographic abnormality presenting in dogs with and without cardiovascular disease. A significant number of PVCs put patients at high risk of developing PVC-induced cardiomyopathy and eventually heart failure.

Objectives:

The aim of this study was to evaluate left ventricular morphology and function in dogs with a significant number of PVCs (> 30 000/24h) before and after radiofrequency catheter ablation. The previous antiarrhythmic therapy was ineffective in all these dogs.

Methods:

Three dogs with left ventricular systolic dysfunction and numerous PVCs referred for ablation were included and followed-up for 24 months. A detailed physical, electrocardiographic and transthoracic echocardiographic examination were performed. A vascular access sheath was placed in right external jugular and femoral vein as well as femoral artery using the Seldinger technique. Left ventricular origin of PVCs was confirmed by QRS morphology analysis and pace-mapping.

Results:

Clinical data							
Breed	Age (year)	Body weight (kg)	LVIDd(mm)* before ablation	LVIDd(mm) * after ablation	LVFS(%)** before ablation	LVFS(%)** after ablation	nsVT
Yakutsk Laika	1.5	23	46	39	26	35	+
Hungarian pointer	1.5	22	50	41	25	37	-
German Shepherd	2.5	27	53	43	22	29	+

*, **p≤0.05

In all dogs the procedure was successful. In one patient, an access site hematoma has formed and was treated conservatively. There was a significant improvement of LVEF from $24,6 \pm 2,3$ % at baseline to $33,6 \pm 4,1$ % at 12 months, $P < 0.005$ and LVIDd from $49,6 \pm 3,5$ mm to 41 ± 2 mm.

Conclusions:

Radiofrequency ablation of PVCs is an effective treatment for idiopathic PVCs and PVC-induced cardiomyopathy.

Topic: AS16 Internal medicine (other)

ANALYSIS OF RED BLOOD CELL PARAMETERS IN DOGS WITH VARIOUS STAGES OF DEGENERATIVE MITRAL VALVE DISEASE

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Introduction:

Although peripheral blood analysis has become increasingly automatized, microscopical blood analysis remains an important tool in hematological diagnostics and is the only available method for the diagnosis of anisocytosis and poikilocytosis.

Objectives:

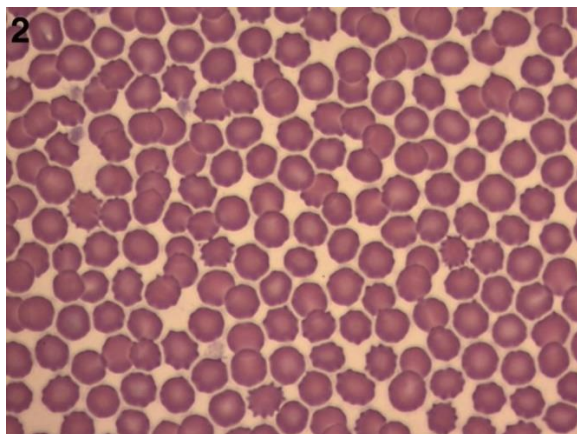
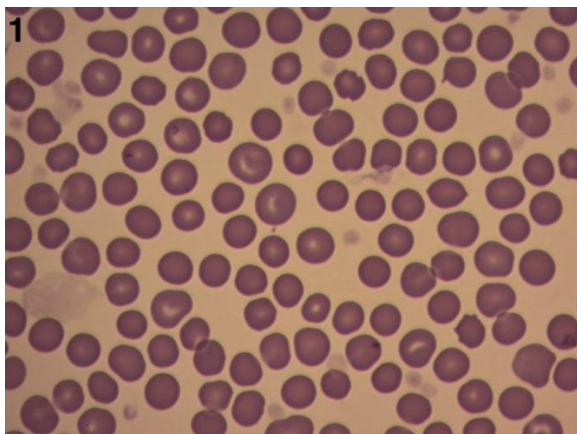
The aim of the study was to compare the morphological data on erythrocyte (RBC) volume obtained with two different analyzers and manual assessment of smears. The secondary aim was to compare the RBC volume between dogs in various stages of heart failure secondary to degenerative valvular disease (DVD). Additionally, the impact of diuretic administration on the RBC morphology was assessed.

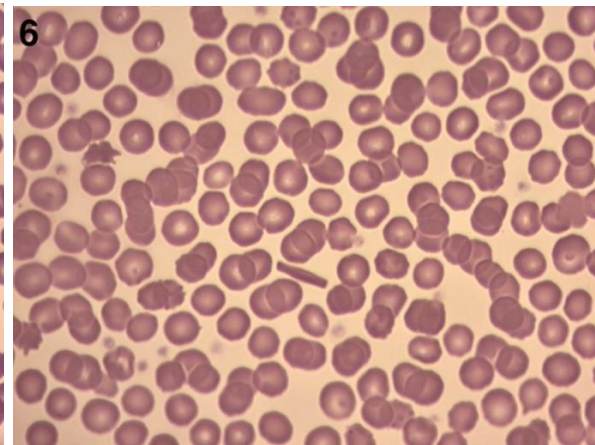
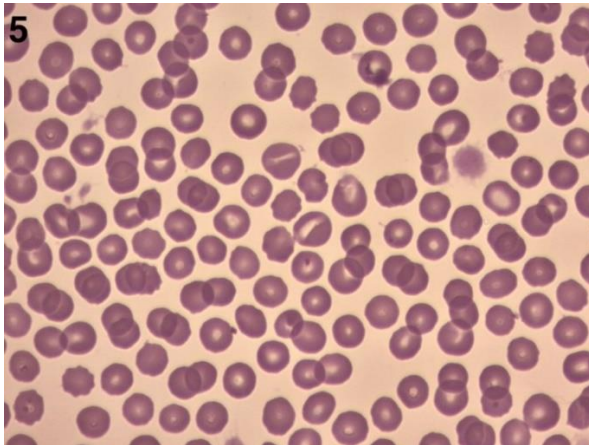
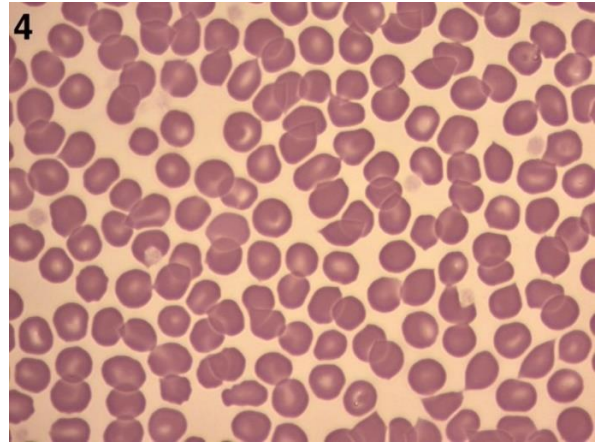
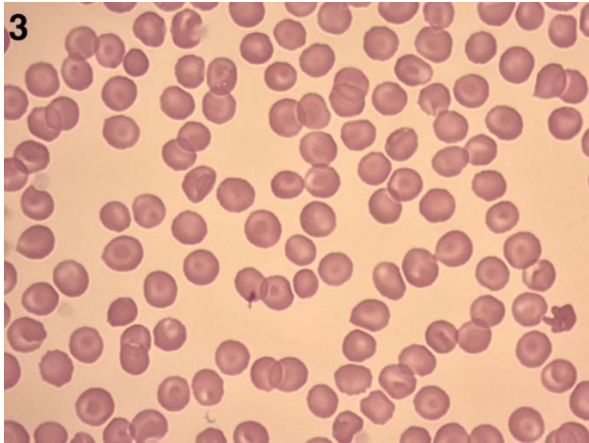
Methods:

Sixty-eight dogs in different stages of DVD together with healthy controls were included in the study. Two hematological analyses on impedance-based and flow cytometry analysers were performed from each animal. Additionally, two smears were prepared for manual analysis. The RBC structure, staining and size differences were recorded.

Results:

There were no significant differences between the values of the blood morphological parameters assessed using hematological analysers as well as between dogs receiving diuretic treatment and those with no diuretic treatment. Based on the manual smear, significantly higher erythrocyte anisocytosis was observed in the dogs with symptomatic DVD compared to the control group (fig. 1-6).





Conclusions:

Haematological blood analysers based on impedance and flow cytometry provide reliable and comparable results of the blood morphology in dogs with heart failure. However, the microscopic assessment of blood smears is a more reliable tool to detect erythrocyte anisocytosis.

P046 / #46

Topic: AS17 Nephrology and Urology

CASE REPORT: BICARBONATE LIQUID SUSPENSION ADMINISTRATION IN A CASE OF FANCONI SYNDROM.

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Introduction:

Fanconi syndrome (FS) is a proximal renal tubular defect, that leads to inadequate resorption of glucose, amino acids, bicarbonate and water. One of the abnormalities connected to FS is a metabolic acidosis (MA). Supportive therapy of MA involves supplementation with bicarbonate.

Objectives:

To document the acid-base balance response to the bicarbonate (Sodium Alginate, Sodium Bicarbonate, Calcium Carbonate 500mg/267mg/160mg per 10 ml) liquid suspension administration.

Methods:

Case description. An eight-year-old yorkshire terrier, intact female, was presented for weight loss, polyuria and polydipsia and mild lethargy. The main diet compartment were jerky treats. FS was diagnosed based on persistent glycosuria with euglycemia, severe proteinuria, diluted urine and positive COLA-test. Therapy was started with enalapril 0,5 mg/kg (P.O. q24H), bicarbonate 13 mg/kg (P.O. q12H) and excluding the jerky treats from the diet. Blood samples for acid-base analysis were obtained by jugular venepuncture using anaerobic approach and were analysed in 10 minutes after sampling (GASTAT-navi, Techno Medica).

Results:

HISTORY OF ACID-BASE ANALYSIS						
	at the time of diagnosis	after 3 weeks of supplementation	after 5 weeks without supplementantation	after 13 weeks of supplementation	reference	
pH	7,27	7,3	7,26	7,34	7,3 to 7,42	
pCO ₂	4,6	4,6	3,7	4,3	5,2 to 6,7	kPa
pO ₂	5,8	4,6	6,8	4,4	3,2 to 6,4	kPa
bicarbonate (HCO ₃ ⁻)	15,1	16,3	12,1	16,9	19,1 to 24,1	mmol/l
base excess	(-10,6)	(-8,9)	(-13,3)	(-7,6)	(-0,5) to (+4,0)	mmol/l
total CO ₂	16,2	17,4	12,9	17,9	17,0 to 24,0	mmol/l

Conclusions: Continuous bicarbonate supplementation can help to normalize acid-base balance and increase buffer capacity in a case of FS.

Topic: AS17 Nephrology and Urology

PILOT STUDY: EVALUATION OF THE EFFECTS OF OSATERONE ACETATE ON CANINE PROSTATE SPECIFIC ESTERASE AND PROSTATE VOLUME IN DOGS WITH BENIGN PROSTATIC HYPERPLASIA

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Introduction:

Benign prostatic hyperplasia (BPH) is a common disease in dogs. The prevalence is higher in intact males older than 5 years. The cause of BPH is the effect of dihydrotestosterone on prostatic parenchyma. **Osaterone acetate** is a selective receptor antagonist in prostatic parenchyma. **Canine prostate specific esterase** (CPSE) is described as a useful serum biomarker in preventive screening programme or diagnostic tool of canine prostate.

Objectives:

To evaluate the response to a 7-day long osaterone treatment 3 weeks after administration in case of BPH and to document CPSE serum level changes.

Methods:

The inclusion criteria for the study comprised male intact dogs, 5-10 years, with body weight (BW) 10-40 kg with common clinical signs and no treatment of BPH. Sonography was performed at the time of diagnosis and the 3rd week after osaterone treatment administration. Every patient was diagnosed with BPH (cytology) and in all cases multiple intraprostatic cysts were present. Calculated prostatic volume can be predicted using the formula: $V = (1/26) (length \times width \times height) + 1,8 \text{ cm}^3$ and the V was compared to V_{norm} to get a relative value of the prostatic size $S_{rel} = V/V_{norm}$. $V_{norm} = 0,33 \times BW(kg) + 3,28$.

Results:

COMPARISON OF PROSTATIC SIZE AND CPSE LEVELS				
Dog	Srel ^{Dg}	CPSE ^{Dg}	Srel ^{3rd}	CPSE ^{3rd}
1.	2,6	165	2,4	90
2.	2,4	129	1,2	12
3.	1,3	133	0,8	26
4.	2,2	93	1,9	36
5.	2,8	>500	1,1	119
6.	3,2	>500	1,6	122

Conclusions:

Osaterone effectively reduced the prostatic volume and CPSE serum level and mitigated clinical signs in dogs with BPH.

P048 / #53

Topic: *AS17 Nephrology and Urology*

COMPARISON OF TWO URINE COLLECTING METHODS FOR DIAGNOSING URINARY TRACT INFECTIONS IN DOGS.

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Introduction:

Urinary tract infections (UTIs) in dogs are a common problem in the clinical practice. Its diagnosis is based on the presence of lower urinary tract signs associated with findings in urinalysis such as pyuria, hematuria or bacteriuria and positive bacterial culture.

Cystocentesis is the recommended sampling method in dogs for urine culture, although this procedure can sometimes be difficult to perform or can be contraindicated. Recent studies show that voided samples with proper management may be suitable for a culture.

Objectives:

The aim of this study was to evaluate the accuracy of voided samples for the diagnosis of UTIs in dogs and to compare it with the current reference method.

Methods:

Prospective study. Seven dogs with lower urinary tract signs and eight dogs with conditions that required research into complicating UTIs were included. Paired urine samples were collected by both voiding and cystocentesis at the same time. Urinalysis and quantitative bacteriological cultures were performed within the same day. PSPP statistical analysis software was used to analyze the results.

Results:

There were no differences between results of paired voided and cystocentesis specimens. Urine cultures were positive only in animals with lower urinary tract signs. There was more bacterial contamination in voided samples however, the accuracy to diagnosis UTIs were the same using both sampling methods.

Conclusions:

Based on our results, voided samples can be as useful as cystocentesis specimens in diagnosing UTIs in dogs in the veterinary practice.

P049 / #73

Topic: *AS17 Nephrology and Urology*

EXPRESSION OF TRANSFORMING GROWTH FACTOR-BETA IN THE KIDNEYS OF CATS WITH CHRONIC KIDNEY DISEASE

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Introduction:

Transforming growth factor (TGF)-beta plays a crucial role in the progression of renal sclerosis. However, the renal expression of TGF-beta in feline chronic kidney disease (CKD) has not been investigated.

Objectives:

The present study was designed to elucidate the changes in renal TGF-beta expression and their association with clinicopathological and renal pathological stages of feline CKD.

Methods:

Paraffin blocks of formalin-fixed kidneys from CKD cats (n=12) and the healthy controls (n=7) were examined through immunohistochemistry and histopathology.

Immunohistochemical signals for TGF- β were quantitated, and their correlations with the plasma concentrations of urea and creatinine, and the severity of glomerular sclerosis and interstitial fibrosis, were statistically analyzed.

Results:

TGF- β expression was detected at various sites in the feline kidneys with CKD. TGF- β expression in the distal nephrons showed positive correlations with serum creatinine levels and glomerular sclerosis, whereas in the proximal tubules and platelets, it showed negative correlations with the levels of urea and creatinine. TGF- β expression was not correlated with interstitial fibrosis.

Conclusions:

TGF- β was expressed in the renal tissues of cats with CKD, and the sites of expression correlated with the stages of the disease. Expression in the proximal tubules and platelets may be associated with the progression of CKD in the early stages, and that in the distal nephrons may be associated with the later stages.

P050 / #92

Topic: *AS17 Nephrology and Urology*

PALATABILITY AND TOLERANCE EVALUATIONS OF A NEW FORMULATION OF A SUPPLEMENT DEDICATED TO MAINTAIN THE BALANCE OF RENAL FUNCTION IN DOGS AND CATS (PRONEFRA®).

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¹Virbac, Gmbo, Carros, France, ²Virbac, R&d Biopharmacy, Carros, France, ³Virbac, Innovation Npr, Carros, France

Introduction:

A new formulation of Pronefra® oral suspension (Virbac), for the balance of renal function of dogs and cats, has been developed.

Objectives:

The palatability and tolerance of this formulation were tested on healthy animals.

Methods:

Palatability: In dogs, the supplement was added once with food of 38 dogs and the number of dogs taking the product and food was evaluated. In cats, it was mixed with food of 83 cats daily for 7 days and the mean ration consumed was compared to the usual ration.

Tolerance was evaluated for 28 days in animals receiving either 1 time (n=8) or 5 times (n=8) the recommended dose. Food consumption and animals' general health were assessed daily. A complete clinical examination and body weight measurement were performed once a week. Blood samples were taken before the start and at the end of study for standard hematology and blood biochemistry (plus SDMA).

Results:

Palatability: all dogs (100%) took the product, 84% consumed more than 95% of the product and 92% of dogs totally consumed their kibbles.

The food with product was accepted by 94% of cats with no impact on the mean food consumption on Day 7. The owners gave a mean acceptability score of 7.7/10 and 72% judged the acceptability was good enough to give it for 30 days.

Tolerance: No product-related clinical signs were observed. The supplement did not affect body weight, food consumption or blood parameters.

Conclusions:

Therefore, Pronefra® oral suspension is considered very palatable and well tolerated by cats and dogs.

P051 / #94

Topic: *AS17 Nephrology and Urology*

PALATABILITY AND TOLERANCE OF AN ORAL SUSPENSION DEVELOPED TO MAINTAIN A HEALTHY URINARY TRACT IN CATS

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¹Virbac, Gmbo, Carros, France, ²Virbac, R&d Biopharmacy, Carros, France, ³Virbac, Innovation Npr, Carros, France

Introduction:

A new suspension containing glycosaminoglycans, hibiscus and green tea concentrates was developed to maintain a healthy urinary tract in cats.

Objectives:

The objectives of the studies were to test the palatability and tolerance of this suspension in healthy cats.

Methods:

Palatability: 1 ml of suspension was poured over the food of 89 client-owned cats for 7 days, twice a day, and the daily consumption of the food was compared to the usual consumption.

Tolerance: the tolerance was tested for 28 days on cats receiving either 1 time (n=8) or 5 times (n=8) the recommended daily dose. Four cats were used as control. Cats were observed daily and a complete clinical examination was performed once a week. Food consumption was assessed daily. Blood samples were taken on Day -5 and Day 28 for standard hematology and blood biochemistry.

Results:

Palatability: 82 cats (92.1%) accepted to eat the food with product and the mean food consumption slightly increased (around 10%) by day 7. The mean acceptability score given by the owners was 7.2/10 and 73% of owners judged the palatability was good enough to give the product over 30 days. Seventy-four percent (74%) of owners judged there was either no impact or a positive impact of the suspension on the cat's eating behaviour.

Tolerance: no product-related clinical signs were observed and all cats remained healthy throughout the study. The supplement did not affect body weight, food consumption or blood parameters.

Conclusions:

This product is therefore considered as very palatable and well tolerated by cats.

P052 / #95

Topic: AS17 Nephrology and Urology

COMPARATIVE ANALYSIS OF THE PREVALENCE OF URINARY PATHOLOGIES IN THE VETERINARY TEACHING HOSPITAL OF UNIVERSITY OF ZARAGOZA REGARDING REPORTS FROM OTHER GEOGRAPHICAL AREAS

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Introduction:

Urinary diseases in dogs and cats are very common in the clinical practice, but their prevalence and causes depend on several factors including the geographical area where the patient lives.

Objectives:

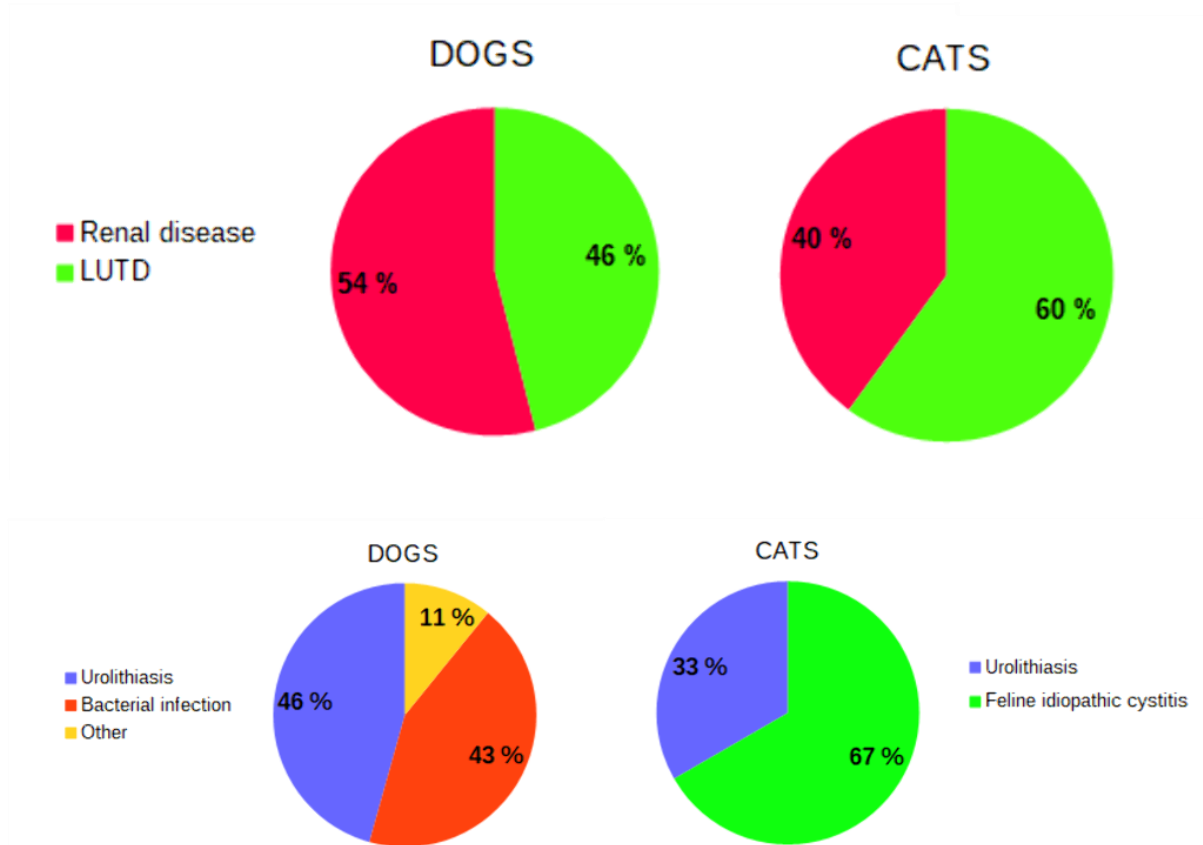
To calculate the prevalence of urinary pathologies in the veterinary teaching hospital of the University of Zaragoza (VTH-UZ) and to compare with the data reported from different geographical areas of Europe and North America.

Methods:

Retrospective study. Data of 135 patients, dogs and cats, that were evaluated and diagnosed with different urinary pathologies were collected.

Results:

Renal diseases were more prevalent in dogs (54%) and lower urinary tract diseases (LUTD) were more common in cats (60%), which contrasts with other studies reported (Figure 1). Chronic kidney disease related to aging was the most frequent clinical presentation in dogs (62%) and cats (71%), as it has also been founded in other epidemiological studies. Furthermore, leishmaniasis was also a very common cause of renal disease in our canine population (20%). Unlike other studies, urolithiasis was a very common cause of LUTD in dogs (46%), even before than bacterial infections (43%). In cats, idiopathic cystitis was the first cause of LUTD (67%) and urolithiasis the second one (33%) according to previous publications. In contrast, there were not any cases related to bacterial infection (Figure 2).



Conclusions:

The differences found among our results (VTH-UZ) and the data reported from other geographical areas were probably due to the particular characteristics of our region such as the presence of canine endemic vectorial diseases.

P053 / #97

Topic: AS18 Neurology/Neurosurgery

THE MICROBIOLOGICAL STUDY OF THE CEREBROSPINAL FLUID IN BACTERIAL INFECTIONS IN DOGS

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Introduction:

Because of limited possibilities of direct investigation of the central nervous system the determination of severity, topography, and extent of lesions does not always correlate with the clinical findings.

A correct etiological diagnosis is a challenge both intravital and post mortem, it involves the fusion of clinical and paraclinical data for contouring a specific neurological disease.

Objectives:

Our study aimed at highlighting the microorganisms which manage to pass the protective mechanisms of the blood-brain barrier and the drug resistance of the isolated microorganisms in the global context of the of microorganism resistance to usual drugs

Methods:

We conducted a microbiological examination of cerebrospinal fluid collected through sterile puncture from dogs with neurologic and systemic symptomatology intravital and postmortem at maximum 48 hours after death, consisting of microbiological examination and the confirmation, through biochemical profiling of the strains isolated was done with Vitek 2 and API systems.

Results:

We isolated the following microorganisms: *Pseudomonas fluorescens*, *E.coli* 2 subtypes, *Aeromonas salmonicida*, *Chryseobacterium indologenes* (bacteria implicated in nosocomial infections), *Proteus mirabilis* 3 subtypes

The resistance was tested using 8 antibiotics of choice in current practice, the best results were: *E.coli* –Enrofloxacin 30.20mm (1), 22.36 mm (2); *Proteus mirabilis* - Cefotaxim 31.28 mm (1); 24.46 mm partial inhibition (2); Trimetoprim sulfamatoxazol - 19.57 mm (3); *Chryseobacterium indologenes* - Enrofloxacin 28.59 mm. The rest of the results were between 6 and 26.31 de mm.

Conclusions:

Our study demonstrates the possibility of overcoming the blood-brain barrier protection mechanisms by some opportunistic pathogenic bacteria and their antibiotic sensitivity

P054 / #117

Topic: *AS18 Neurology/Neurosurgery*

NMR METABOLOMICS UNCOVERS WIDESPREAD METABOLIC CHANGES IN PHENOBARBITAL-TREATED DOGS

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Introduction:

Phenobarbital is a commonly used anticonvulsant drug in the treatment of canine epilepsy. It is known that in addition to its depressing effects on the central nervous system (CNS), long-term phenobarbital administration affects liver function. However, further studies in metabolic consequences of phenobarbital treatment are limited.

Objectives:

To determine the metabolic changes occurring in dogs with phenobarbital medication.

Methods:

We analysed canine serum samples with phenobarbital concentrations ranging from below (7,8-20 µg/ml, n = 30) to within (20-30 µg/ml, n = 11) and above therapeutic level (30-38,9 µg/ml, n = 6). 25 samples with clinical chemistry values within reference intervals served as controls. The samples were analysed by a canine-specific ¹H-NMR based metabolomics platform. One-way analysis of variance was used to identify differences in the samples with phenobarbital concentrations below therapeutic level, within or above therapeutic level, and controls.

Results:

Glutamine, phenylalanine, glycoprotein acetyls, albumin, creatinine, LDL diameter, XL-VLDL cholesterol, palmitic acid %, and polyunsaturated and saturated fatty acid % showed significant differences (FDR < 0,05) in both phenobarbital-treated groups compared to controls. No significant differences in analyte concentrations between the groups with phenobarbital concentrations below therapeutic level and within-above therapeutic level were observed.

Conclusions:

Glutamine, phenylalanine, glycoprotein acetyls, albumin, creatinine, LDL diameter, XL-VLDL cholesterol, palmitic acid %, and polyunsaturated and saturated fatty acid % showed significant differences (FDR < 0,05) in both phenobarbital-treated groups compared to controls. No significant differences in analyte concentrations between the groups with phenobarbital concentrations below therapeutic level and within-above therapeutic level were observed.

P055 / #247

Topic: AS19 Nutrition

EFFECT OF SILYMARIN ON NUTRIENTS' DIGESTIBILITY IN DOGS

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Introduction:

Silymarin is a flavonoid complex extracted from the *Silybum marianum* plant. Silybinum is the main ingredient of silymarin, which has also been promoted for its potential role in the supportive treatment of liver diseases in dogs (Center, 2004).

Objectives:

Each dietary supplement may affect nutrients' digestibility, however most of the reports evaluate only the effect on blood liver markers. Our hypothesis is that silybinum supplementation has no effect on nutrient's digestibility coefficient. Hence, the present study investigated the effect of silymarin supplementation on nutrient utilization in dogs.

Methods:

Six healthy adult dogs were used. Before the test each dog was regularly vaccinated and periodically treated for intestinal parasites. Dogs received two dietary treatments: control dry, extruded and complete diet formulated for adult dogs and control supplemented with silybinum (28.3 mg/10 kg BW), as a main active ingredient of silymarin. Each feeding period lasted 28 days. Dogs were fed twice a day. On days 24 to 28 of each feeding period a fresh fecal sample were collected from each dog within 30 min from defecation and thereafter frozen at -20 °C for nutrients analyses and apparent total tract digestibility assessment. Nutrient analyses in the diets were also done. Based on obtained results the digestibility of particular nutrients was calculated.

Results:

No effect of silymarin supplementation on apparent total tract digestibility coefficient in dogs was found.

Conclusions:

Silybinum, main active component of silymarin, can be used as the supportive treatment of liver diseases in dogs and does not exert a negative effect on nutrients' digestibility coefficient.

P056 / #115

Topic: AS20 Oncology

EFFECT OF ESTROGEN RECEPTOR STIMULATION ON THE PROLIFERATION OF CANINE LYMPHOMA/LEUKEMIA CELLS IN VITRO.

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Introduction:

Estrogens are crucial in reproductive as well as immune functions. Two main types of estrogen receptors (ER): ER α and ER β are expressed in immune cells and lymphoid malignancies. Most research in human medicine shows the influence of estrogen in the occurrence and prognosis of lymphoid cancers. Studies using mouse and human cells have shown that B-cell malignancies express mainly ER β while selective ER β agonists inhibit cell growth and induce apoptosis. However, there are no current reports on the expression of ER in canine hematopoietic cancers or the effect of agonists/antagonists of these receptors on the proliferation of canine lymphoma or leukemia cells.

Objectives:

The aim of the study was to investigate the effect of non-selective and selective ER receptor stimulation on cell proliferation of different canine hematopoietic cancer cell lines.

Methods:

The effect of non-selective estrogen receptor agonist (17 β -estradiol) and selective agonists of ER α (PPT, Propylpyrazoletriol) and ER β (DPN, Diarylpropionitrile) on proliferation and viability of CLBL-1, GL-1 and CLB70 cell lines was evaluated in the MTT assay and the cytometric test using annexin V and propidium iodide staining.

Results:

All compounds used in the study had antiproliferative and proapoptotic effects. Estradiol was the most potent, killing around 50% of GL-1, 70% of CLB70 and 80% of CLBL-1 cells in the concentration of 60 μ M.

Conclusions:

In canine lymphoma/leukemia cells selective ER β receptor stimulation is not an effective anti-cancer strategy. Simultaneously, supplementation of 17 β -estradiol-containing preparations may have a significant impact on the proliferation of such cell lines.

P057 / #179

Topic: AS20 Oncology

FATTY ACID PROFILING OF MAMMARY TUMORS

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Introduction:

Altered fatty acid metabolism is recognized as a component of malignant transformation in many aspects of cancer cells. Attempts to define alterations in FAM pathways and the role of different lipids in cancer physiology depend on the ability to accurately monitor changes in lipid composition at cell level due to the diversity of lipid classes.

Objectives:

We investigated the differences in total and phospholipid fatty acid composition of tumor and normal tissue sample in attempt to get better insight into the lipid metabolism of tumor cells as well as to improve grading of studied tumors

Methods:

Paired samples of tumor and non-tumor tissue were isolated from 40 mammary tumors. The pathohistological examination and fatty acid profiling of tumor and non-tumor samples were performed.

Results:

Significant difference between tumor and normal tissue fatty acid profile were observed. The most significant differences were the increased content in C20:4n6, 18:1n7, 20:3n6, C22:4n6 and C22:5n6 for the mammary tumors in total lipids. The phospholipids reflected the same pattern as observed in total lipids.

Conclusions:

These preliminary results showed significant variations in the fatty acid profile of different lipid classes of the tumor and healthy tissue as well as within tumor tissues depending on tumor type. The pattern of the fatty acid profile of different lipid classes could be a good starting point in future research of tumor prognosis.

This work has been supported by the Croatian Science Foundation in the project IP-06-2016-3163 awarded to Kristina Starčević.

Topic: AS20 Oncology

NMR PROFILING OF CANINE MASTOCITOMA AND MAMMARY GLAND TUMOURS

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Introduction:

Cancer cells act differently and have the different microenvironments in comparison to normal cells which comprise the ability to adapt to special environments including hypoxic conditions. Understanding cell activity has benefited from analysis of the large molecules (DNA, RNA, proteins) but in addition the low-molecular-weight molecules, such as amino acids, organic acids, and fatty acids should be also analysed.

Objectives:

In this study, NMR combined with statistical analyses was used to get better insight and profile the tissue metabolites of tumour and normal tissue sample as well as the ability to differentiate the cancers by their origin.

Methods:

Paired samples of tumour and corresponding non-tumour tissue were isolated from 17 mastocitoma and 20 mammary tumours. After the pathohistological examination of tumour and non-tumour samples NMR profiling was assessed.

Results:

The 14 metabolites that underlying the amino acid metabolism and miscellaneous metabolites were identified. The most significant differences were the increased content in glutamate and lactate metabolite in mammary gland tumour while in mastocitoma has significantly lower level of both metabolites The content of glycerophosphocholine and ethanolamine were significantly lower in mammary gland tumour tissue. Mastocitoma tissue metabolites valine and leucine were most abundant in comparison to normal tissue.

Conclusions:

These preliminary results showed significant variations in metabolite abundance between tumours and healthy tissue. In addition, the differences between different tumours gives us possibility to classify cancers by their tissue of origin.

This work has been supported by the Croatian Science Foundation in the project IP-06-2016-3163 awarded to Kristina Starčević.

P059 / #238

Topic: *AS20 Oncology*

ELECTROCHEMOTHERAPY IN THE LOCAL CONTROL OF THE CANINE ORAL SARCOMA– A CASE SERIES.

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Introduction:

Electrochemotherapy is a method of local tumor treatment in which cell uptake and cytotoxicity of a chemotherapeutic drug is increased by the electroporation of tumor cells. Canine oral sarcoma recurrence rates are estimated up to 57%, therefore the local tumor control still represents the main challenge for veterinary practitioners.

Objectives:

To assess the local tumor control and safety of electrochemotherapy with cisplatin application in the palliative treatment of recurrent canine oral sarcomas.

Methods:

Two dogs with a recurrence of palatine fibro-myxoid sarcoma and one with recurrence of maxillary osteosarcoma were treated with electrochemotherapy with intratumorally administered cisplatin at an approximative dose 2mg/cm³ of tumor mas. Electroporation was performed using bipolar high voltage and low voltage generator (ELECTROcell B15, Leroy Biotech). Square wave pulses of 100 µs were delivered at 1 Hz, with 15 mm needle electrodes and the electric field intensity set at 1300 V/cm. The response to the treatment was evaluated according to the Response Evaluation Criteria in Solid Tumors.

Results:

Cisplatin injection resulted in medium bleeding in all patients and resolved immediately after electroporation. Mild muscular contractions during electrochemotherapy were observed. No adverse effects in the perioperative period were observed. 4 weeks after electrochemotherapy, partial response was observed in two patients, in one patient disease was stable. Tumor progression occurred 8 weeks after initial treatment. In all patients, the second electrochemotherapy was implemented.

Conclusions:

Electrochemotherapy may be safely applied in the oral cavity for partial local control of the recurrent sarcoma.

P060 / #242

Topic: *AS20 Oncology*

SERUM THYMIDINE KINASE IN HEALTHY GUINEA PIGS COMPARED TO GUINEA PIGS WITH LYMPHOMA

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Introduction:

Activity of serum Thymidine kinase (sTK1) is closely correlated with DNA synthesis and cell proliferation. In lymphoproliferative neoplasia associated with increased cell proliferation sTK1 activity provides information regarding prognosis and treatment effectiveness in humans, dogs, cats, and horses.

Objectives:

Aim of this retrospective study was to compare sTK1 levels in clinically healthy guinea pigs (n=4) to ones with lymphoma (n=3).

Methods:

sTK1 was measured with chemiluminescence immunoassay (LiaisonXL, DiaSorin, Italy).

Results:

Case 1 was a four years old, female American guinea pig presented with acute dyspnea, swollen throat area and generalized lymphadenopathy. Lymphoma was suspected. STK1 concentration was 90,3U/l. Lymphoma was confirmed by histopathology (diffuse infiltration of small to intermediate lymphocytes and loss of organ-specific structures) and immunohistochemistry (95% lymphocytes expressed CD79a (B-lymphocytes)) one month later by post mortem.

Case 2 was a four years old, male American guinea pig presented with anorexia and generalized lymph nodes enlargement. The complete blood count (CBC) showed marked leukocytosis (332.8G/l) with lymphocytosis (292.9G/l). Microscopically mainly large granular lymphocytes were seen. STK1 concentration was 30.8U/l.

Case 3 was a 5 years old, male guinea pig with generalized enlargement of lymph nodes and marked swelling of the conjunctiva. Leukocytosis of 81.7G/l with a lymphocytosis of 75.2G/l occurred in the CBC. Lymphoma was suspected. STK1 concentration was 2.3U/l.

In comparison sTK1 in four healthy guinea pigs was <0.5–1.5U/l.

Conclusions:

sTK1 seems to discriminate between healthy guinea pigs and those with lymphoma. Marked elevation may correspond with severity of disease (proliferative activity) as known in humans but further investigation is required.

P061 / #133

Topic: AS21 One health

CHOICE OF ANTIMICROBIALS AND USE OF EBVM METHODS IN RUSSIA

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Introduction:

EBM methods are well established in human medicine. No information is available about their use by Russian-speaking veterinarians and antimicrobials of choice they use in practice.

Objectives:

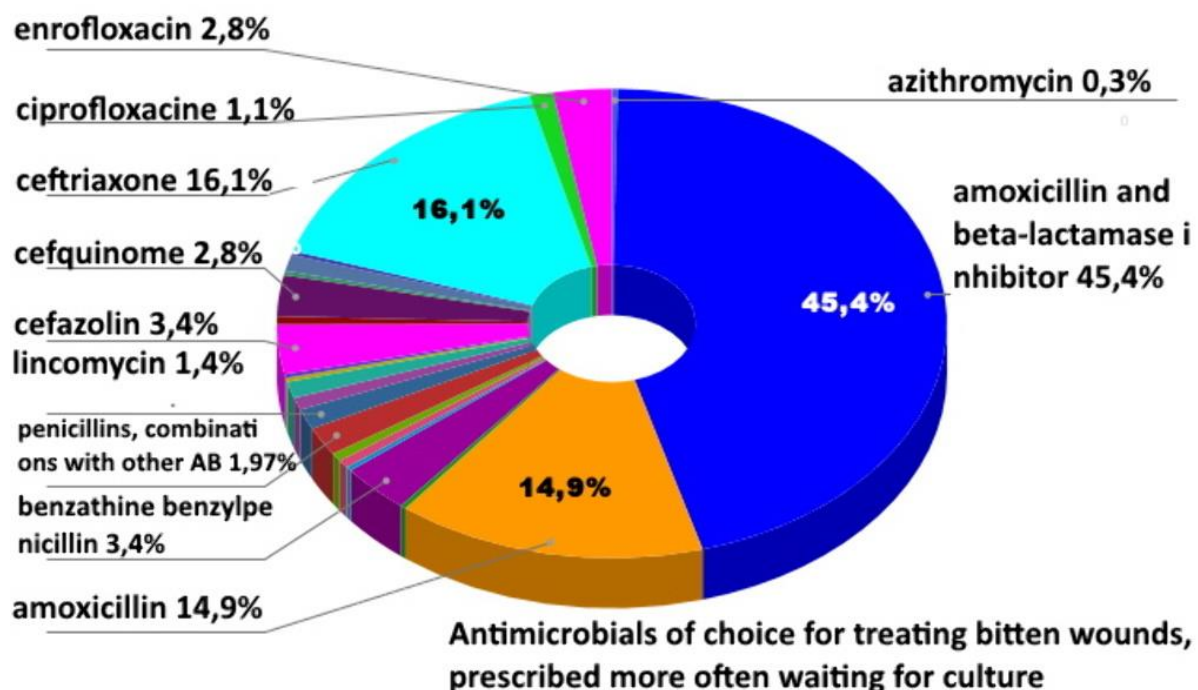
To analyze compliance of Russian-speaking veterinarians with EBVM principles and their antimicrobial preferences

Methods:

A survey in professional network groups of Russian-speaking veterinarians (348 respondents, 61 Russian regions, 11 countries)

Results:

Choice of antimicrobials by veterinarians from Russia and 11 countries was estimated. Amoxicillin with clavulanic acid is prescribed most commonly (59.13%). Amoxicillin/clavulanate is treatment of choice for patients with bitten wounds 45.35%.



B-lactams and penicillins (59.13%) and fluoroquinolones (19%) are the most popular groups.

There is a gap between EBVM concepts and terminology perceived (59.8%) and actual (34.5%) knowledge. Veterinarians consider that EBVM information is necessary in studies and practice (95.1%) and must be on university and CE programs (88.8%). Despite high interest in EBVM, 18.7% of respondents use homeopathy, though it has no proven efficacy and is not included in the ATCvet system. 41.4% of respondents search for professional information in Russian only. Good understanding of EBVM is impossible for them, as most EBVM sources are in English. There are no EBVM guidelines and textbooks written or translated into Russian, and access for Russian-speaking veterinarians to EBVM information is limited, as many of them do not read English.

Conclusions:

Preferences in use of antimicrobials in daily practice were assessed, penicillins/B-lactams and fluoroquinolones are most popular. Veterinarians need information on EBVM (in Russian too) and consider it vital for university curricula and CE programs.

P063 / #19

Topic: AS22 *Ophthalmology*

MONITORING OF SPONTANEOUS CHRONIC CORNEAL EPITHELIAL DEFECT WITH OPTICAL COHERENCE TOMOGRAPHY

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Introduction:

The indolent ulcer is a specific type corneal ulcer in which the epithelium not adhere to the stroma. Boxers are more commonly affected. Regardless of the cause, these ulcers can persist for months if left untreated, causing pain and scar formation. The inability of the ulcer to properly heal is due to a number of changes that can be observed on histopathology.

Objectives:

In this case we monitored the healing of the ulcer in a French bulldog with OCT.

Methods:

The principle of operation of the Optical Coherence Tomography (OCT) is very similar to the ultrasound with one major difference, that in case of the OCT the physical wave originates from a special light source. In our study we used fourier domain OCT.

Results:

In our study we examined 6 years old french bulldog male. We took OCT pictures at different stages of the ulcer.

Conclusions:

With Optical Coherence Tomography we are able to monitor the healing of the ulcer. We can examine the adhesion of the epithelium to the stroma. We can monitor the effectiveness of conservative or surgical treatment

P064 / #20

Topic: AS22 *Ophthalmology*

EARLY DIAGNOSIS OF PROGRESSIVE RETINOPATHY WITH OPTICAL COHERENCE TOMOGRAPHY IN KUVASZ

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Introduction:

The PRA is a genetic disorder. It was announced in 2016 that PRA has been identified in Kuvasz. It causes the degeneration and death of the cone and rod cells of the retina. The examination with ophthalmoscope and fundus camera do not make it possible to detect fine changes thus do not support the detection of progressive retina atrophy (PRA) the early signs of which appear in the retina.

Objectives:

Our goal is to introduce the importance of the OCT in the early diagnosis of PRA in Kuvasz.

Methods:

The principle of operation of the Optical Coherence Tomography (OCT) is very similar to the ultrasound with one major difference, that in case of the OCT the physical wave originates from a special light source. In our study we used Fourier domain OCT.

Results:

In our study we examined 22 Kuvasz between the age of 11 months to 9 years old. We took OCT pictures at different stages of PRA. We observed the retinal thinning, while the structure got disrupted. In some cases we observed retinal detachment and liquid between the layers.

Conclusions:

With Optical Coherence Tomography we are able to detect fine lesions. This makes possible to begin the therapy earlier and slows down the degeneration of the cells.

P065 / #31

Topic: *AS22 Ophthalmology*

EPISCLERAL SILICONE MATRIX CYCLOSPORINE IN A DOG THAT IS UNCOOPERATIVE FOR A LOCAL APPLICATION OF A DRY EYE TREATMENT

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Introduction:

Introduction: One of method to therapy of dry eyes in brachycephalic dogs is episcleral implant silicone matrix cyclosporine.

Objectives:

Objectives: Improving clinical symptoms in a dog that is uncooperative for a local dry eyes therapy

Methods:

Methods: Episcleral silicone matrix cyclosporine (ESMC), is 2mm wide, 1mm high and 1,9mm long. 12 mg of cyclosporine loaded into each implant. Schirmer 1 tear test (S1TT) before operation was OD 14 mm; OS 17 mm. Implanted in both eyes under total anesthesia

Results:

Results: The 1st control at 2 months after operation, S1TT OD 16mm, OS 10 mm;

2nd control at 8 months OD 15mm, OS 16mm; 3rd control at 10 months OD 14mm,

OS 15mm; 4th control at 1 year OD 10mm, OS 8mm;

5th control at 14 months OD 8mm, OS 7mm.

During the postoperative controls the implant did not move from the implant site.

Conclusions:

Conclusions: ESMC implanted in both eyes of this patient did not show good results in the quantity and in the quality measurements of the tears, the same can be seen on the clinical picture.

Monitoring the patient for 14 months after the surgery, we can conclude that the intervention has not gave the wanted results, and we can make the same conclusion for the price of the implant.

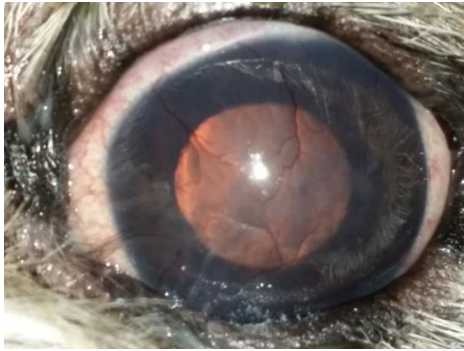


Fig.1 before operation



Fig.2 ESMC implant



Fig.3 . The 5th control at 14 months OS 7mm.

P066 / #118

Topic: AS22 *Ophthalmology*

THE EFFECT OF OLIVE OIL ON EIPHORA IN RABBITS

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Introduction:

Epiphora is a common disease in rabbits and often causes eyelid dermatitis due to wet skin. In addition to causal treatment, symptomatic treatment is important.

Objectives:

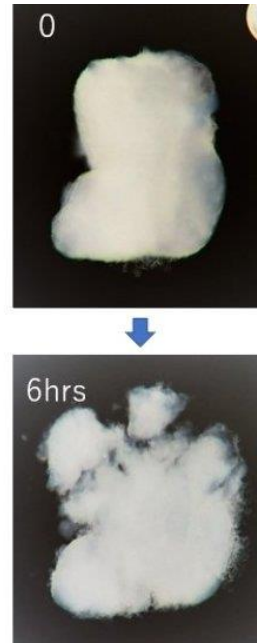
One cause of epiphora is decreased secretion or obstruction of the meibomian glands. Olive oil was used to verify its improving and protective effects.

Methods:

- 1) Sodium hyaluronate ophthalmic solution was permeated into the eye surface and around the eyelid by opening and closing the eyelid. Then, the swollen secretions and excess liquid were removed by wiping.
- 2) As the next step, olive oil was applied to the eyelids and the eyelid margin.
- 3) Eyelid massage: In the above procedure, the eyelid was opened and closed 10 to 20 times, and the olive oil was well penetrated and wiped.
- 4) For severe dermatitis only, antibiotics and corticosteroids were applied.

(In-vitro test)

Olive oil was found to dissolve meibomian gland secretions.



Results:

All 58 patients had decreased tear flow and improved symptoms of blepharitis. In severe blepharitis, daily treatment was able to maintain improvement.

Conclusions:

The use of hyaluronic acid ophthalmic solution and olive oil was effective in improving meibomian gland function and protecting the eyelids. The secretions of human meibomian glands contain oleic acid. Olive oil, a similar component, is considered to be one of the effective eyelid- function improving agents in rabbits.

P067 / #102

Topic: AS23 Orthopedics

EVALUATION OF THE CYTOCOMPATIBILITY OF AN INNOVATIVE CRUCIATE LIGAMENT PROSTHESIS WITH A PHARMACOLOGICALLY ACTIVE SURFACE - IN VITRO STUDY.

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Introduction:

In consequence of a rupture of cruciate ligament (CCL), necessary is surgical restabilization, e.g. with a polyester implant, which implanted intra-capsular restores the mechanical stability of the knee, while causing synovial irritation. In the present work, modification of polyester implant surface by active oxide coating has been proposed to eliminate well-known problems associated with rupture of CCL.

Objectives:

Improving the biocompatibility of the implant by reducing synovitis accomplished by applying sol-gel SiO₂ coating functionalized with betamethasone and hyaluronic acid.

Methods:

Materials were newly obtained and physicochemical and morphological investigated by EDS (Energy-dispersive X-ray spectroscopy), Raman spectroscopy, goniometer and SEM (scanning electron microscopy). Cytotoxicity of modified polyester was carried out according to criteria of ISO 10993-5 using XTT assay (Cell Proliferation Kit II). NHDE cells (normal human dermal fibroblast) viability was assessed after contact of tested materials with cells monolayer for 24 hrs of incubation at 37°C in 5% CO₂. The percentage of growth inhibition was calculated for each material.

Results:

The study of chemical structures (EDS and Raman spectroscopy) confirmed the presence of oxide structure and active substances. The wettability measurements of both surfaces showed changes in SFE. After 24hrs of cells incubation in the presence of tested materials, there was no change in cells morphology. Moreover, in the XTT assay, there were no significant differences in cells viability to the control group.

Conclusions:

Here we showed that both active substances incorporated in SiO₂ structure and applied on polyester implant do not present any cytotoxic effects against normal fibroblast.

P068 / #175

Topic: AS23 Orthopedics

EVALUATION OF THE FEMORAL AND TIBIAL ALIGNMENTS IN DOGS: A SYSTEMATIC REVIEW

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Introduction:

Evaluation of the hind limb conformations was always important in veterinary orthopedics. Using standard methods provide reliable values, especially in the case of bilateral deformities, where the sound extremity does not exist

Objectives:

The aims of this study were to report standard values in different breeds, to compare the measured values in dogs with and without different orthopedic diseases and to evaluate the accuracy of the protocols

Methods:

All articles were collected by screening the databases Scopus, PubMed, and Web of Science using PRISMA guidelines. The screening process was carried out for each database separately. After excluding the duplicates, unrelated articles and screening the titles, abstracts, and full-text of the articles, 47 articles included in this review

Results:

Alignments were measured in the frontal, sagittal and transverse planes. In the frontal plane, proximal femoral alignments did not differ between the dogs with and without orthopedic diseases in most of the articles, whereas the distal femoral alignments significantly differed between the dogs with and without medial patellar luxation (MPL). The tibial alignments in the frontal plane differed between healthy and MPL affected dogs. In most of the studies, a significant difference was recorded between the tibial plateau angle (TPA), diaphyseal proximal tibial angle (DPA) and Z angle of the dogs with and without cranial cruciate ligament (CrCL) rupture

Conclusions:

Tibial and distal femoral alignments in the frontal plane corresponded to the severity of the MPL. The difference between the affected and non-affected dogs with CrCL disease was limited to the TPA, Z angle and DPA

Topic: AS24 Other

ANTIMICROBIAL RESISTANCE IN STAPHYLOCOCCUS AUREUS AND STAPHYLOCOCCUS PSEUDINTERMEDIUS ISOLATED FROM DOGS

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Introduction:

Introduction. Methicillin-resistant coagulase-positive staphylococci have become increasingly recognised as opportunistic pathogens that limit therapeutic options in companion animals. Antimicrobials, especially broad-spectrum antibiotics, are increasingly used in the treatment of pet infections.

Objectives:

The aim of the present study was to examine the antimicrobial resistance in coagulase-positive staphylococci isolated from dogs.

Methods:

Methods. Samples for staphylococci isolation were collected from the rectum and nasal cavity of dogs (n = 61). Staphylococci isolates have been identified using multiplex polymerase chain reaction and tested for resistance genes. Polymerase chain reaction was used to beta-lactams (*blaZ*) and methicillin (*mecA*). For all comparisons, values of $p < 0.05$ were considered significant.

Results:

Strains of *Staphylococcus* genus were isolated from 52 dogs (85.2%). The prevalence of *Staphylococcus pseudintermedius* (*S. pseudintermedius*) (45.9%) in dogs was significantly higher than *Staphylococcus aureus* (*S. aureus*) (6.6 %) ($p < 0.001$).

S. pseudintermedius more commonly colonized canine rectum, while *S. aureus* - nasal cavity. The isolates of *S. aureus* were less resistant to antimicrobial agents than *S. pseudintermedius* strains. Seven strains (22.6%) of all *S. pseudintermedius* isolates were identified as multidrug resistant. The strains of *S. aureus* and *S. pseudintermedius* producing beta-lactamase were more resistant to amoxicillin and penicillin G ($p < 0.001$). Occurrence of *blaZ* gene in the isolated *S. aureus* and *S. pseudintermedius* was responsible for high resistance to penicillin G, ampicillin and amoxicillin.

Conclusions:

Isolated coagulase-resistant staphylococci strains did not show resistance to methicillin. *S. pseudintermedius* strains were more often multidrug-resistant compared with *S. aureus* strains.

P070 / #83

Topic: AS24 Other

WOUND TREATMENT IN THE DOG USING PLATELET-RICH-FIBRIN (PRF) MEMBRANE

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Introduction:

Platelet-rich-fibrin membrane contains a fibrin matrix with leukocytes, erythrocytes, platelets, B and T lymphocytes, monocytes, stem cells and growth factors that provides better and faster tissue regenerating. Because of those features, the PRF membrane is very useful in contaminated wound treatment.

Objectives:

Evaluate Platelet-rich-fibrin membrane use in contaminated wound treatment in a dog.

Methods:

6 months young female mix dog, weight 3.3 kg BMI=4, was presented from a shelter for wound treatment. During the physical examination, a wound (4 cm x 2,2 cm) was noticed on a dorsal surface on the front right leg with purulent discharge.

The wound was cleaned with chlorhexidine 0.12% solution. The whole blood sample (5 ml) was collect from *v. saphena* into 5 sterile tubes without anticoagulant. WB sample was centrifuged at 2500 rpm, 12 min. After separation and compression, PRF membrane was put in a wound area. Control recheck was made 2, 5, and 7days after the procedure. For evaluation, wound healing score system and wound measurement were used. Table 1. 0 – non-present; 1 – present. Wound contraction was counted comparing to primary measurements and last check.

Results:

	0 days	2 days	5 days	7 days
Re-epithelialization	0	1	1	1
Wound measurements, cm	2,2 x 4	1,7 x 3,8	1,3 x 3,5	0,6 x 2,7
Purulent discharge	1	0	0	0
Wound contraction, %	-	26,6	48,3 (29,6)	81,6 (64,4)

Conclusions:

PRF may be a useful tool in contaminated wound treatment but there is a need for more research about its concept in dogs.

P071 / #174

Topic: AS24 Other

UNTARGETED METABOLOMIC PROFILING OF PLASMA FROM DOGS WITH IDIOPATHIC DILATED CARDIOMYOPATHY

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Introduction:

Idiopathic dilated cardiomyopathy (iDCM) is the second most common cardiac disease in dogs, and the major cause of morbidity and mortality in various dog breeds. It is characterized by dilatation and impaired contraction of the left or both ventricles and carries a poor prognosis with progression to congestive heart failure or fatal arrhythmias.

Objectives:

To compare the clinically healthy dogs plasma metabolome versus dogs with clinically diagnosed iDCM. The potential role of the differentially expressed metabolites in iDCM was investigated.

Methods:

Plasma was collected from 8 dogs with iDCM and 12 healthy dogs. The plasma metabolome was analysed using untargeted metabolomics approach by applying UHPLC and Q Exactive Plus Orbitrap Mass Spectrometer operating in alternating positive and negative modes with mass resolution 70.000 at m/z range 70-1050. Analyses were performed using Polyomics integrated Metabolomics Pipeline (PiMP) program specifically designed for metabolomics.

Results:

Metabolomics analysis resulted in the annotation of 2636 peaks, 237 of which showed statistically significant differences ($p < 0.05$) between dogs with iDCM and healthy control. Among them, 48 metabolites were identified using standards. When the two groups were compared, the most significant metabolites are O-Acetylcarnitine, L-Carnitine and cis-Aconitic acid.

Conclusions:

The study shows that the differences in plasma metabolome between dogs with iDCM and healthy dogs can be detected with an untargeted metabolomics approach using UHPLC-MS/MS method. O-Acetylcarnitine, L-Carnitine, and cis-Aconitic acid may have potential in the discovery of biomarkers relevant for iDCM.

Topic: AS25 Pain management

COMPARISON OF THE ANALGESIC EFFECTS OF PHARMACOPUNCTURE WITH MELOXICAM AND BY SUBCUTANEOUS ROUTE IN THE POSTOPERATIVE PAIN OF BITCHES SUBMITTED TO OVARIOHISTERECTOMY

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Introduction:

As conventional drugs used for pain control promote side effects in several animals, alternative techniques are needed.

Objectives:

Pain expression was compared in bitches after ovariohysterectomy using two protocols with 15 animals each: 1- pharmacopuncture (M_{AP} meloxicam 0.02mg/kg diluted in 0.8ml of 0.9% NaCl administered bilaterally in acupoints SP6, S36, GB34 and L3) or 2- meloxicam (M_{SC} 0.2mg/kg SC).

Methods:

Healthy bitches of varied breeds were employed, with weight of 9 ± 1.24 kg and age 1.8 ± 2.58 years. Pain was evaluated before (basal) and 1, 2, 4, 8, 12 and 24 hours after extubation. Modified Glasgow Pain Scale (MGPS), Dynamic Interactive Visual Analog Scale (DIVAS) and Sedation Score (Kuusela et al., 2001) were used to determine pain scores and when greater than 33% of MGPS, morphine was administered for analgesic rescue. Statistical analysis was performed by Shapiro-Wilk, Friedman's followed by Dunn's test, Wilcoxon's and Fisher's with significance at $P < 0.05$.

Results:

In both treatments, there was an increase in sedation scores at moments 1 to 8 hours compared to basal. In MGPS, in relation to baseline, the M_{AP} group showed an increase in pain scores later at moments 1 to 8, while the M_{SC} group showed an increase at moments 1 and 2. The values for DIVAS were higher in both treatments at moments 1 to 12 compared to basal. There were no significant differences between treatments when compared on the same scale.

Conclusions:

It is concluded that treatments presented similar analgesic effectiveness postoperatively in bitches submitted to ovariohysterectomy.

P073 / #234

Topic: AS25 Pain management

EFFICACY AND SAFETY EVALUATION IN EUROPE OF BEDINVETMAB, A NOVEL MONTHLY ANTIBODY THERAPY FOR THE TREATMENT OF OSTEOARTHRITIS PAIN IN CLIENT-OWNED DOGS

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Introduction:

Bedinvetmab is a canine monoclonal antibody targeting Nerve Growth Factor (NGF). The inhibition of NGF mediated cell signaling has demonstrated to relieve pain associated with osteoarthritis (OA).

Objectives:

To determine the efficacy and safety of bedinvetmab for the treatment of pain associated with OA.

Methods:

Dogs with OA (n=287) were enrolled from 26 veterinary practices in four EU countries. Dogs were randomized to subcutaneous treatment with placebo (saline, n=146) or bedinvetmab (0.5-1.0 mg/kg, n=141) administered on days 0, 28 and 56. The primary endpoint was treatment success based on the owner-assessed Canine Brief Pain Inventory (CBPI). Treatment Success was defined as a reduction of ≥ 1 in CBPI Pain Severity Score and ≥ 2 in CBPI Pain Interference Score vs Day 0.

Results:

Percent treatment success was significantly greater in the bedinvetmab-treated group vs the placebo-treated group at all time points ($P \leq 0.0025$). On day 28, 43.5% of dogs achieved treatment success with bedinvetmab compared to placebo (16.9%) ($P = 0.0017$). Treatment success continued through days 56 (50.8%) and 84 (48.2%) in the bedinvetmab-treated group and was $< 25\%$ in the placebo-treated group at all time points. Withdrawals for lack of efficacy were greater in the placebo-treated (n=21) compared to the bedinvetmab-treated group (n=3). Treatment-induced immunogenicity was found in 1.4% of bedinvetmab-treated dogs. Adverse events were similar in frequency between treatment groups and considered typical for a population of OA dogs.

Conclusions:

This study demonstrated the safety and efficacy of bedinvetmab in the population treated when administered monthly (0.5-1.0 mg/kg, SC) for three months.

P074 / #243

Topic: AS25 Pain management

EVALUATION OF THE LONG-TERM EFFICACY AND SAFETY OF BEDINVETMAB FOR THE TREATMENT OF PAIN ASSOCIATED WITH OSTEOARTHRITIS IN CLIENT-OWNED DOGS IN EUROPE

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Introduction:

Bedinvetmab is a canine monoclonal antibody targeting Nerve Growth Factor (NGF). The inhibition of NGF mediated cell signaling has demonstrated to relieve pain associated with osteoarthritis (OA).

Objectives:

To further collect long-term efficacy and safety data from client-owned dogs for the treatment of pain associated with OA in a single-arm open label study.

Methods:

Bedinvetmab-treated dogs, previously enrolled in a three-month placebo-controlled study at veterinary practices in three EU countries, were offered continued treatment (CT) provided they had responded positively based on the assessment of both owner and veterinarian. Eighty-nine dogs received up to six additional subcutaneous monthly administrations of bedinvetmab (0.5-1.0 mg/kg). Owners assessed the dog's pain by completing a validated Canine Brief Pain Inventory (CBPI). Treatment Success was defined as ≥ 1 reduction in Pain Severity Score and ≥ 2 in Pain Interference Score compared with the dog's pre-treatment baseline.

Results:

Treatment success was 48.2% (n=131) at the end of the three-month placebo-controlled study. After the first month of bedinvetmab-treatment within the CT study, treatment success was 62.8% (n=78), thereafter it ranged from 73.3% to maximum 82.2% (n=64 to 75). Eleven cases were withdrawn, eight of those due to developing unrelated medical conditions and one due to lack of efficacy. Observed adverse events were considered typical for a population of OA dogs, none were deemed treatment related.

Conclusions:

Results demonstrate sustained safety and efficacy of bedinvetmab in the population treated after continued administration for up to nine months at a monthly minimum dose of 0.5 mg/kg.

P075 / #56

Topic: *AS27 Practice management*

THE ROLE OF THE VETERINARY MANAGEMENT GROUP (VMG) AS A CHANGE AGENT IN THE UK'S VETERINARY PROFESSION

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Introduction:

The Veterinary Management Group (VMG) is a not-for-profit membership organisation founded in 1993. Historically, VMG members have been Practice Managers but following a rebrand in 2018, the target market has broadened to include anyone working in a veterinary leadership or management role.

Objectives:

The veterinary sector currently faces an eclectic mix of challenges and opportunities including corporatisation, technological advances, changing client expectations, staff wellbeing concerns and uncertain workforce planning; and there is a clear need for further understanding, guidance and support. This need is clearly aligned to VMG's purpose and therefore presents the organisation with an opportunity to occupy the support gap that currently exists. This study aimed to establish how this could be done.

Methods:

A literature review was carried out examining traditional and contemporary change theory. Emergent themes were evaluated against VMG's business plan and recommendations made.

Results:

The major themes identified were the requirement for new types of leadership (values-led and purpose-driven, and facilitating rather than controlling or enforcing); innovative approaches to adapt to a continually changing environment; and the need for performance enablers and empowered people.

Conclusions:

Future directions for the VMG should include developing a programme of training in basic management and leadership skills to complement existing certification; carrying out or commissioning primary research in order to make evidence-based decisions; and adopting theories of change methodology to identify future goals for veterinary leadership, and the conditions under which these goals could be reached. They could then position themselves as the change agent to enable these conditions to be met.

P076 / #107

Topic: *AS27 Practice management*

21ST CENTURY LEADERSHIP: USING LEADERSHIP TO IMPROVE PERFORMANCE IN UK VETERINARY PRACTICE

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Introduction:

Today's organisations are working in a world of disruptive innovation, rising consumer expectations, global markets and a changeable environment. UK veterinary practice is no exception; experiencing corporatisation, technological change, a workforce retention crisis and changing client demands. Traditional management methods are no longer appropriate.

Objectives:

The 2015 Vet Futures report identified "exceptional leadership" as a key ambition for the long-term sustainability of the UK veterinary sector. This study aimed to understand the leadership competencies required to drive performance in 21st century veterinary practice.

Methods:

A literature review was carried out examining current leadership theory and practice and the competencies required of contemporary leaders. Emergent themes were collated to produce a set of recommendations for those working in the veterinary sector to improve their leadership capabilities.

Results:

Traditional leadership competencies (such as communicating effectively, delivering results, having a strategic perspective) are still relevant but now form a foundation to build on in, for example, modern networking and digital familiarity. Complex modern organisations require flexibility and responsiveness in a rapidly-changing world. Staff expect leaders who are 'authentic': principled, passionate, and aware of how they think and therefore behave. Companies require leaders who direct rather than command; leading diverse, multidisciplinary teams of people who are increasingly willing to leave an organisation with poor leadership.

Conclusions:

Modern leaders have to update their skills to respond to workforce and environmental demands. In the veterinary sector, practice leaders should utilise a grounding in classical leadership traits to build the competencies required of contemporary leaders; focusing on flexibility, authenticity and inclusivity.

P077 / #130

Topic: *AS28 Reproduction, pediatrics*

CALCIUM CHLORIDE NONSURGICAL NEUTER FOR SMALL ANIMALS: CASE STUDY IN A PET RAT

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Introduction:

Neutering small pets presents a dilemma for owners, with its expense and surgical risk. Calcium chloride dihydrate (CaCl₂) is an inexpensive intratesticular injection for nonsurgical neuter. Previous studies in rats using CaCl₂ dissolved in saline or dimethyl sulfoxide reported successful sterilization, although a small study in guinea pigs using CaCl₂ in lidocaine did not.

Objectives:

Conduct the first evaluation of 20% CaCl₂ in ethyl alcohol (reported as the optimal solution for dogs) to neuter a pet male rat.

Methods:

CaCl₂ topical solution 20% in 95% ethyl alcohol was obtained from an accredited compounding pharmacy and filter sterilized. A licensed veterinarian gave the rat a premedication injection of butorphanol for analgesia followed by isoflurane anesthesia. The veterinarian injected 0.1 ml of the CaCl₂ solution into the caudoventral aspect of each testicle with no seepage of solution. The rat was provided pain medication for three days. Behavior and testicular size were evaluated over 41 days.

Results:

The rat had a normal appetite throughout the period. A slight skin irritation at day 14 was noted. The testicles began to shrink and by day 41 only a small remnant remained. No fertility assessment was made, although the veterinarian judged that the testicular remnants would not support fertility.

Conclusions:

CaCl₂ in alcohol was simple to administer in the pet rat, had no significant side effects and resulted in testicular remnants inconsistent with fertility. The owner was pleased with the outcome and that the procedure was quick, inexpensive, and did not put the rat at surgical risk.

P078 / #237

Topic: AS28 Reproduction, pediatrics

COMBINED THICKNESS OF UTERUS AND PLACENTA (CTUP) IN NORMAL GESTATION AND THREATENED ABORTIONS IN CANINES.

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Introduction:

Ultrasonographic measurement of the combined thickness of the uterus and placenta (CTUP) is currently the most widely used diagnostic tool for diagnosis of placentitis in mare. However, there are scanty reports of evaluation of CTUP studies in normal or threatened abortion in canines.

Objectives:

Evaluation of CTUP in canines

Methods:

Clinically healthy pregnant bitches, irrespective of age, weight, parity and breed with known history of breeding were selected in this study. The bitches belonged to different breeds with weights ranging from 3 to 55 kg. Total of 56 bitches were included. All the cases were classified into normal gestation (n=28) and threatened abortion (n=28). The experimental bitches were further divided into four groups according to the body weight, each comprising 14 bitches. Two dimensional ultrasonography was used to study the combined thickness of uterus and placenta (CTUP) in all the experimental bitches during 40 to 50 days of gestation. Three such measurements were taken at different places close to central part of the placenta and averaged.

Results:

The mean CTUP in normal gestation groups during 40 to 50 days of gestation was 0.85 ± 0.05 cm while it was 1.28 ± 0.05 cm in threatened abortion groups during the same gestation period.

Conclusions:

. In canines CTUP ≥ 1.2 cm, may be used as indicator of placentitis for diagnosis and monitoring of threatened abortion till the end of gestation. In canines CTUP measurement above 1.3 cm during 40 to 50 days of gestation in threatened abortion may result in abortion in spite of treatment.

P079 / #106

Topic: AS29 *Soft tissue surgery and Oncosurgery*

MINIMALLY INVASIVE URETHRECTOMY COMBINED WITH PREPUBIC URETROSTOMY IN A BITCH - CADAVER STUDY.

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Introduction:

A surgical treatment of urethral neoplastic hyperplasia in female dogs requires an extensive surgery often combined with pelvic osteotomy. The restoration of urethral continuity after its partial resection brings a risk of anastomosis rupture or not obtaining tumor free margins.

Objectives:

The study was made in purpose to develop a new minimally invasive surgical technique of partial urethrectomy, ovariohysterectomy, resection of uterus body (in sterilized females) and vulvovaginectomy combined with perineal urethrostomy.

Methods:

The experiment was carried out on 10 dog cadavers divided into two groups of 5 dogs each (sterilized and non-sterilized). The study developed an optimal distribution of 3 trocars of 5mm diameter (first in the linea alba behind the navel, second and third located caudo-laterally from the first trocar) allowing distal urethrectomy and ovariohysterectomy or body of uterus up to the vaginal vestibulum. After the laparoscopy assisting prepubic urethrostomy, from the perineum approach in an open surgery way, vulvovaginectomy was performed and previously disattached organs were taken out. Trocar wounds were closed with a single, interrupted suture pattern, while the wound after vulvovaginectomy was closed with a few layers.

Results:

The average procedure time was 63 minutes for sterilized and 84 minutes for non-sterilized bitches. The presented technique enabled the resection of potential urethral neoplastic hyperplasia using 3 trocars.

Conclusions:

The presented technique will probably allow for a minimally invasive resection of urethral neoplastic hyperplasia in female dogs while obtaining tumor free margins and the formation of prepubic urethrostomy of proximal urethra.

P080 / #230

Topic: *AS29 Soft tissue surgery and Oncosurgery*

COMPARISON OF LAPAROTOMY LIVER BIOPSY WITH LAPAROSCOPY LIVER BIOPSY IN DOGS

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Introduction:

Biopsy is a common procedure performed in liver disease. Thin and thick needle biopsies under ultrasound guidance are the fastest methods but can be risky and do not always allow collection of sufficient tissue. In order to obtain a larger sample, biopsy may be performed during median laparotomy or with laparoscopy.

Objectives:

The study compares the time of the procedure and postoperative period in dogs undergoing laparoscopic and laparotomy liver biopsy.

Methods:

Patients referred to the Clinic at the Department of Surgery to have liver samples collected were divided into two groups. In group A laparoscopic biopsy was performed in six dogs. In group B liver samples were taken from six dogs during median laparotomy. Animals in both groups were anesthetized using the same protocols and received the same drugs during the postoperative period. On the first, third and seventh day after the procedure, the animals were examined and owners answered questions about the condition of the animals in the postoperative period.

Results:

The average procedure time in group A was 42 min \pm 12, while in group B it was 67 min \pm 22. The average recovery time in group A was 1.3 day \pm 0.5 and in group B recovery took 3.3 day \pm 1. The owners of the animals from both groups did not report post-operative complications.

Conclusions:

Performance of liver biopsy using the minimally invasive method allows a larger sample to be taken than in thin and thick needle biopsies. In comparison to laparotomy, the time of the procedure was shorter and the recovery was faster.

P081 / #239

Topic: AS29 *Soft tissue surgery and Oncosurgery*

**MAPPING OF SENTINEL LYMPH NODES (SLN) IN A BITCH WITH MAMMARY GLAND CANCER
- CASE REPORT**

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Introduction:

Mastectomy remains the primary treatment of mammary tumors in dogs.

The aim of oncosurgery is to achieve complete tumor removal and extirpate regional lymph node suspected as a metastatic- *en block* procedure (1).

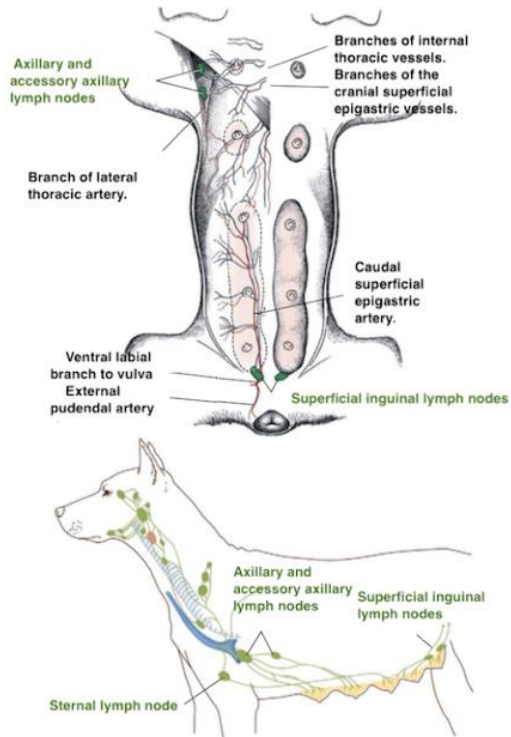
The sentinel lymph node (SLN) is the hypothetical first lymph node draining a cancer(2).

The concept of SLN surgery is to determine if the cancer has spread to the very first draining lymph node.

If the SLN does not contain cancer, then there is a high likelihood that the cancer has not spread to other area of the body.

Objectives:

Detecting SLN



From Karen M. Tobias, Spencer A. Johnston: VETERINARY SURGERY: SMALL ANIMAL 2012, Saunders/Elsevier

Table 1: Lymph drainage of neoplastic mammary glands in the bitch as shown by indirect lymphography [10].

Mammary gland	Lymph node
1 st	Axillary, sternal
2 nd	Axillary, sternal
3 rd	Axillary, inguinal medial iliac
4 th	Inguinal, axillary
5 th	Inguinal, popliteal, lymphatic plexus of the thigh

L. Papazoglou, E. Basdani, S. Rabidi, M.Patsikas, M.Karayianopoulos, Current Surgical Options for Mammary Tumor Removal in Dogs, J Veter Sci Med 2014 Issue:1, Vol.:2*

Methods:



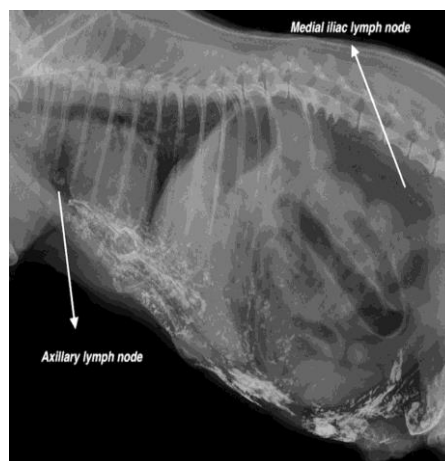
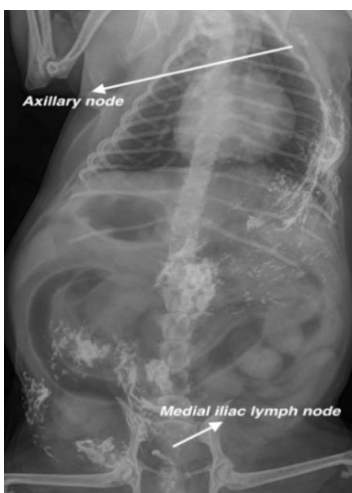
„Molly“- 13 years old york shire terier, female, non spay.
 Additional tests were performed- blood test, abdominal ultrasound, cardiac echo.
 Lymphadenography was performed.
 24 hours later X-rays and surgical procedure was performed.
 Surgical procedure: ovariohysterectomy, local left sided mastectomy and right- sided unilateral mastectomy.
 Chest X-rays excluded metastases.
 Histopathology results: intraductal papillary adenoma, dysplasia of a mammary gland, reactively enlarged lymph node, mixed carcinoma of the low grade (carcinoma mixed type, grade I).



Lymphadenography aims mapping SLN using a lymph transported contrast agent - iodinated ethyl esters of oily fatty acids. 1 ml of Lipiodol was injected in the four quarters surrounding the tumor, into the tissue minimum 0.5 cm from the tumor border, to avoid pseudocapsules damage

24 hours after later X-ray was performed.

Results:



Lymphadenography results:

In this case, the sentinel lymph nodes were: medial iliac lymph node and the right axillary lymph node.

Conclusions:

Lymphatic drainage of the tumor may be difficult to predict (Table1).
Regional lymph node is not always a SLN.

SLN mapping:

decreases lymph node dissections where unnecessary

reduce the risk of lymphedema - a common complication of lymphadenectomy

increases attention on the node(s) identified to most likely contain metastasis

helps determine staging and treatment

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P082 / #223

Topic: *AS30 Sports Medicine and Rehabilitation*

EVALUATING THE EFFECTIVENESS OF PHYSICAL REHABILITATION PROCEDURES IN SOME CASES OF INTERVERTEBRAL DISK DISORDER OF THE DOG

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Introduction:

. Intervertebral disk disease represents a common condition, especially in chondrodystrophic breeds of dogs, in which protrusion or extrusion of an intervertebral disk causes pain, weakness, and varying degrees of neurologic dysfunction

Objectives:

Our study aimed at assessing the effectiveness of physical rehabilitation protocols for neurological patients with disk herniation and discospondylitis

Methods:

5 canine patients (different age, breed, sex) with disk herniation of different degrees, discospondylitis and neurological deficit were submitted to a general clinical exam and a neurological evaluation We evaluated the different degrees of pain (Glasgow pain scale), muscle atrophy (circumferential measurement of the thigh and crus), lameness and neurological deficit (proprioception). The physical rehabilitation procedures applied were: therapeutic exercise, massage, laser therapy, electrostimulation and hydrotherapy protocols

Results:

The physical rehabilitation procedures applied reduced the level of pain, muscle atrophy, and neurological deficit. The use of laser on the soft tissues around the joints, had an analgesic role decreasing the pain rate from 3/4 to 0/4. The electrostimulation and hydrotherapy protocols helped decrease the lameness score in average of 2 points and the improvement of neurological reflexes from -2 (absent) to 0 (normal) also a decrease in pain from 3 (severe) to 0 (absent) and regaining of motor functions in paraplegic patients who did not experience irreversible lesions

Conclusions:

Our study demonstrates the possibility of applying physiotherapy methods to canine patients and the therapeutic effects they have, resulting in the correction of proprioceptive deficits to physiological aspects, diminishing muscle atrophy, significant improvement of the reflexes tested.

P083 / #226

Topic: AS30 Sports Medicine and Rehabilitation

EVALUATING THE EFFECTIVENESS OF PHYSICAL REHABILITATION PROCEDURES IN SOME CANINE PATIENTS WITH JOINT DISORDERS

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Introduction:

Age, sex, genetics, and diet are some of the predisposing agents that cause degenerative processes at the level of these joints.

Objectives:

Our study aimed at assessing the effectiveness of physical rehabilitation protocols for orthopedic patients with hip dysplasia, aseptic necrosis of the femoral head and cranial cruciate ligament injury.

Methods:

5 canine patients (different age, breed, sex) with hip dysplasia, aseptic necrosis of the femoral head or cranial cruciate ligament injury were submitted to a general clinical exam and an orthopedic evaluation using both clinical and imagistic methods. We evaluated the different degrees of pain (Glasgow pain scale), muscle atrophy (the circumferential measurement of the thigh and crus/calf), lameness and levels of the decreased amplitude of articular movements. The physical rehabilitation procedures applied were: therapeutic exercise, massage, laser therapy, electro-stimulation, and hydrotherapy protocols

Results:

The procedures applied reduced the level of pain, muscle atrophy and overall stiffness of the joints. The use of laser on the soft tissues around decreased the pain rate from 3/4 to 1/4 or from 2/4 to 0/4. The electrostimulation and hydrotherapy helped with lameness score in the average of 2 points, increased the circumferential measurement of the thigh with an average of 5.78 cm and 6.82 for the crus

Conclusions:

Laser therapy applied on the affected joints had an anti-inflammatory and analgesic effect, the electrostimulation protocols had an analgesic role decreasing muscle atrophy, hydrotherapy protocols decreased muscle atrophy and improved joint movement. The applied procedures had a significant role in the rehabilitation of orthopedic patients.