February 2015 Abstracts

Journal of Small Animal Practice

A retrospective survey of ocular abnormalities in pugs: 130 cases.
M. Krency, A. Tichy, J. Rushton and B. Nell.
OBJECTIVES - To determine the types and frequency of ophthalmic findings in pugs. MATERIALS AND METHODS - Retrospective analysis of case records of pugs presented to an ophthalmology unit between 2001 and 2012. Ophthalmological findings were correlated with age, gender, presenting signs and time of onset of disease. RESULTS - In total, 130 pugs (258 eyes) were examined. Ocular abnormalities identified included keratoconjunctivitis sicca (n = 39 eyes), macroblepharon (n = 258 eyes), entropion (n = 258 eyes), distichiasis (n = 56 eyes), ectopic cilia (n = 8 eyes), conjunctivitis (n = 88 eyes), corneal pigmentation (n = 101 eyes), opacity (n = 63 eyes), ulceration (n = 46 eyes), vascularisation (n = 35 eyes), iris-to-iris persistent pupillary membranes (n = 21 eyes) and cataract (n = 18). Keratoconjunctivitis sicca was significantly associated with the presence of corneal pigmentation (P = 0.007 for left eyes; P = 0.043 for right eyes). However corneal pigmentation was also identified in pugs (n = 61) without keratoconjunctivitis sicca. There was a significant influence of ectopic cilia on corneal ulceration (P < 0.001). Younger dogs (mean age, 1·28 (±0·45) years) were significantly more affected by distichiasis. CLINICAL SIGNIFICANCE - The high number of cases of corneal pigmentation without keratoconjunctivitis sicca suggests that there may be additional yet undetermined factors involved in the development of corneal pigmentation in pugs.

Pro-coagulant thromboelastographic features in the bulldog.
G. Hoareau and M. Mellema.
OBJECTIVES - To determine if bulldogs develop a hypercoagulable state comparable to that observed in human patients with sleep apnoea hypopnoea syndrome. MATERIALS AND METHODS - Thromboelastography was performed in 15 clinically healthy bulldogs and 24 healthy control dogs of other breeds or mixed breed lineage. RESULTS - Bulldogs had significantly shorter R and K times relative to control dogs. The alpha angle, maximum amplitude and overall clot strength was significantly greater in bulldogs than in controls. The largest differences between the groups were found in the maximal amplitude and overall clot strength parameters.CLINICAL SIGNIFICANCE - These findings support the concept that brachycephalic syndrome promotes a hypercoagulable phenotype similar to that observed with sleep apnoea hypopnoea syndrome in humans. The large increases in maximal amplitude observed suggest platelet hyperreactivity may play an important role.

Prevalence of physiological heart murmurs in a population of 95 healthy young adult dogs.
A. Drut, T. Ribas, F. Floch, S. Franchequin, L. Freyburger, B. Rannou, J. L. Cadoré and J. Bublot
OBJECTIVES - To determine the prevalence of physiological heart murmurs in healthy young adult dogs. MATERIALS AND METHODS - Healthy dogs aged between 1 and 5 years were enrolled prospectively. All participating dogs underwent physical examination, urinalysis, blood testing and blood pressure measurement. Cardiac auscultations were performed by three independent examiners. Dogs with heart murmurs underwent echocardiography, to exclude cardiovascular abnormalities. RESULTS - Of 109 dogs evaluated, 95 completed the study. Heart murmurs were detected in 22 dogs. Interobserver agreement for murmur detection was moderate to fair (weighted kappa 0.29–0.56). On the basis of two different sets of echocardiographic criteria, physiological heart murmurs were diagnosed in 6 and 11 dogs, respectively, giving a prevalence of 6–12%. All physiological heart murmurs were systolic and low-grade (I–III/V1). Most were louder towards the left heart base and some radiated up to the thoracic inlet. The epidemiological features of dogs with physiological heart murmurs did not differ significantly from those of dogs without murmurs (P > 0.10). CLINICAL SIGNIFICANCE - This study shows that physiological heart murmurs may not be limited to growing dogs or specific breeds, as they were commonly encountered in this population of healthy young adult dogs.

Inflammatory and oxidative biomarkers of disease severity in dogs with parvoviral enteritis.
OBJECTIVES - To study changes in serum C-reactive protein, haptoglobin, ceruloplasmin and albumin concentration, total anti-oxidant capacity and paraoxonase-1 and butyrylcholinesterase activity in dogs with parvoviral enteritis of different degrees of clinical severity. METHODS - Prospective study of 9 healthy and 43 dogs with parvoviral enteritis that were classified into mildly, moderately and
affected groups. RESULTS - Dogs with parvoviral enteritis had a significant increase in C-reactive protein compared with healthy dogs, with an increase of higher magnitude in animals with more severe clinical signs. All dogs with parvoviral enteritis had a significant increase in haptoglobin concentration compared with healthy dogs, but with no difference according to disease severity. There was a decrease in paraoxonase-1 activity in parvoviral enteritis. CLINICAL SIGNIFICANCE - Major increases of C-reactive protein concentrations in dogs with parvoviral enteritis are a marker of disease severity. In addition, higher values for anti-oxidants in severe cases compared with mild and moderate cases suggest a possible compensatory anti-oxidant mechanism.

The diagnostic utility of lymph node cytology samples in dogs and cats.
I. Amores-Fuster, P. Cripps, P. Graham, A. M. Marrington and L. Blackwood

OBJECTIVES - The aim of this study was to determine common reasons for lymph node fine needle aspirates, cytological diagnoses reported and the frequency and reasons for non-diagnostic samples from dogs and cats. METHODS - Retrospective study of computerised records of fine needle aspirate samples submitted to NationWide Laboratories (UK) between April 2009 and May 2011 to identify lymph node samples. Reason for sampling, sample quality, diagnosis achieved and reason for non-diagnostic samples were assessed. RESULTS - A total of 1473 records were available for review. Of 1274 canine samples, 928 (72.8%) were diagnostic and 346 (27.2%) were non-diagnostic. Of 199 feline samples, 171 (85.9%) samples were diagnostic and 28 (14.1%) were non-diagnostic. The most common reasons for sample submission in both species were investigation of lymphadenopathy (alone or in combination with other clinical signs) or tumour staging. In dogs, the most common diagnosis was lymphoma (351, 27.5%), and in cats, reactive hyperplasia (63, 31.6%). Absence of cells, cell disruption and low yield were the most common causes of non-diagnostic samples. Submission of the history did not affect the probability of reaching a cytological diagnosis. CLINICAL SIGNIFICANCE - Lymph node cytology is a useful diagnostic procedure but educating veterinarians to improve sampling and smearing may increase diagnostic yield.

Hepatic fungal infection in a young beagle with unrecognised hereditary cobalamin deficiency (Imerslund-Gräsbeck syndrome).
P. H. Kook, M. Drögemüller, T. Leeb, S. Hinden, M. Ruetten and J. Howard

A 12-month-old beagle presented for anorexia, pyrexia and vomiting. The dog had been treated intermittently with antibiotics and corticosteroids for inappetence and lethargy since five months of age. Previous laboratory abnormalities included macrocytosis and neutropenia. At presentation, the dog was lethargic, febrile and thin. Laboratory examination findings included anaemia, a left shift, thrombocytopenia, hypoglycaemia and hyperbilirubinaemia. Multiple, small, hypoechoic, round hepatic lesions were observed on abdominal ultrasound. Cytological examination of hepatic fine needle aspirates revealed a fungal infection and associated pyogranulomatous inflammation. The dog’s general condition deteriorated despite supportive measures and treatment with fluconazole, and owners opted for euthanasia before hypocobalaminemia was identified. Subsequent genomic analysis revealed a CUBN:c.786delC mutation in a homozygous state, confirming hereditary cobalamin malabsorption (Imerslund-Gräsbeck syndrome). Similar to human infants, dogs with Imerslund-Gräsbeck syndrome may rarely be presented for infectious diseases, distracting focus from the underlying primary disorder.

American Journal of Veterinary Research

Regional metabolite concentrations in the brain of healthy dogs measured by use of short echo time, single voxel proton magnetic resonance spectroscopy at 3.0 Tesla.
Inés Carrera, Henning Richter, Dieter Meier, Patrick R. Kircher, Matthias Dennler

OBJECTIVE To investigate regional differences of relative metabolite concentrations in the brain of healthy dogs with short echo time, single voxel proton magnetic resonance spectroscopy (1H MRS) at 3.0 T. ANIMALS 10 Beagles. PROCEDURES Short echo time, single voxel 1H MRS was performed at the level of the right and left basal ganglia, right and left thalamus, right and left parietal lobes, occipital lobe, and cerebellum. Data were analyzed with an automated fitting method (linear combination model). Metabolite concentrations relative to water content were obtained, including N-acetyl aspartate, total choline, creatine, myoinositol, the sum of glutamine and glutamate (glutamine-glutamate complex), and glutathione. Metabolite ratios with creatine as the reference metabolite were calculated. Concentration differences between right and left hemispheres and sexes were evaluated with a Wilcoxon signed rank test and among various regions of the brain with an independent t test and 1-way ANOVA. RESULTS No significant differences were detected between sexes and right and left hemispheres. All metabolites, except the glutamine-glutamate complex and glutathione, had regional
concentrations that differed significantly. The creatine concentration was highest in the basal ganglia and cerebellum and lowest in the parietal lobes. The N-acetyl aspartate concentration was highest in the parietal lobes and lowest in the cerebellum. Total choline concentration was highest in the basal ganglia and lowest in the occipital lobe. CONCLUSIONS AND CLINICAL RELEVANCE Metabolite concentrations differed among brain parenchymal regions in healthy dogs. This study may provide reference values for clinical and research studies involving 1H MRS performed at 3.0 T.

Evaluation of mean corpuscular volume difference as a marker for serum hypertonicity during water deprivation in dogs.
Jennifer M. Reinhart, Misty R. Yancey, Lisa M. Pohlman, Thomas Schermerhorn.
OBJECTIVE To evaluate mean corpuscular volume difference (dMCV) as a marker for hypertonicity induced by water deprivation in dogs. ANIMALS 5 healthy Greyhounds maintained in a research colony. PROCEDURES Water was withheld for 24 hours. Blood and urine samples were collected before (time 0) and every 6 hours during water deprivation. Serum and urine osmolality were measured on the basis of freezing point depression, and dMCV was calculated from routine hematologic variables. RESULTS Serum and urine osmolality significantly increased and body weight decreased over time in healthy Greyhounds during water deprivation, although most dogs developed only a slight increase in serum osmolality. The dMCV also increased over time, but the value at 24 hours did not differ significantly from the value at time 0. However, a significant correlation was found between serum osmolality and dMCV. A dMCV ≥ 5 fL yielded 100% specificity for predicting hypertonicity when hypertonicity was defined as serum osmolality ≥ 310 mOsM. CONCLUSIONS AND CLINICAL RELEVANCE dMCV may be a useful marker for detection of mild hypertonicity in dogs and may have clinical and research applications for use in screening canine populations for hypertonicity.

Journal of Feline Medicine and Surgery

Antiviral treatment of feline immunodeficiency virus-infected cats with (R)-9-(2-phosphonylmethoxypropyl)-2,6-diaminopurine
Elien Taffin, Dominique Paepe, Neya Goris, et al
Feline immunodeficiency virus (FIV), the causative agent of an acquired immunodeficiency syndrome in cats (feline AIDS), is a ubiquitous health threat to the domestic and feral cat population, also triggering disease in wild animals. No registered antiviral compounds are currently available to treat FIV-infected cats. Several human antiviral drugs have been used experimentally in cats, but not without the development of serious adverse effects. Here we report on the treatment of six naturally FIV-infected cats, suffering from moderate to severe disease, with the antiretroviral compound (R)-9-(2-phosphonylmethoxypropyl)-2,6-diaminopurine ([R]-PMPDAP), a close analogue of tenofovir, a widely prescribed anti-HIV drug in human medicine. An improvement in the average Karnofsky score (pretreatment 33.2 ± 9.4%, post-treatment 65±12.3%), some laboratory parameters (ie, serum amyloid A and gammaglobulins) and a decrease of FIV viral load in plasma were noted in most cats. The role of concurrent medication in ameliorating the Karnofsky score, as well as the possible development of haematological side effects, are discussed. Side effects, when noted, appeared mild and reversible upon cessation of treatment. Although strong conclusions cannot be drawn owing to the small number of patients and lack of a placebo-treated control group, the activity of (R)-PMPDAP, as observed here, warrants further investigation.

Early pregnancy diagnosis and monitoring in the queen using ultrasonography with a 12.5 MHz probe
Emmanuel Topie, Djemil Bencharif, Lamia Briand, and Daniel Tainturier
Eleven pregnancies in six queens were monitored daily from day 7 to day 28, corresponding to the end of the embryonic period, using ultrasonography with a 12.5 MHz probe. The first mating was considered as the presumed start of gestation, as has been described to be the case in 92.3% of pregnancies. The embryonic vesicles were identified on day 11, while the embryo appeared on day 15 or 16. The stage of pregnancy could be evaluated approximately by measuring the length of the embryonic vesicle or the crown–rump length of the embryo from days 11 and 17, respectively, up until the end of the embryonic phase of gestation. The visualisation of certain organs could also be used to date gestation; for example, the limbs, neural tube and stomach were visible from days 19, 20 and 26, respectively. The 12.5 MHz probe did not enable the diagnosis of gestation to be performed any earlier
than with 7.5 and 10 MHz probes. However, there was a significant difference in comparison with a 5 MHz probe.

**Influence of the observer’s level of experience on systolic and diastolic arterial blood pressure measurements using Doppler ultrasonography in healthy conscious cats**

Vassiliki Gouni, Renaud Tissier, Charlotte Misbach, et al

The objective of this study was to determine the influence of the observer’s level of experience on within- and between-day variability, and the percentage of successful systolic (SAP) and diastolic arterial blood pressure (DAP) measurements obtained by Doppler ultrasonography (DU) in awake cats. For this purpose, six healthy conscious cats were used and four observers with different levels of training performed 144 SAP and DAP measurements on 4 days using DU. Measurements were recorded five consecutive times, and mean values were used for statistical analysis. Only the two most skilled observers – a PhD student in cardiology and a Dipl ECVIM-CA (cardiology) – had within- and between-day coefficients of variation (CVs) for SAP \( \leq 16\% \) (13–16\%). Conversely, the two less experienced observers – a fifth-year student and an assistant – had high between-day CVs (61\% and 73\%). For DAP, only the most experienced observer (Dipl ECVIM-CA) succeeded in 100\% of the attempts, with within- and between-day CVs of 11\% and 4\%, respectively. Conversely, DAP could not be measured by the other three observers in 8\%, 19\% and 56\% of attempts (from the highest to the lowest level of experience); therefore, the corresponding CV values could not be calculated. In conclusion, SAP may be assessed using DU in healthy awake cats with good repeatability and reproducibility by a well-trained observer. Measurement of DAP is more difficult than of SAP, and needs a longer training period, which represents one of the limitations of DU in cats.

**Effect of high-dose ciclosporin on the immune response to primary and booster vaccination in immunocompetent cats**

Elizabeth S Roberts, Karen A VanLare, Linda M Roycroft, and Stephen King

Ciclosporin (Atopica oral solution for cats 100 mg/ml; Novartis Animal Health) was recently approved for use in cats with feline hypersensitivity dermatitis. The immunosuppressant effect of ciclosporin on the ability of cats to mount an immune response following vaccination was determined. Thirty-two healthy, immunocompetent adult cats (16 cats/group) were treated with either ciclosporin for 56 days at a dose of 24 mg/kg once daily or sham dosed. Prior to treatment, cats had an adequate antibody response to primary vaccination against feline calicivirus (FCV), feline herpesvirus-1 (FHV-1), feline panleukopenia virus (FPV), feline leukemia virus (FeLV) and rabies. Booster vaccination or novel vaccination with feline immunodeficiency virus (FIV) was administered 28 days after initiation of treatment with ciclosporin. There were no differences between the ciclosporin-treated and control cats for FCV and FPV antibody titers following booster vaccination. There were delays/reductions in antibody response to FHV-1, FeLV and rabies in treated cats; however, adequate protection was achieved in response to all booster vaccinations. Following primary vaccination with FIV, control cats showed a response, but treated cats showed no antibody production. Adverse events commonly associated with ciclosporin treatment, including diarrhea/loose stool, vomiting, salivation and regurgitation, were reported. In adult cats treated with 24 mg/kg/day of ciclosporin (more than three times the therapeutic dose), vaccine titer levels were adequate for protection following booster vaccination. In contrast, treated cats failed to mount a humoral response to a novel (FIV) vaccination, suggesting that memory B-cell immune responses remain intact during repeated high-dose ciclosporin administration in cats, but that primary immune responses are impaired.

**Analgesic effects of maxillary and inferior alveolar nerve blocks in cats undergoing dental extractions**

Joana Aguiar, Alexandre Chebroux, Fernando Martinez-Taboada, and Elizabeth A Leece

The aim of this study was to evaluate the analgesic effects of maxillary and/or inferior alveolar nerve blocks with lidocaine and bupivacaine in cats undergoing dental extractions. Twenty-nine cats were enrolled. Using an adapted composite pain scale, cats were pain scored before the dental procedure and 30 mins, and 1, 2 and 4 h after isoflurane disconnection. Cats were sedated with buprenorphine (20 µg/kg), medetomidine (10 µg/kg) and acepromazine (20 µg/kg) intramuscularly. Anaesthesia was induced using alfaxalone (1–2 mg/kg) intravenously and maintained with isoflurane in oxygen. Each
cat was randomly assigned to receive maxillary and/or inferior alveolar nerve blocks or no nerve blocks prior to dental extractions. Each nerve block was performed using lidocaine (0.25 mg/kg) and bupivacaine (0.25 mg/kg). Heart rate, systolic arterial blood pressure, respiratory rate, end tidal carbon dioxide and isoflurane vaporiser settings were recorded 5 mins before and after the dental extractions, and the difference calculated. Group mean differences (mean ± SD) for heart rate (−9.7 ± 10.6 vs 7.6 ± 9.5 beats/min [nerve block vs control group, respectively], P < 0.0001), systolic arterial blood pressure (−10.33 ± 18.44 vs 5.21 ± 15.23 mmHg, P = 0.02) and vaporiser settings (−0.2 ± 0.2 vs 0.1 ± 0.4, P = 0.023) were significantly different between groups. The control group had higher postoperative pain scores (median [interquartile range]) at 2 h (3 [1.75–4.00] vs 1 [0–2], P = 0.008) and 4 h (4 [2–6] vs 2 [1–2], P = 0.006) after the dental extractions. Maxillary and inferior alveolar nerve blocks with lidocaine and bupivacaine administered prior to dental extractions resulted in a reduction in heart rate and blood pressure while allowing for a reduction in isoflurane. Cats receiving nerve blocks had lower postoperative pain scores than the group without nerve blocks.

**Treatment of acquired nasopharyngeal stenosis using a removable silicone stent**

Davide De Lorenzi, Diana Bertoncello, Stefano Comastri, and Enrico Bottero

The aim of this prospective study was to characterise patient characteristics and the histories of cats with acquired nasopharyngeal stenosis (ANS), and to describe the use of a removable silicone stent for treatment. ANS was diagnosed in 15 cats with clinical signs present for a median of 4 months. Clinical signs included stertor and inspiratory difficulty, nasal discharge, sneezing, dysphagia, regurgitation, vomiting and anorexia. Radiographs revealed a dorsal deviation or deformation of the caudal part of the soft palate in 10 of the cats, a soft tissue density across the cranial nasopharynx in four and no abnormality in one. The stenosis was initially dilated with a Kelly forceps in 10 of the cats and by balloon dilatation in five. A segment of a 24 Fr silicone thoracic catheter was used for the stent in five cats; in the other 10 cats a segment of a 28 Fr catheter was used. The stent was removed after 3 weeks in 12 cats and after 4 weeks in the other three. Endoscopy revealed an adequate nasopharyngeal diameter in all of the cats. At both 3 and 10 months after surgery the response was considered to be satisfactory, with complete resolution of clinical signs in 14 cats and improvement in the remaining cat. The treatment of ANS by stenosis dilatation followed by temporary stenting with a silicone stent is a rapid, safe, economical and effective procedure.

**Longevity and mortality of cats attending primary care veterinary practices in England**

Dan G O’Neill, David B Church, Paul D McGreevy, et al

Enhanced knowledge on longevity and mortality in cats should support improved breeding, husbandry, clinical care and disease prevention strategies. The VetCompass research database of primary care veterinary practice data offers an extensive resource of clinical health information on companion animals in the UK. This study aimed to characterise longevity and mortality in cats, and to identify important demographic risk factors for compromised longevity. Crossbred cats were hypothesised to live longer than purebred cats. Descriptive statistics were used to characterise the deceased cats. Multivariable linear regression methods investigated risk factor association with longevity in cats that died at or after 5 years of age. From 118,016 cats attending 90 practices in England, 4009 cats with confirmed deaths were randomly selected for detailed study. Demographic characterisation showed that 3660 (91.7%) were crossbred, 2009 (50.7%) were female and 2599 (64.8%) were neutered. The most frequently attributed causes of mortality in cats of all ages were trauma (12.2%), renal disorder (12.1%), non-specific illness (11.2%), neoplasia (10.8%) and mass lesion disorders (10.2%). Overall, the median longevity was 14.0 years (interquartile range [IQR] 9.0–17.0; range 0.0–26.7). Crossbred cats had a higher median longevity than purebred cats (median [IQR] 14.0 years [9.1–17.0] vs 12.5 years [6.1–16.4]; P < 0.001), but individual purebred cat breeds varied substantially in longevity. In cats dying at or after 5 years (n = 3360), being crossbred, having a lower bodyweight, and being neutered and non-insured were associated with increased longevity. This study described longevity in cats and identified important causes of mortality and breed-related associations with compromised longevity.

**Coxofemoral joint kinematics using video fluoroscopic images of treadmill-walking cats: development of a technique to assess osteoarthritis-associated disability**

Martin Guillot, Pierre Gravel, Marie-Lou Gauthier, et al
The objectives of this pilot study were to develop a video fluoroscopy kinematics method for the assessment of the coxofemoral joint in cats with and without osteoarthritis (OA)-associated disability. Two non-OA cats and four cats affected by coxofemoral OA were evaluated by video fluoroscopy. Video fluoroscopic images of the coxofemoral joints were captured at 120 frames/s using a customized C-arm X-ray system while cats walked freely on a treadmill at 0.4 m/s. The angle patterns over time of the coxofemoral joints were extracted using a graphic user interface following four steps: (i) correction for image distortion; (ii) image denoising and contrast enhancement; (iii) frame-to-frame anatomical marker identification; and (iv) statistical gait analysis. Reliability analysis was performed. The cats with OA presented greater intra-subject stride and gait cycle variability. Three cats with OA presented a left–right asymmetry in the range of movement of the coxofemoral joint angle in the sagittal plane (two with no overlap of the 95% confidence interval, and one with only a slight overlap) consistent with their painful OA joint, and a longer gait cycle duration. Reliability analysis revealed an absolute variation in the coxofemoral joint angle of 2°–6°, indicating that the two-dimensional video fluoroscopy technique provided reliable data. Improvement of this method is recommended: variability would likely be reduced if a larger field of view could be recorded, allowing the identification and tracking of each femoral axis, rather than the trochanter landmarks. The range of movement of the coxofemoral joint has the potential to be an objective marker of OA-associated disability.

**Insulin detemir treatment in diabetic cats in a practice setting**

Kirsten Madsen Hoelmkjaer, Eva-Maria Hohneck Spodsberg, and Charlotte Reinhard Bjornvad

Insulin detemir is a long-acting insulin analogue and may represent a valuable treatment option for diabetic cats. So far, only one study addressing detemir treatment of diabetic cats has been published, and this was based on an intensive blood glucose monitoring protocol. The aim of the current, retrospective study was to evaluate the effect of detemir therapy in diabetic cats in a general clinical setting. Fourteen diabetic cats with a follow-up period of at least 3 months were included. Data were collected from medical records at the University Hospital for Companion Animals, University of Copenhagen, Denmark. Thirteen of 14 cats achieved moderate or excellent control of clinical symptoms within the initial 3 months of detemir therapy, including five cats previously treated unsuccessfully with other types of insulin. Clinical improvements were noted after 1 month of therapy and continued over time. Three cats achieved remission within the initial 3 months and none experienced a diabetic relapse during the study period. One cat achieved remission after 13 months of therapy. Improvements in clinical symptoms were markedly better than indicated by blood glucose and serum fructosamine concentrations. The safety of detemir was very high, with only two reported episodes of clinical hypoglycaemia, neither of which required veterinary attention. Based on these results detemir can be recommended for the treatment of diabetic cats, including cats previously treated unsuccessfully with other types of insulin.

**Utility of feline coronavirus antibody tests**

Diane D Addie, Sophie le Poder, Paul Burr, et al

Eight different tests for antibodies to feline coronavirus (FCoV) were evaluated for attributes that are important in situations in veterinary practice. We compared four indirect immunofluorescent antibody tests (IFAT), one enzyme-linked immunosorbent assay (ELISA) (FCoV Immunocomb; Biogal) and three rapid immunochromatographic (RIM) tests against a panel of samples designated by consensus as positive or negative. Specificity was 100% for all but the two IFATs based on transmissible gastroenteritis virus (TGEV), at 83.3% and 97.5%. The IFAT and ELISA tests were best for obtaining an antibody titre and for working in the presence of virus. The RIM tests were the best for obtaining a result quickly (10–15 mins); of these, the Speed F-Corona was the most sensitive, at 92.4%, followed by FASTest feline infectious peritonitis (FIP; 84.6%) and Anigen Rapid FCoV antibody test (64.1%). Sensitivity was 100% for the ELISA, one FCoV IFAT and one TGEV IFAT; and 98.2% for a second TGEV IFA and 96.1% for a second FCoV IFAT. All tests worked with effusions, even when only blood products were stipulated in the instruction manual. The ELISA and Anigen RIM tests were best for small quantities of sample. The most appropriate FCoV antibody test to use depends on the reason for testing: in excluding a diagnosis of FIP, sensitivity, specificity, small sample quantity, rapidity and ability to work in the presence of virus all matter. For FCoV screening, speed and sensitivity are important, and for FCoV elimination antibody titre is essential.
A retrospective molecular study of select intestinal protozoa in healthy pet cats from Italy
Francesca Mancianti, Simona Nardoni, Linda Mugnaini, et al
The feline gut can harbour a number of protozoan parasites. Recent genetic studies have highlighted new epidemiological findings about species of Cryptosporidium, assemblages of Giardia duodenalis and Toxoplasma gondii. Furthermore, epidemiological studies suggest the occurrence of Tritrichomonas foetus in cats is on the increase worldwide. The prevalence of selected intestinal protozoa was determined by PCR using DNA previously extracted from the faeces of 146 privately owned healthy cats from Italy. Molecular genotyping on T gondii, G duodenalis and Cryptosporidium DNA was achieved. PCR assays were positive in 32 (22.9%) samples. Three animals (2.0%) were positive for T foetus and Cryptosporidium DNA, 15 specimens (10.3%) were positive for T gondii and 11 (7.5%) for G duodenalis. Co-infections were never observed. Results of the typing analysis allowed the identification of Cryptosporidium felis in all cases. The specimens positive for T gondii hinted at clonal genotype I (n = 7), genotype II (n = 1) and genotype III (n = 7). The G duodenalis isolates were referable to assemblages F (n = 9) and C (n = 2). In conclusion, the results obtained in this study add to the literature regarding the epidemiology of these parasites by confirming their presence in the faeces of healthy pet cats.

Hyperammonaemia in four cats with renal azotaemia
Carl Adagra and Darren J Foster
Hyperammonaemia is well reported in animals with advanced hepatic disease and portosystemic shunts, but is unreported in cats with renal disease. This case series describes four cats with severe renal azotaemia, in which elevated ammonia levels were detected during the course of treatment. In two cases hyperammonaemia was detected at a time when neurological signs consistent with encephalopathy had developed. This raises the possibility that hyperammonaemia may play a role in the development of encephalopathy in cats with renal azotaemia.

Nosocomial spread of Mycobacterium bovis in domestic cats
Aisling Murray, Andrea Dineen, Pamela Kelly, et al
Five domestic cats were euthanased owing to confirmed or suspected Mycobacterium bovis infection. The initial source of infection remains unclear. Cat A was presented to a veterinary clinic in County Kildare, Ireland, with a discharging submandibular lesion. The infection appears to have been transmitted to four other cats through direct (cats B and C living in the same household as cat A) and non-direct (nosocomial spread during routine operations; cats D and E) contact over a 13.5-week period. Of the five cases, two (B and D) had post-mortem examinations in which gross changes consistent with tuberculosis were seen, moderate numbers of acid-fast bacteria (AFB) were seen on microscopy and M bovis (spoligotype SB0978) was confirmed on culture. Of the remaining three cats, one had a swab taken from its draining ovariohysterectomy wound, which revealed large numbers of AFB with morphology consistent with M bovis (cat E). Two cases were euthanased without diagnostic tests; however, their history and clinical presentations were highly suggestive of tuberculosis (cats A and C). To our knowledge, this is the first documented case of nosocomial spread of M bovis in cats.

Treatment of Troglostrongylus brevior (Metastrongylidae, Crenosomatidae) in mixed lungworm infections using spot-on emodepside
Angela Di Cesare, Raffaella Iorio, Paolo Crisi, et al
Feline lungworms have long been known as pathogens of cats. However, an increased incidence of clinical cases in some areas has been the focus of a number of recent epidemiological and clinical studies. While Aelurostrongylus abstrusus causes respiratory signs in cats all over the world, Troglostrongylus brevior has recently been found in domestic cats from Spain and Italy (where it often causes severe clinical signs). Capillaria aerophila, a parasite that infects many wild carnivores, may cause respiratory distress in cats. A variety of treatment options are known for A abstrusus, while almost no information is available on the treatment of troglostrongylosis and capillariosis. This series describes two mixed infections in clinically affected kittens with T brevior, one with concurrent A abstrusus and the other with C aerophila. In both cases, the nematodes were identified and confirmed by copromicroscopic examination and specific DNA-based assays. Kittens showed respiratory signs
that resolved after one or two administrations of a spot-on solution containing emodepside. Larval (*T. brevior* and *A. abstrusus*) and egg (*C. aerophila*) shedding was also eliminated 2–4 weeks after treatment. New clinical insights into these parasitoses are discussed.

**Exploration of paclitaxel (Taxol) as a treatment for malignant tumors in cats: a descriptive case series**

Jennifer Kim, Mary Doerr, and Barbara E Kitchell

Paclitaxel, an effective chemotherapeutic agent in human oncology, has received little evaluation in feline patients. The diluent used to solubilize paclitaxel, polyoxyethylated castor oil (Cremophor EL), causes anaphylactoid reactions in human and dogs, which limits enthusiasm for use of this agent in veterinary oncology. Nine feline patients with measurable malignant tumors were treated with paclitaxel at a dosage of 80 mg/m² intravenously every 21 days for up to two doses. Adverse effects, including evidence of toxicity and anaphylactoid reactions, were assessed. Tumor response, progression and patient time to progression (TTP) were also recorded. Adverse effects included grade III and IV thrombocytopenia, grade III gastrointestinal signs (vomiting and constipation) and hypersensitivity reactions, seen in a total of five patients. Anaphylactoid reactions resolved with appropriate management. Stable disease and partial response were observed in 56% of feline patients. Median TTP was 28 days (range 15–45 days). Intravenous paclitaxel is a safe treatment option for feline malignant tumor patients. Future investigation is warranted to explore the effectiveness and appropriate application of this agent for specific tumor types.

**Acute motor and sensory polyganglioradiculoneuritis in a cat: clinical and histopathological findings**

Rodrigo Gutierrez-Quintana, Nerea Cuesta-Garcia, Annette Wessmann, et al

Polyneuropathies can have a variety of clinical presentations and tend to be rare in cats. In this report we describe a 6-year-old domestic shorthair cat with an acute and rapidly progressive onset of lower motor neuron and sensory signs affecting the spinal and cranial nerves. Histopathological examination revealed moderate-to-severe multifocal inflammatory infiltrates at the ventral and dorsal nerve roots, and dorsal spinal ganglia at the level of the L4 and cauda equina. The type and severity of inflammation varied between nerve roots, being composed of mainly neutrophils in some and mainly lymphocytes and macrophages in others. Immunohistochemistry showed a combination of neutrophils, macrophages and lymphocytes infiltrating the nerve roots and ganglia. The majority of the lymphocytes were T lymphocytes; only a few B lymphocytes were seen. Neurons within the affected ganglia showed central chromatolysis and necrosis. Wallerian-like degeneration and demyelination were observed in the nerve roots. A sensory and motor polyganglioradiculoneuritis was diagnosed. An autoimmune process similar to the acute motor and sensory neuropathy subtype of Guillain–Barré syndrome in humans or an infection by an unidentified agent were considered most likely.

**Journal of the American Veterinary Medical Association – Feb 1**

**Formulation and validation of a predictive model to correct blood glucose concentrations obtained with a veterinary point-of-care glucometer in hemodiluted and hemoconcentrated canine blood samples**

Selena L. Lane, Amie Koenig, Benjamin M. Brainard

Objective—To determine the effect of PCV on veterinary point-of-care (POC) glucometer measurements in canine blood samples and develop a formula to correct the glucose concentration as measured by a point-of-care glucometer (POCGluc) given a known PCV. Design—Experimental and prospective study. Samples—Blood samples from 6 healthy dogs and from 30 hospitalized dogs. Procedures—60 mL of heparinized blood was obtained from each of 6 healthy dogs. Samples were processed into packed RBCs and plasma. Packed RBCs were resuspended with plasma to achieve a range of PCVs from 0% to 94%. Duplicate POCgluc and PCV measurements were obtained for each dilution; following POCgluc measurements, plasma samples were analyzed for glucose concentration by a clinical laboratory biochemical analyzer (LABgluc). A correction formula for POCgluc was developed. Measurements of POCgluc, PCV, and LABgluc were also determined from blood samples of 30 dogs admitted to the veterinary teaching hospital. Results—Values of LABgluc for each sample were similar at any PCV. As PCV decreased, POCgluc was falsely increased; as PCV increased,
POCgluc was falsely decreased, compared with LABgluc. The absolute difference between POCgluc and LABgluc increased as the PCV changed from 50%. Compared with POCgluc, the corrected POCgluc had a significantly improved correlation with LABgluc, which was also reflected in improvements in Clarke and consensus error grid analyses. Conclusions and Clinical Relevance—Results indicated that in dogs with hemodilution or hemoconcentration, POCgluc did not reflect actual patient glucose concentrations. Use of a correction formula reduced this error. Corrected POCgluc data had strong, significant correlations with LABgluc data.

**Internal obturator muscle transposition for treatment of perineal hernia in dogs: 34 cases (1998–2012)**
Magen Shaughnessy, Eric Monnet
Objective—To evaluate the outcome of dogs with perineal hernia treated with transposition of the internal obturator muscle. Design—Retrospective case series. Animals—34 dogs. Procedures—Medical records of dogs with perineal hernia surgically treated from 1998 to 2012 were reviewed. Diagnostic methods and surgical techniques were recorded. Dogs were assigned preoperative and postoperative clinical sign scores. Complication and recurrence rates were evaluated over time. Risk factors were determined. Results—Median follow-up time was 345 days (range, 22 to 1,423 days). Complications were observed in 10 dogs. Tenesmus (n = 9), dyschezia (7), fecal impaction (3), stranguria (4), hematochezia (2), urinary incontinence (2), diarrhea (1), urinary tract infection (1), and megacolon (1) occurred following surgery. Bladder retroflexion at the time of initial evaluation or surgery was not a risk factor for complication (hazard ratio, 1.72). One year after surgery, 51.2% dogs were free of complications. Three dogs developed a perineal hernia on the contralateral side between 35 and 95 days after surgery. The 1-year recurrence rate was 27.4%. Median time for recurrence was 28 days after surgery (range, 2 to 364 days). Postoperative tenesmus was a risk factor for the development of recurrence (hazard ratio, 2.29). Conclusions and Clinical Relevance—Internal obturator muscle transposition was used for primary repair of perineal hernia in dogs. Recurrence was recorded as long as 1 year after surgery. Tenesmus was a risk factor for the development of recurrence after treatment of perineal hernia with internal obturator muscle transposition.

**Incidence of and risk factors for postoperative regurgitation and vomiting in dogs: 244 cases (2000–2012)**
John A. Davies, Boel A. Fransson, Anastacia M. Davis, Aaron M. Gilbertsen, John M. Gay
Objective—To determine the incidence of and risk factors for postoperative regurgitation and vomiting (PORV) in dogs. Design—Retrospective cohort study. Animals—244 client-owned dogs. Procedures—Dogs referred for nonelective surgery in the first 3 months of 2000 and 2012 were included. Breed; sex; age; weight; body condition score; emergency status; food withholding status; history of vomiting or regurgitation; American Society of Anesthesiologists score; presence of diabetes or hypothyroidism; preoperative PCV and total solids concentration; anesthesia protocol; corticosteroid, opioid, neuromuscular blocking agent, and nitrous oxide usage; anesthesia time; surgery time; type of surgery; and occurrence of vomiting or regurgitation within 24 hours after recovery from anesthesia were recorded. Data were analyzed by means of the Fisher exact test, Wilcoxon rank sum test, and logistic regression. Results—30 of 244 (12.3%) dogs meeting study inclusion criteria developed PORV. There was no significant difference in the incidence of PORV between the 2000 (12/111 [10.8%]) and 2012 (18/133 [13.5%]) cohorts, although the incidence of regurgitation was higher in 2012. Univariate logistic regression identified the most significant risk factors as gastrointestinal surgery (OR, 11.15; 95% confidence interval [CI], 3.11 to 40.03), premedication without strong sedatives including either an α2-adrenoceptor agonist or acepromazine (OR, 5.36; 95% CI, 1.89 to 15.17), American Society of Anesthesiologists score of 4 (OR, 5.25; 95% CI, 1.05 to 26.15), history of vomiting or regurgitation (OR, 5.12; 95% CI, 1.83 to 14.31), emergency surgery (OR, 4.08; 95% CI, 1.29 to 12.90), neurologic surgery (OR, 3.18; 95% CI, 1.02 to 9.92), sevoflurane inhalation anesthesia (OR, 2.78; 95% CI, 1.25 to 6.13), and being sexually intact (OR, 2.37; 95% CI, 1.07 to 5.27). Multivariate analysis was not clinically useful owing to the low sensitivity and specificity of the model. Conclusions and Clinical Relevance—Between 2000 and 2012, there was no change in the incidence of PORV for dogs undergoing neurologic, orthopedic, and soft tissue surgical procedures; however, the proportion of dogs that regurgitated increased significantly in 2012. Preoperative antimetic prophylaxis should be considered in dogs undergoing gastrointestinal surgery and in those in which other risk factors are present.
**Reference values, intertest correlations, and test-retest repeatability of selected tear film tests in healthy cats**
Lionel Sebbag, Philip H. Kass, David J. Maggs

**Objective**—To determine reference values, intertest correlations, and test-retest repeatability of Schirmer tear test 1 (STT-1), phenol red thread test (PRTT), tear film breakup time (TFBUT), tear osmolarity, and meibometry in healthy cats. Design—Evaluation study. Animals—135 healthy domestic cats aged 0.5 to 12.8 years. Procedures—Each test was performed once in 120 cats and repeated in 40. Pearson correlation was used to assess correlation among tests. Intraclass correlation coefficients (ICCs) and 95% limits of agreement (LOA) were used to evaluate test-retest repeatability. Results—Median (95% central range) values were 18 mm/min (9 to 34 mm/min) for STT-1, 29 mm/15 s (15 to 37 mm/15 s) for PRTT, 12.4 seconds (9.1 to 17.7 seconds) for TFBUT, 322 mOsm/L (297 to 364 mOsm/L) for osmolarity, and 32 meibometry units (MU; 11 to 114 MU) for peak meibometry value. The STT-1 and PRTT values were positively correlated. Age was weakly associated with TFBUT and osmolarity. Meibometry measurements were higher for strips that touched the eyelid margin only (32 MU) than for those that touched the eyelid margin only (32 MU). All ICCs were < 0.75, and 95% LOA were wide. Conclusions and Clinical Relevance—Tear deficiency should be suspected in cats with STT-1 < 9 mm/min, PRTT < 15 mm/15 s, or TFBUT < 9 to 10 seconds. Generally poor correlation among tests suggested that thorough tear film analysis requires performance of multiple tests in concert. Relatively poor test-retest repeatability should be considered when repeated tests are used to monitor tear film dysfunction and response to treatment.

**Initial experience with endoscopic retrograde cholangiography and endoscopic retrograde biliary stenting for treatment of extrahepatic bile duct obstruction in dogs**
Allyson Berent, Chick Weisse, Mark Schattner, Hans Gerdes, Peter Chapman, Michael Kochman

**Objective**—To describe techniques for endoscopic retrograde cholangiography (ERC) and endoscopic retrograde biliary stenting of the common bile duct (CBD) for minimally invasive treatment of extrahepatic bile duct obstruction (EHBDO) in dogs. Design—Experimental study and clinical report. Animals—7 healthy research dogs and 2 canine patients. Procedures—ERC and endoscopic retrograde biliary stenting were performed in healthy purpose-bred research dogs and client-owned dogs with a diagnosis of EHBDO that underwent an attempted biliary stent procedure. Research dogs were euthanized after completion of the procedure and underwent necropsy. With dogs under general anesthesia, the pylorus was cannulated with a side-view duodenoscope, and the duodenum was entered. The major duodenal papilla (MDP) and minor duodenal papilla were then identified, and the MDP was cannulated. Endoscopic retrograde cholangiography and endoscopic retrograde biliary stenting were attempted with the aid of endoscopy and fluoroscopy in all dogs. Procedure time, outcome for duodenal and MDP cannulation, and success of stent placement were recorded. Results—Endoscopic retrograde cholangiography was successfully performed in 5 of 7 research dogs and in 1 of 2 patients. Biliary stenting was achieved in 4 of 7 research dogs and 1 of 2 patients, with a polyurethane (n = 4) or self-expanding metallic stent (1). One patient had a mass such that visualization of the MDP was impossible and no attempt at biliary cannulation could be made. After placement, stent patency was documented by means of contrast cholangiography and visualization of biliary drainage into the duodenum intra-operatively. No major complications occurred during or after the procedure in any patient. Follow-up information 685 days after stent placement in 1 patient provided evidence of biliary patency on serial repeated ultrasonography and no evidence of complications. Conclusions and Clinical Relevance—ERC and endoscopic retrograde biliary stenting were successfully performed in a small group of healthy dogs and 1 patient with EHBDO, but were technically challenging procedures. Further investigation of this minimally invasive technique for the treatment of EHBDO in dogs is necessary before this may be considered a viable alternative to current treatment methods.

**Epilepsy in dogs five years of age and older: 99 cases (2006–2011)**
Tara M. Ghormley, David G. Feldman, James R. Cook

**Objective**—To classify the etiologic of epilepsy and evaluate use of abnormal neurologic examination findings to predict secondary epilepsy in dogs ≥ 5 years of age. Design—Retrospective case series. Animals—99 dogs with epilepsy. Procedures—Medical records were reviewed to identify client-owned dogs evaluated for seizures at ≥ 5 years of age with a diagnosis of primary or secondary epilepsy. Dogs were stratified by age; prevalence of primary and secondary epilepsy and the proportion of dogs with secondary epilepsy that had a diagnosis of neoplasia (on the basis of MRI findings) versus other disease were evaluated. Sensitivity and specificity of abnormal neurologic findings to detect secondary epilepsy were determined. Results—7 of 30 (23%) dogs 5 to 7 years of age, 13 of 29 (45%) dogs 8 to 10 years of age, 13 of 33 (39%) dogs 11 to 13 years of age, and 2 of 7 dogs ≥ 14 years of age

had primary epilepsy. Prevalence of primary vs secondary epilepsy did not differ among age groups. The proportion of dogs with neoplasia at 5 to 7 years of age was lower than that of dogs in other age groups. Abnormal neurologic examination results had 74% sensitivity and 62% specificity to predict secondary epilepsy. Conclusions and Clinical Relevance—A substantial proportion of dogs ≥ 5 years of age had primary epilepsy. Results indicated that lack of abnormalities on neurologic examination does not exclude the possibility of intracranial lesions, and MRI with CSF analysis (when applicable) should be recommended for all dogs with onset of seizures at ≥ 5 years of age.

The Canadian Veterinary Journal - Volume 56(2); 2015 Feb

Computed tomography or rhinoscopy as the first-line procedure for suspected nasal tumor: A pilot study
Marlène Finck, Frédérique Ponce, Laurent Guilbaud, Cindy Chervier, Franck Floch, Jean-Luc Cadoré, Thomas Chuzel, Marine Hugonnard
There are no evidence-based guidelines as to whether computed tomography (CT) or endoscopy should be selected as the first-line procedure when a nasal tumor is suspected in a dog or a cat and only one examination can be performed. Computed tomography and rhinoscopic features of 17 dogs and 5 cats with a histopathologically or cytologically confirmed nasal tumor were retrospectively reviewed. The level of suspicion for nasal neoplasia after CT and/or rhinoscopy was compared to the definitive diagnosis. Twelve animals underwent CT, 14 underwent rhinoscopy, and 4 both examinations. Of the 12 CT examinations performed, 11 (92%) resulted in the conclusion that a nasal tumor was the most likely diagnosis compared with 9/14 (64%) for rhinoscopies. Computed tomography appeared to be more reliable than rhinoscopy for detecting nasal tumors and should therefore be considered as the first-line procedure.

Surgical treatment of canine stifle disruption using a novel extracapsular articulated stifle stabilizing implant
Neil A. Embleton, Veronica J. Barkowski
A 5-year-old Labrador retriever mixed breed dog was presented for an acute non-weight-bearing left hind limb lameness. A stifle disruption was diagnosed. The patient was treated using a novel extracapsular articulated stifle stabilizing implant (Simitri™). Twelve weeks after surgery the patient had full range of motion of the affected stifle and had begun to return to pre-injury activity. This is the first reported case of this condition being surgically managed successfully in this manner.

The Veterinary Journal

A review of the pharmacology and clinical application of alfaxalone in cats
Leon N. Warne, Thierry Beths, Ted Whittem, Jennifer E. Carter, Sébastien H. Bauquier
Alfaxalone-2-hydroxypropyl-β-cyclodextrin (alfaxalone-HPCD) was first marketed for veterinary use in Australia in 2001 and has since progressively become available throughout the world, including the USA, where in 2012 Food and Drug Administration (FDA) registration was granted. Despite the growing body of published works and increasing global availability of alfaxalone-HPCD, the accumulating evidence for its use in cats has not been thoroughly reviewed. The purpose of this review is: (1) to detail the pharmacokinetic properties of alfaxalone-HPCD in cats; (2) to assess the pharmacodynamic properties of alfaxalone-HPCD, including its cardiovascular, respiratory, central nervous system, neuromuscular, hepatic, renal, haematological, blood-biochemical, analgesic and endocrine effects; and (3) to consider the clinical application of alfaxalone-HPCD for sedation, induction and maintenance of anaesthesia in cats. Based on the published literature, alfaxalone-HPCD provides a good alternative to the existing intravenous anaesthetic options for healthy cats.

Myocardial collagen deposition and inflammatory cell infiltration in cats with pre-clinical hypertrophic cardiomyopathy
K.H. Khor, F.E. Campbell, H. Owen, I.A. Shiels, P.C. Mills
The histological features of feline hypertrophic cardiomyopathy (HCM) have been well documented, but there are no reports describing the histological features in mild pre-clinical disease, since cats are rarely screened for the disease in the early stages before clinical signs are apparent. Histological changes at the early stage of the disease in pre-clinical cats could contribute to an improved understanding of disease aetiology or progression. The aim of this study was to evaluate the histological features of HCM in the left ventricular (LV) myocardium of cats diagnosed with pre-clinical HCM. Clinically healthy cats with normal (n = 11) and pre-clinical HCM (n = 6) were
identified on the basis of echocardiography; LV free wall dimensions (LVFWd) and/or interventricular septal wall (IVSd) dimensions during diastole of 6–7 mm were defined as HCM, while equivalent dimensions <5.5 mm were defined as normal. LV myocardial sections were assessed and collagen content and inflammatory cell infiltrates were quantified objectively. Multifocal areas of inflammatory cell infiltration, predominantly lymphocytes, were observed frequently in the left myocardium of cats with pre-clinical HCM. Tissue from cats with pre-clinical HCM also had a higher number of neutrophils and a greater collagen content than the myocardium of normal cats. The myocardium variably demonstrated other features characteristic of HCM, including arteriolar mural hypertrophy and interstitial fibrosis and, to a lesser extent, myocardial fibre disarray and cardiomyocyte hypertrophy. These results suggest that an inflammatory process could contribute to increased collagen content and the myocardial fibrosis known to be associated with HCM.

**A blind insertion airway device in dogs as an alternative to traditional endotracheal intubation**

Timothy James, Michael Lane, Dennis Crowe, William Pullen

Endotracheal intubation is the standard of care to establish a secure airway; however, laryngeal airway management systems are increasingly being used in human patients for elective surgical procedures and in emergency settings. In this study, a double lumen, blind insertion airway device (BIAD) was placed in the esophagus of dogs and evaluated for its ability to ventilate the lungs. Initially, 10 euthanized dogs were evaluated, followed by a group of 15 mixed breed dogs that were undergoing elective spay or neuter procedures, and a group of 10 healthy dogs. Post-procedure evaluation included visual examination with a laryngoscope to inspect for signs of inflammation or mucosal damage. The device provided adequate ventilation in all subjects; the dogs were under anesthesia or heavily sedated for 10 min to 2 h and recovered uneventfully. No evidence of esophagitis, aspiration pneumonia, tracheitis, subcutaneous emphysema or esophageal laceration was observed. In conclusion, the use of double lumen airway devices warrants further study as an alternative airway management system in dogs.

**Serotonin markers show altered transcription levels in an experimental pig model of mitral regurgitation**


Serotonin (5-hydroxytryptamine, 5-HT) signalling is implicated in the pathogenesis of myxomatous mitral valve disease (MMVD) through 5-HT1B receptor (R), 5-HT2AR and 5-HT2BR-induced myxomatous pathology. Based on increased tryptophan hydroxylase-1 (TPH-1) and decreased serotonin re-uptake transporter (SERT) in MMVD-affected valves, increased valvular 5-HT synthesis and decreased clearance have been suggested. It remains unknown how haemodynamic changes associated with mitral regurgitation (MR) affect 5-HT markers in the mitral valve, myocardium and circulation. Twenty-eight pigs underwent surgically induced MR or sham-operation, resulting in three MR groups: control (CON, n = 12), mild MR (mMR, n = 10) and severe MR (sMR, n = 6). The gene expression levels of 5-HT1B1R, 5-HT2AR, 5-HT2BR, SERT and TPH-1 were analysed using quantitative PCR (qPCR) in the mitral valve (MV), anterior papillary muscle (AP) and left ventricle (LV). MV 5-HT2BR was also analysed with immunohistochemistry (IHC) in relation to histological lesions and valvar myofibroblasts. All 5-HTR mRNAs were up-regulated in MV compared to AP and LV (P < 0.01). In contrast, SERT and TPH-1 were up-regulated in AP and LV compared to MV (P < 0.05). In MV, mRNA levels were increased for 5-HT2BR (P = 0.02) and decreased for SERT (P = 0.03) in sMR vs. CON. There were no group differences in 5-HT2BR staining (IHC) but co-localisation was found with α-SMA-positive cells in 91% of all valves and with 33% of histological lesions. In LV, 5-HT1B1R mRNA levels were increased in sMR vs. CON (P = 0.01). In conclusion, these data suggest that MR may affect mRNA expression of valvular 5-HT2BR and SERT, and left ventricular 5-HT1B1R in some pigs.

**Clinical and antiviral effect of a single oral dose of famciclovir administered to cats at intake to a shelter**

A.L. Litster, B.R. Lohr, R.A. Bukowy, S.M. Thomasy, D.J. Maggs

Although famciclovir is efficacious in feline herpesvirus type 1 (FHV-1)-infected cats, effects of a single dose early in disease course have not been reported. In this two part, randomized, masked, placebo controlled study, cats received a single dose of 125 mg famciclovir (n = 43) or placebo (n = 43; pilot study), or 500 mg famciclovir (n = 41) or placebo (n = 40; clinical trial) on entering a shelter. FHV-1 PCR testing was performed, bodyweight and food intake were recorded, and signs of respiratory disease were scored prior to and 7 days following treatment. FHV-1 DNA was detected in
40% of cats in both parts at study entry. In the pilot study, ocular and nasal discharge scores increased from days 1 to 7 in famciclovir and placebo treated cats. Sneezing scores increased and bodyweight decreased in famciclovir-treated cats. The proportion of cats in which FHV-1 DNA was detected increased over time in all cats in the pilot study. In the clinical trial, food intake and median clinical disease scores for nasal discharge and sneezing increased from days 1 to 7 in both groups and demeanor scores worsened in famciclovir-treated cats. The proportion of cats shedding FHV-1 DNA was greater on day 7 than on day 1 in cats receiving 500 mg famciclovir. A single dose of famciclovir (125 or 500 mg) administered at shelter intake was not efficacious in a feline population in which 40% were already shedding FHV-1.

Body conformation in Great Danes with and without clinical signs of cervical spondylomyelopathy
P. Martín-Vaquero, R.C. da Costa
It has been suggested that a combination of large head and long neck cause abnormal forces on the cervical vertebral column and are involved in the pathogenesis of cervical spondylomyelopathy (CSM) in Great Danes. The aim of this study was to compare the body conformation of 15 clinically normal and 15 CSM-affected Great Danes. There were no statistically significant differences between clinically normal and CSM-affected Great Danes in any body measurements. There were no significant associations between body conformation and the severity of neurological signs or cervical vertebral body dimensions determined by magnetic resonance imaging in CSM-affected Great Danes. The results of this study do not support the hypothesis that differences in body conformation related to head size, neck length, and body height and length, play a role in the pathogenesis of CSM in Great Danes.

Retrospective study on the occurrence of the feline lungworms Aelurostrongylus abstrusus and Troglostrongylus spp. in endemic areas of Italy
Angela Di Cesare, Gabriella Di Francesco, Antonio Frangipane di Regalbono, Claudia Eleni, Claudio De Liberato, Giuseppe Marruchella, Raffaella Iorio, Daniela Malatesta, Maria Rita Romanucci, Laura Bongiovanni, Rudi Cassini, Donato Traversa
Aelurostrongylus abstrusus is a metastrongyloid nematode infesting the respiratory system of domestic cats worldwide. Troglostrongylus brevior and Troglostrongylus subcrenatus, two lungworms thought to infest wild felids, have been found recently in domestic cats from Spain and Italy. These unexpected findings have raised doubts about the assumed past and present occurrence of Troglostrongylus spp., especially T. brevior, in domestic hosts and suggest that there may have been missed detection or misdiagnosis. The present retrospective study evaluated the presence of lungworms in cats from Italy with a diagnosis of respiratory parasitism or with compatible lung lesions from 2002 to 2013. Sixty-eight samples of DNA and larvae from cats with a diagnosis of aelurostrongylosis, and 53 formalin-fixed paraffin-embedded lung samples from cats confirmed as lungworm infested or with compatible lesions, were investigated using two DNA-based assays specific for A. abstrusus or T. brevior. All DNA and larval samples were positive for A. abstrusus and one was additionally positive for T. brevior. Most paraffin-embedded lung tissues were positive only for A. abstrusus, but two samples tested positive for both lungworms and one for T. brevior only. This study supports the major role of A. abstrusus in causing feline respiratory parasitism in endemic areas of Italy.

Increased serum concentrations of adiponectin in canine hypothyroidism
Michal Mazaki-Tovi, Sarah K. Abood, Amir Kol, Amnon Farkas, Patricia A. Schenck
Serum concentrations of adiponectin were compared between sex-matched hypothyroid (n = 18) and euthyroid (n = 18) client-owned dogs with comparable ages and body condition scores (BCS). Concentrations of adiponectin (mean; 95% confidence interval) were significantly (P < 0.01) higher in hypothyroid (17.2 µg/mL; 12.1–20.5 µg/mL) than healthy (8.0 µg/mL; 5.6–11.4 µg/mL) dogs following adjustment for potential confounders (BCS, age and sex). Serum concentrations of adiponectin were significantly negatively associated with concentrations of total thyroxine (P < 0.05) and positively correlated with concentrations of cholesterol (r = 0.6, P < 0.01) in hypothyroid dogs. In conclusion, this study demonstrated increased serum concentrations of adiponectin in dogs with hypothyroidism. Suggestive of the presence of resistance to adiponectin that could have contributed to development of hyperlipidemia and insulin resistance in these dogs or alternatively, could be a consequence of these metabolic alterations.

Inflammatory colorectal polyps in miniature Dachshunds frequently develop ventrally in the colorectal mucosa

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Hirotaka Igarashi, Koichi Ohno, Aki Fujiwara-Igarashi, Hideyuki Kanemoto, Kenjiro Fukushima, Kazuyuki Uchida, Hajime Tsujimoto

This study explored the hypothesis that inflammatory colorectal polyps (ICRPs) in miniature Dachshunds are more likely to occur ventrally in the colorectum. Angle-fixed colonoscopic images were collected from 11 miniature Dachshunds with ICRPs and randomly rotated. Macroscopic severity at 12 divided angles was scored by four veterinarians blinded to the rotation angle. Mean prevalence and severity scores of ICRPs were significantly higher ventrally than dorsally ($P < 0.01$).

**Serum paraoxonase 1 and butyrylcholinesterase in dogs with hyperadrenocorticism**

Asta Tvarijonaviciute, Marco Caldin, Silvia Martinez-Subiela, Fernando Tecles, Josep Pastor, Jose J. Ceron

The aim of this study was to evaluate serum activities of paraoxonase 1 (PON1) using three substrates; (1) 4-nitrophenylacetate (PON1n), (2) phenylacetate (PON1p), and (3) 5-thiobutyl butyrolactonase (PON1t), and butyrylcholinesterase (BChE) in dogs with hyperadrenocorticism (HAC). Serum activities of PON1 and BChE were higher in dogs with HAC than healthy dogs. There were strong positive correlations between PON1 activity measured with the three different substrates. This study demonstrated increased serum PON1 and BChE activities in dogs with HAC that could be attributed to the direct effect of glucocorticoids and lipid mobilisation.