Prevalence and Risk Factors of Toxoplasma gondii Infection in Domestic Cats from the Tropics

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A subset of neurons in the cochlear nucleus (CN) of the auditory brainstem has the ability to enhance the auditory nerve’s temporal representation of stimulating sounds. These neurons reside in the ventral region of the CN (VCN) and are usually known as highly synchronized, or high-sync, neurons. Most published reports about the existence and properties of high-sync neurons are based on recordings performed on a VCN output tract-not the VCN itself-of cats. In other species, comprehensive studies detailing the properties of high-sync neurons, or even acknowledging their existence, are missing. Examination of the responses of a population of VCN neurons in chinchillas revealed that a subset of those neurons have temporal properties similar to high-sync neurons in the cat. Phase locking and entrainment-the ability of a neuron to fire action potentials at a certain stimulus phase and at almost every stimulus period, respectively-have similar maximum values in cats and chinchillas. Ranges of characteristic frequencies for high-sync neurons in chinchillas and cats extend up to 600 and 1000 Hz, respectively. Enhancement of temporal processing relative to auditory nerve fibers (ANFs), which has been shown previously in cats using tonal and white-noise stimuli, is also demonstrated here in the responses of VCN neurons to synthetic and spoken vowel sounds. Along with the large amount of phase locking displayed by some VCN neurons there occurs a deterioration in the spectral representation of the stimuli (tones or vowels). High-sync neurons exhibit a greater distortion in their responses to tones or vowels than do other types of VCN neurons and auditory nerve fibers. Standard deviations of first-spike latency measured in responses of high-sync neurons are lower than similar values measured in ANFs’ responses. This might indicate a role of high-sync neurons in other tasks beyond sound localization.


Enhancement and distortion in the temporal representation of sounds in the ventral cochlear nucleus of chinchillas and cats.

A lentiviral gene therapy strategy for the in vitro production of feline erythropoietin.


Nonregenerative anemia due to chronic renal failure is a common problem in domestic cats. Unfortunately, administration of recombinant human erythropoietin often only improves anemia temporarily due to antibody development. In this in vitro study, feline erythropoietin cDNA was cloned from feline renal tissue and utilized in the construction of a replication-defective lentiviral vector. The native recombinant feline erythropoietin (rEPO) sequence was confirmed by sequencing. Upon viral vector infection of human 293H cells, Crandall Renal Feline Kidney cell line and primary feline peripheral blood mononuclear cells, bioactive rEPO protein was produced. The presence of cellular rEPO cDNA was confirmed by standard PCR, production of abundant rEPO mRNA was confirmed by real-time PCR, and secretion of rEPO protein was demonstrated by Western blot analyses, while rEPO protein bioactivity was confirmed via an MTT proliferation bioassay. This in vitro study demonstrates the feasibility of a replication-defective lentiviral vector delivery system for the in vivo production of biologically active feline erythropoietin. Anemic cats with chronic renal failure represent a potential in vivo application of a lentiviral gene therapy system.


Prevalence and Risk Factors of Toxoplasma gondii Infection in Domestic Cats from the Tropics of Mexico Using Serological and Molecular Tests.
The aim of this study was to determine the prevalence and risk factors associated with Toxoplasma gondii infection in domestic cats using an indirect-ELISA (IgM and IgG) and PCR. Samples collected from 220 cats from Merida, Yucatan, Mexico, were analyzed. Cases were reported as acute or chronic. Cases when positive to IgM and IgG and PCR were considered as reactivated chronic infection. Risk factors (sex, age, body condition, diet access to hunting, and number of cats in home) were assessed with a multivariate analysis. 75.5% of the cats were IgM and 91.8% of the cats were IgG-seropositive and 79% were PCR-positive (173/220). Number of cats per household and low body condition score were associated with reactivated chronic infection (P < 0.05). It is concluded that T. gondii is scattered in the studied population with several periods of reinfection, and therefore an environmental contamination with infecting oocysts exists and there are intrinsic associated factors in cats that increase the risk of becoming infected.


Opinions from the front lines of cat colony management conflict.

Outdoor cats represent a global threat to terrestrial vertebrate conservation, but management has been rife with conflict due to differences in views of the problem and appropriate responses to it. To evaluate these differences we conducted a survey of opinions about outdoor cats and their management with two contrasting stakeholder groups, cat colony caretakers (CCCs) and bird conservation professionals (BCPs) across the United States. Group opinions were polarized, for both normative statements (CCCs supported treating feral cats as protected wildlife and using trap- neuter and release [TNR] and BCPs supported treating feral cats as pests and using euthanasia) and empirical statements. Opinions also were related to gender, age, and education, with females and older respondents being less likely than their counterparts to support treating feral cats as pests, and females being less likely than males to support euthanasia. Most CCCs held false beliefs about the impacts of feral cats on wildlife and the impacts of TNR (e.g., 9% believed feral cats harmed bird populations, 70% believed TNR eliminates cat colonies, and 18% disagreed with the statement that feral cats filled the role of native predators). Only 6% of CCCs believed feral cats carried diseases. To the extent the beliefs held by CCCs are rooted in lack of knowledge and mistrust, rather than denial of directly observable phenomenon, the conservation community can manage these conflicts more productively by bringing CCCs into the process of defining data collection methods, defining study/management locations, and identifying common goals related to caring for animals.


Prevalence of Toxoplasma gondii antibodies, circulating antigens and DNA in stray cats in Shanghai, China.

BACKGROUND: Toxoplasma gondii is prevalent in most areas of the world and may cause abortions or neonatal complications in humans. As the only definitive host, cats play an important role in the epidemiology of the disease. Infection rates in cats, especially stray or free-living cats, are considered to be the best sentinels of the level of T. gondii in the environment. The T. gondii infection can be diagnosed in different ways with different methods depending on the target. However, little information on T. gondii infection in cats available in Shanghai, China. Moreover reports on prevalence of circulating antigens, antibodies and DNA of T. gondii in samples from 145 stray or unwanted cats from 6 animal shelters in Shanghai (China) was determined in order to estimate the prevalence of T. gondii infection, by Ab-ELISA, CA-ELISA, and nested-PCR, respectively. RESULTS: The positive rates for the antibodies, circulating antigen and DNA of T. gondii were 11.7% (17 of 145), 5.5% (8 of 145) and 5.71% (2 of 35), respectively. No cat tested was positive by both the Ab-ELISA and the CA-ELISA, but the results of the PCR were consistent with the CA-ELISA assay. Therefore, the overall estimated prevalence of toxoplasmosis was 17.2% (25 of 145). According to our results, the positive rates of specific antibodies and circulating antigen of T. gondii were significantly different between adult cats (>1 year old) and juvenile cats (<1 year old); the former was 13.5% versus 9.9% by Ab-ELISA, while the latter was 1.7% versus 23.1% by CA-ELISA. From the results obtained with all three detection methods used in this study, the rate of infection was not significantly different between male and female cats (P > 0.05); and the overall rate was 17.9% for males versus 16.4% for females. CONCLUSIONS: The results suggest that detection of circulating antigens (CA) is necessary in surveys of T. gondii infection, especially for juvenile cats. Our investigation revealed that the prevalence of T. gondii infection in stray cats in Shanghai is high. Control programs are needed for stray cat populations in order to reduce the risk of zoonotic transmission of toxoplasmosis to other domestic animals and humans, especially females.


Combination of foot stimulation and tramadol treatment reverses irritation induced bladder overactivity in cats.

PURPOSE: We determined whether transcutaneous electrical foot stimulation combined with a low dose of tramadol (Sigma-Aldrich(R)) could completely suppress bladder overactivity. MATERIALS AND METHODS: Repeat cystometrograms were performed in 18 alpha-chloralose anesthetized cats by infusing the bladder with saline or 0.25%
acetic acid. Transcutaneous electrical stimulation (5 Hz) of the cat hind foot at 2 to 4 times the threshold intensity needed to induce observable toe movement was applied to suppress acetic acid induced bladder overactivity. Tramadol (1 to 3 mg/kg intravenously) was administered to enhance foot inhibition. RESULTS: Acetic acid irritated the bladder, induced bladder overactivity and significantly decreased bladder capacity to a mean +/- SE of 26% +/- 5% of saline control capacity (p <0.01). Without tramadol, foot stimulation at 2 and 4 threshold intensity applied during acetic acid cystometrograms significantly increased bladder capacity to a mean of 47% +/- 5% and 62% +/- 6% of saline control capacity, respectively (p <0.05). Without foot stimulation, tramadol (1 mg/kg) only slightly changed bladder capacity to a mean of 39% +/- 2% of saline control capacity (p >0.05), while 3 mg/kg significantly increased capacity to 85% +/- 14% that of control (p <0.05). However, 1 mg/kg tramadol combined with foot stimulation increased bladder capacity to a mean of 71% +/- 18% (2 threshold intensity) and 84% +/- 14% (4 threshold intensity), respectively, which did not significantly differ from saline control capacity. In addition, long lasting (greater than 1.5 to 2 hours) post-stimulation inhibition was induced by foot stimulation combined with 3 mg/kg tramadol treatment. CONCLUSIONS: This study suggests a new treatment strategy for overactive bladder by combining foot stimulation with a low dose of tramadol, which is noninvasive and has potentially high efficacy and fewer adverse effects.

Walmsley, A., S. Elton, J. Louys, L. C. Bishop, and C. Meloro (2012) J Morphol 273:1424-1438. **Humeral epiphysial shape in the felidae: The influence of phylogeny, allometry, and locomotion.** Bone morphology of the cats (Mammalia: Felidae) is influenced by many factors, including locomotor mode, body size, hunting methods, prey size and phylogeny. Here, we investigate the shape of the proximal and distal humeral epiphyses in extant species of the felids, based on two-dimensional landmark configurations. Geometric morphometric techniques were used to describe shape differences in the context of phylogeny, allometry and locomotion. The influence of these factors on epiphyseal shape was assessed using Principal Component Analysis, Linear Discriminant functions and multivariate regression. Phylogenetic Generalised Least Squares was used to examine the association between size or locomotion and humeral epiphyseal shape, after taking a phylogenetic error term into account. Results show marked differences in epiphyseal shape between felid lineages, with a relatively large phylogenetic influence. Additionally, the adaptive influences of size and locomotion are demonstrated, and their influence is independent of phylogeny in most, but not all, cases. Several features of epiphyseal shape are common to the largest terrestrial felids, including a relative reduction in the surface area of the humeral head and increased robusticity of structures that provide attachment for joint-stabilising muscles, including the medial epicondyle and the greater and lesser tubercles. This increased robusticity is a functional response to the increased loading forces placed on the joints due to large body mass. J. Morphol., 2012. (c) 2012 Wiley Periodicals, Inc.

Benito, J., M. E. Gruen, A. Thomson, W. Simpson, and B. D. Lascelles (2012) J Feline Med Surg 14:863-870. **Owner-assessed indices of quality of life in cats and the relationship to the presence of degenerative joint disease.** This study evaluated the types of items owners consider important to their cats’ quality of life (QoL). We hypothesized that items contributing to QoL in cats are predominantly items requiring mobility. The objectives of the study were to describe the types of items considered important by owners for their cats’ QoL; to describe the proportion of these items that involve mobility; to evaluate what patient factors, including severity of degenerative joint disease (DJD), affect this distribution; and to evaluate whether the proportion of QoL items involving mobility chosen by owners is different in cats presenting for a DJD study compared with a randomly selected population. A total of 830 client-generated items were evaluated. Regardless of DJD status, 40% of items listed by owners involved mobility, while 60% were ‘inactive’ items, rejecting our hypothesis. This highlights the need to assess non-active items that owners consider to constitute QoL to fully assess the impact of diseases like DJD and, therefore, the success of therapeutic interventions.

Hosseinejad, M. (2012) Exp Parasitol 132:556-560. **Evaluation of an indirect ELISA using a tachyzoite surface antigen SAG1 for diagnosis of Toxoplasma gondii infection in cats.** Toxoplasma gondii infection is very common in cats throughout the world. Most cats are subclinically infected and potentially fatal clinical disease occurs in some of them. The aim of this study is to develop an indirect enzyme linked immunosorbent assay (ELISA) test using an affinity purified tachyzoite surface antigen (SAG1) to detect T. gondii infection in cats. Six sero-negative kittens were used in this study; four kittens received 10(4)T. gondii tachyzoites of NED strain (type III) and the remaining two were used as uninfected controls. Serum samples were collected within 41 days and were evaluated for anti-T. gondii antibodies using indirect fluorescent antibody test (IFAT) and ELISA method. IgG antibodies were detectable at least from eight days after tachyzoites inoculation and an increasing pattern in both serum ELISA indices (SLns) and IFAT titers were detected. SLns were significantly different in sera of cats presenting different IFAT titers. In order to evaluate the performance of ELISA to detect anti-T. gondii antibodies of naturally infected cats, serum samples were also collected from household and stray cats and evaluated in the same way.
IFAT was regarded as the standard test and sensitivity and specificity of the ELISA to detect the infection in naturally infected kittens were analyzed using two-graph receiver operating characteristic (TG-ROC) analysis. An area under curve (AUC) of 0.996 revealed the test as a highly accurate test with relative sensitivity and specificity of 100% and 96% for a cut-off value of 0.10 for SIn.

The prevalence of various viral infections was examined in primary accession cases of feline lower urinary tract disease (FLUTD) and healthy control cats in Norway. Urine samples from 102 cats with clinical signs of FLUTD and 73 healthy control cats were tested for the presence of feline calicivirus (FCV), feline coronavirus (FCoV) and feline herpesvirus-1 (FHV-1) by polymerase chain reaction. All urinary samples were negative for FCV and FCoV. One (1%) of the FLUTD cats was found to be positive for FHV-1. The results did not indicate an association between the viral infections examined and signs of FLUTD in the study sample.

The prevalence of Giardia duodenalis was determined in faecal samples from dogs and cats in Madrid, Spain and molecular characterisation of isolates. A total of 604 and 144 faecal samples from dogs and cats, respectively, were analysed by routine coprological methods. The prevalence of G. duodenalis was 16.4 % (99/604) in dogs and 4.2 % (6/144) in cats. Sixty-four G. duodenalis isolates (63 from dogs and 1 from a cat) were characterised using glutamate dehydrogenase and beta-giardin genes by PCR-RFLP. The single cat sample showed a mixed infection by assemblages A + F. The assemblages found in the dog samples were A, B, C, D and E, both as single and as mixed infections. The zoonotic assemblages A and B were found in 56 (88.8 %) G. duodenalis-positive samples with 15.9 % of samples having assemblage A (10/63) and 73 % of samples with assemblage B (46/63), indicating high potential zoonotic risk and public health significance.

It is generally recommended that female cats not intended for planned breeding are spayed to reduce the population of feral cats and also because spaying is beneficial for the long-term health of the individual. For female cats of unknown origin or with estrous symptoms after spaying there is a need for a reliable method to diagnose or rule out the presence of ovaries to avoid unnecessary surgery. Methods previously recommended include vaginal cytology, evaluation of serum estradiol concentration during suspected estrus, induction of ovulation and subsequent evaluation of progesterone, or explorative laparotomy. These methods have the disadvantages that an accurate diagnosis only can be made during estrus or that an invasive procedure is required. Previously, the use of a GnRH challenge test and a semiquantitative LH test have been reported. Our aim was to compare these two methods. We therefore divided 31 female cats in two groups: (1) intact nonestrous females (N = 16), and (2) previously ovariohysterectomized females (N = 15). A blood sample was collected (Time 0) and 0.4 mg/kg buserelin (Receptal; Intervet, Danderyd, Sweden) was injected im. A new blood sample was collected 120 min after the injection. A drop of serum from the sample collected at Time 0 was placed on the LH test (Witness LH; Synbiotics, Corp., San Diego, CA, USA) and the result was evaluated as negative or positive. The remaining serum was frozen and analyzed for estradiol in one batch. Serum estradiol before buserelin stimulation ranged between 5 and 45 pmol/L (N = 14) in intact nonestrous queens and between 2 and 6 pmol/L (N = 15) in ovariohysterectomized females. Estradiol in samples collected after 120 min ranged between 12 and 51 pmol/L (N = 16) in intact queens and between 1 and 7 pmol/L (N = 15) in spayed cats giving a sensitivity and specificity of 100% for the buserelin stimulation test at a cutoff value of 11 pmol/L. All intact queens were negative in the semiquantitative LH test while 14/15 spayed cats were positive and one was negative giving a sensitivity of 100% and a specificity of 93.8% to detect the presence of ovaries in nonestrous cats.

Cases of feline thelaziosis have seldom been published in the scientific literature. We report the first autochthonous case of feline ocular thelaziosis in Portugal caused by Thelazia callipaeda and suggest that this infestation should be included among differential diagnoses of ocular diseases in cats from this country.
Mycoplasma haemocanis - the canine hemoplasma and its feline counterpart in the genomic era.

ABSTRACT: Mycoplasma haemocanis is a hemotrophic mycoplasma (hemoplasma), blood pathogen that may cause acute disease in immunosuppressed or splenectomized dogs. The genome of the strain Illinois, isolated from blood of a naturally infected dog, has been entirely sequenced and annotated to gain a better understanding of the biology of M. haemocanis. Its single circular chromosome has 919,992 bp and a low G + C content (35%), representing a typical mycoplasmal genome. A gene-by-gene comparison against its feline counterpart, M. haemofelis, reveals a very similar composition and architecture with most of the genes having conserved synteny extending over their entire chromosomes and differing only by a small set of unique protein coding sequences. As in M. haemofelis, M. haemocanis metabolic pathways are reduced and apparently rely heavily on the nutrients afforded by its host environment. The presence of a major percentage of its genome dedicated to paralogous genes (63.7%) suggests that this bacterium might use antigenic variation as a mechanism to evade the host’s immune system as also observed in M. haemofelis genome. Phylogenomic comparisons based on average nucleotide identity (ANI) and tetranucleotide signature suggest that these two pathogens are different species of mycoplasmas, with M. haemocanis infecting dogs and M. haemofelis infecting cats.

Inherited disorders of hemostasis in dogs and cats.

Inherited disorders of hemostasis encompass abnormalities in primary hemostasis, coagulation, and fibrinolysis resulting from genetic mutations. There is significant variation in the phenotype expressed ranging from life limiting to the absence of overt clinical signs. Von Willebrand disease is the most common primary hemostatic disorder in dogs, and hemophilia A is the most common coagulation factor disorder. The diagnosis of inherited bleeding disorders is made by functional and/or quantitative evaluation. Genetic testing has added to the knowledge base, allowing prevention through targeted breeding. Avoidance of trauma and injury is paramount in the prevention of bleeding in animals diagnosed with inherited hemostatic disorders. Current therapeutic options include platelet transfusions, broad replacement of coagulation factors (e.g., plasma), targeted factor replacement (e.g., cryoprecipitate), antifibrinolytic agents and specific factor replacement, and treatment of the symptoms (i.e., bleeding) with blood transfusions.

Ototoxicity in dogs and cats.

A variety of drugs in veterinary use have side effects that can potentially damage the senses of hearing or balance in animals. A large body of literature exists on the incidence and mechanisms of ototoxicity in experimental animals and in humans, but little is documented in domestic dogs and cats. However, the generality of these adverse actions across species allows one to extrapolate and provide the veterinarian with insight into possible complications of chemotherapy.

Feline deafness.

Cats have among the best hearing of all mammals in that they are extremely sensitive to a broad range of frequencies. The ear is a highly complex structure that is delicately balanced in terms of its biochemistry, types of receptors, ion channels, mechanical properties, and cellular organization. Sensorineural deafness is caused by “flawed” genes that are inherited from one or both parents. Hearing loss can also be acquired as a result of noise trauma from industrialized environment, viral infection, or blunt trauma. To date, it is not practical to intervene and attempt to correct these forms of deafness in cats.

Neurological manifestations of ear disease in dogs and cats.

There are four major neuroanatomical structures associated with the ear that, when damaged, result in different neurologic clinical signs. These structures are the facial nerve, the ocular sympathetic tract, the vestibular receptors, and the cochlea. The clinical signs associated with disorders of each structure are discussed, followed by a summary of the diseases that should be considered in each case. The article begins with a description of the neuroanatomy of each of these structures.

BACKGROUND: Cytologic results from bronchoscopic BAL in cats with naturally occurring respiratory disease have not been reported, and the clinical utility of multisegment BAL has not been evaluated. HYPOTHESIS: BAL cytology from 2 separate lung segments in cats will have similar cell counts, cytologic interpretation, or both. ANIMALS: Eighty-seven cases in 85 cats (2 examined twice) with naturally occurring lower respiratory disease. METHODS: A combined prospective/retrospective evaluation of all cats with multisegment BAL was performed. BAL fluid was evaluated for total nucleated cell counts, differential cell counts, and cytologic characteristics at each lavage site. BAL fluid was categorized as eosinophilic, neutrophilic, lymphocytic, hypercellular, or mixed. Radiographs were assessed for diffuse or focal disease. RESULTS: Clinical diagnoses included inflammatory airway disease (n = 63), pneumonia (n = 15), neoplasia (n = 6), and undetermined (n = 3). Total nucleated cell counts varied between sites regardless of radiographic evidence of focal or diffuse radiographic disease. In 28/87 cases (32%), cell counts differed between lavage sites by 2.2-40 fold. BAL yielded similar cytologic interpretation of inflammation in 45/87 (52%) cases. In 8/14 cases that had BAL performed at the site of a focal radiographic infiltrate, as well as at a site of diffuse infiltrates, the same cytologic interpretation was made at each site. CONCLUSIONS AND CLINICAL IMPORTANCE: Total and differential cell counts in BAL fluid often differ between lung segments in cats with lower respiratory disease, and caution is warranted when using a single BAL cytology to define the inflammatory response in cats with spontaneously occurring lower respiratory tract disease.


Detection of RD-114 virus by a reverse transcriptase assay based on product enhancement.

RD-114 virus is a feline endogenous retrovirus that exists in the genome of all cats. It can be assumed that feline and canine live vaccines manufactured by culturing cells of feline origin are contaminated with the virus. The current study is attempted to develop a product enhanced reverse transcriptase (PERT) assay to detect replication-competent RD-114 virus. Since culture supernatants of Crandell-Rees feline kidney (CRFK) cells do not have detectable reverse transcriptase activity in case of do not passage on other cell lines, these results raise the possibility that RD-114 virus grow efficiently in other retrovirus producing cell lines. For the PERT assay, RD-114 virus isolated from CRFK cells may need to be passaged more than four times on 293T cells to be expressed at appreciable levels. The PERT assay described here provides an accurate method for determining the presence of RD-114 virus by a reverse transcriptase assay based on product enhancement.


Efficacy and Adverse Effects of (R)-9-(2-phosphonomethoxypropyl)-2,6-diaminopurine in Feline Immunodeficiency Virus-Infected Cats.

BACKGROUND: (R)-9-(2-phosphonomethoxypropyl)-2,6-diaminopurine (PMPDAP) is active against feline immunodeficiency virus (FIV) in vitro, and is less toxic than other acyclic nucleoside phosphonates. Its efficacy in naturally infected cats has not been evaluated in large controlled studies. HYPOTHESIS/OBJECTIVES: PMPDAP is effective in naturally FIV-infected cats with minimal adverse effects. ANIMALS: Forty-five privately owned cats naturally infected with FIV. METHODS: Prospective, randomized, placebo-controlled, double-blinded clinical study. Cats were randomly assigned to be treated with PMPDAP (25 mg/kg) daily, PMPDAP 3 times a week, or placebo for a period of 6 weeks. RESULTS: Administration of PMPDAP to FIV-infected cats did not lead to detectable improvements in clinical, virological, or immunological variables. Proviral load (FIV copies/10(6) cells) did not change significantly during treatment (placebo group: from 9505 +/- 10119 to 8564 +/- 8615; PMPDAP 3 times a week: from 4818 +/- 4426 to 5041 +/- 6197; PMPDAP daily: from 3525 +/- 5038 to 3167 +/- 5824). There was a significant decrease of red blood cell counts (x10(12) /L) (from 8.91 +/- 1.82 to 7.34 +/- 1.79 in cats treated 3 times per week (P <.001), and from 8.96 +/- 1.13 to 6.01 +/- 1.36 in cats treated daily (P <.001)), as well as of packed cell volume, and hemoglobin in both groups receiving PMPDAP. CONCLUSIONS AND CLINICAL IMPORTANCE: Administration of PMPDAP was not associated with significant improvements in clinical, immunological, or virological parameters, but treatment was associated with adverse effects, mainly anemia. Thus, PMPDAP, as administered in this study, cannot be recommended for treatment of FIV-infected cats.


A review of 18 cases of feline colonic adenocarcinoma treated with subtotal colectomies and adjuvant Carboplatin.

Feline colonic adenocarcinoma is a locally invasive, highly metastatic tumor that is most often treated with wide surgical excision (subtotal colectomy) and systemic chemotherapy either with or without nonsteroidal anti-inflammatory medications. In this retrospective study, the outcome of subtotal colectomy and adjuvant carboplatin in 18 client-owned cats is described. The median carboplatin dose was 200 mg/m(2) (range, 200-254 mg/m(2)) q 4 wk with a
median of five doses/cat (range was two to seven doses/cat). Limited toxicities were noted. Positive prognostic factors for the disease-free interval included cats that had weight loss as a presenting sign (P < 0.036) and negative prognostic factors for median survival included nodal and distant metastasis (178 versus 328 days and 200 versus 340 days, respectively). The median disease-free interval was 251 days (range, 37-528 days) and the median survival time was 269 days (range, 40-533 days). Subtotal colectomy and adjuvant carboplatin is a safe and potentially effective treatment for cats with colonic adenocarcinoma.

Jokelainen, P., O. Simola, E. Rantanen, A. Nareaho, H. Lohi, and A. Sukura (2012) J Vet Diagn Invest 24:1115-1124. Feline toxoplasmosis in Finland: cross-sectional epidemiological study and case series study. Three subgroups of the Finnish cat population underwent investigation for different aspects of feline toxoplasmosis. Blood samples of 445 purebred pet cats and 45 shelter cats were screened for Toxoplasma gondii-specific immunoglobulin G antibodies with a direct agglutination test. The overall seroprevalence was 48.4%; older cats and cats receiving raw meat in their diet were more often seropositive. Fecal samples were obtained from 131 shelters cats; 2 of the cats were found shedding T. gondii-like oocysts, and the oocysts shed by 1 of the 2 were confirmed as T. gondii with polymerase chain reaction. Among 193 cats submitted for necropsy during a 3.5-year period, 6 (3.1%) had been diagnosed with generalized toxoplasmosis and were retrospectively further investigated. The main pathological lesions included acute interstitial pneumonia, acute necrotizing hepatitis, and nonsuppurative meningoencephalitis with glial granulomas. Immunohistochemical staining demonstrated a mild to massive parasite burden in tissues with pathological lesions as well as in unaffected tissues. The results of the direct multilocus genotyping of T. gondii parasites detected were consistent with endemic genotype II, and the causative parasite strains were isolated from 2 of the generalized toxoplasmosis cases. The results indicate that cats in Finland commonly encounter T. gondii and contribute to the environmental oocyst burden, while the endemic genotype II can also prove fatal to the parasite’s definitive host. Preventing feline T. gondii infections is not only of public health importance but also a welfare issue for the cats themselves.

Lewis, K. M., L. A. Cohn, H. S. Marr, and A. J. Birkenheuer (2012) J Vet Intern Med 26:1490-1493. Diminazene Diaceturate for Treatment of Chronic Cytauxzoon felis Parasitemia in Naturally Infected Cats. BACKGROUND: Cytauxzoon felis is a hemoprotozoal parasite that causes substantial morbidity and mortality during the acute phase of infection in cats. However, cats that survive the acute illness remain persistently infected and may serve as a reservoir for the tick-transmitted pathogen. OBJECTIVE: We investigated the ability of the antiprotozoal compound diminazene diaceturate to eliminate the pathogen from naturally infected C. felis carriers. ANIMALS: Seven healthy, chronically infected domestic cats housed in a research setting. METHODS: Prospective clinical trial. Cats were treated in a masked fashion with diminazene diaceturate (3 mg/kg) or placebo IM in a series of 2 injections 7 days apart. Clearance of the organism was assessed by light microscopy and real-time polymerase chain reaction (PCR) at 0, 3, 6, and 10 weeks. In addition, cats were monitored for behavioral changes or for changes on physical examination, CBC, plasma biochemical profile, and urinalysis periodically. Cats that remained parasitemic at the end of 10 weeks were switched to the alternative treatment and similarly monitored for an additional 10 weeks. RESULTS: Adverse events associated with treatment were limited to self-resolving hypersalivation and injection site soreness; the former was ameliorated by premedication with atropine. Parasite burden, as assayed by both light microscopy and real-time PCR, was similar between diminazene- and placebo-treated cats. CONCLUSIONS AND CLINICAL RELEVANCE: Diminazene diaceturate was unable to eliminate the pathogen or decrease parasite burden in healthy, chronically infected cats.

Jas, D., C. Coupiere, C. E. Toulemonde, P. M. Guigal, and H. Poulet (2012) Vaccine 30:6991-6996. Three-year duration of immunity in cats vaccinated with a canarypox-vectored recombinant rabies virus vaccine. Despite the availability of efficacious vaccines for animals and humans, rabies is still a major zoonosis. Prevention of rabies in dogs and cats is key for reducing the risk of transmission of this deadly disease to humans. Most veterinary vaccines are adjuvanted inactivated vaccines and have been shown to provide one to four-year duration of immunity. In response to debates about the safety of adjuvanted vaccines in cats, a non-adjuvanted feline rabies vaccine with one-year duration of immunity claim was specifically developed using the canarypoxvirus vector technology. The objective of this study was to validate a vaccination program based on primary vaccination, revaccination one year later and boosters every three years. Seronegative cats were vaccinated at 12 weeks of age and received a booster vaccination one year later. This vaccination regimen induced a strong and sustained antibody response, and all vaccinated animals were protected against virulent rabies challenge carried out 3 years after vaccination. These results validated 3-year duration of immunity after a complete basic vaccination program consisting in primary vaccination from 12 weeks of age followed by revaccination one year later with a non-adjuvanted canarypox-vectored vaccine.
Repeatability of a planning target volume expansion protocol for radiation therapy of regional lymph nodes in canine and feline patients with head tumors.

For canine and feline patients with head tumors, simultaneous irradiation of the primary tumor and mandibular and retropharyngeal lymph nodes (LNs) is often indicated. The purpose of this study was to assess the repeatability of a planning target volume (PTV) expansion protocol for these LNs. Two CT image sets from 44 dogs and 37 cats that underwent radiation therapy for head tumors were compared to determine LN repositioning accuracy and precision; planning-CT (for radiation therapy planning) and cone-beam CT (at the time of actual treatment sessions). Eleven percent of dogs and 65% of cats received treatment to their LNs. In dogs, the mandibular LNs were positioned more caudally (P = 0.0002) and the right mandibular and right retropharyngeal LNs were positioned more to the left side of the patient (P = 0.00015 and P = 0.003, respectively). In cats, left mandibular LN was positioned higher (toward roof) than the planning-CT (P = 0.028). In conclusion, when the patient immobilization devices and bony anatomy matching are used to align the primary head target and these LNs are treated simultaneously, an asymmetrical PTV expansion that ranges 4-9 mm (dogs) and 2-4 mm (cats), depending on the directions of couch movement, should be used to include the LNs within the PTV at least 95% of the time.


Plasma lactate measurements in healthy cats.

OBJECTIVES: The primary objective was to determine if venous plasma lactate is affected by struggling during venipuncture in clinically normal, healthy cats. Additional objectives were to evaluate the effects of venipuncture site, age, sex, and time (0-24 h) on plasma lactate concentrations in healthy cats. DESIGN: Prospective clinical study. SETTING: Private veterinary referral center. ANIMALS: Twenty-one healthy, privately owned, sexually altered, adult cats. INTERVENTIONS: Blood was collected via jugular or medial saphenous venipuncture at the time of study entry and at 6 and 24 hours later. MEASUREMENTS AND MAIN RESULTS: In healthy cats, there were no significant differences in lactate concentrations stratified by degree of struggling at time 0 (P = 0.33), time 6 (P = 0.23), or at time 24 (P = 0.41), venipuncture site (P = 0.58), age (P = 0.62), sex (P = 0.06), or time (P = 0.13). Most cats had mild to moderate struggling scores. Venous plasma lactate concentrations for this group of healthy adult cats had a mean of 1.63 mmol/L; 95% CI: 1.34-1.92, SD: 0.62, and a minimum-maximum range of 0.37-2.81 mmol/L. CONCLUSIONS: The occurrence of mild to moderate struggling during venipuncture, venipuncture site, age, sex, and time did not affect plasma lactate concentrations in this group of healthy cats. Our results suggest that plasma lactate can be reliably measured in cats. Further studies are warranted in sick cats to determine if plasma lactate measurements can be utilized as a diagnostic or prognostic biomarker.


Measurement of intra-abdominal pressure in dogs and cats.

OBJECTIVE: To review and summarize the human and veterinary literature on intra-abdominal pressure measurement techniques. DATA SOURCES: Human and veterinary clinical studies, research articles, reviews, and textbooks with no date restrictions with a focus on techniques for intra-abdominal pressure (IAP) measurement and their limitations. HUMAN DATA SYNTHESIS: Human literature has established the intravesicular method as the gold standard for indirect measurement of IAP. However, current research has explored the intragastric method as a valid alternative. Recently, debate has focused on the shortcomings of the various measurement methods. VETERINARY DATA SYNTHESIS: Early human literature using dogs as models contributed to the original data for IAP measurements in small animals. Since that time, a number of clinical studies and 1 case report have contributed to that original information. A reference interval for IAP measured by the intravesicular method has recently been determined in healthy cats. CONCLUSIONS: Further studies investigating IAP in critically ill veterinary patients are required to establish the optimal technique for this measurement in veterinary medicine.


The myth of hypoallergenic dogs (and cats).


Ultrasonographic evaluation of preprandial and postprandial gallbladder volume in healthy cats.

OBJECTIVE: To noninvasively assess the influence of ingestion of a standard meal on gallbladder volume (GBV) in healthy cats. ANIMALS: 10 healthy adult domestic shorthair cats (4 neutered females, 5 neutered males, and 1 sexually intact male). PROCEDURES: Nonsedated cats were positioned in dorsal and left lateral recumbency to obtain...
ultrasonographic measurements of the gallbladder via the subcostal and right intercostal acoustic windows, respectively. Gallbladder volume was calculated from linear measurements by use of an ellipsoid formula (volume [mL] = length [mm] x height [mm] x width [mm] x 0.52). Measurements were recorded after food was withheld for 12 hours (0 min) and at 5, 15, 30, 45, 60, and 120 minutes after cats were fed 50 g of a standard commercial diet (protein, 44.3%; fat, 30.3%; and carbohydrate, 15.6% [dry matter percentage]). RESULTS: Agreement between gallbladder linear measurements or GBV obtained from the subcostal and right intercostal windows was good. Feeding resulted in linear decreases in gallbladder linear measurements and GBV. Via the subcostal and intercostal windows, mean +/- SD GBV was 2.47 +/- 1.16 mL and 2.36 +/- 0.96 mL, respectively, at 0 minutes and 0.88 +/- 0.13 mL and 0.94 +/- 0.25 mL, respectively, at 120 minutes. Gallbladder width most closely reflected postprandial modification of GBV. CONCLUSIONS AND CLINICAL RELEVANCE: Results indicated that ultrasonographic assessment (via the subcostal or right intercostal acoustic window) of postprandial changes in GBV can be used to evaluate gallbladder contractility in cats. These data may help identify cats with abnormal gallbladder emptying.

O’Hagan, B. J., K. Pasloske, C. McKinnon, N. R. Perkins, and T. Whitem (2012) Aust Vet J 90:395-401. Clinical evaluation of alfaxalone as an anaesthetic induction agent in cats less than 12 weeks of age. OBJECTIVE: To assess the clinical suitability of alfaxalone as an anaesthetic induction and maintenance agent for kittens aged less than 12 weeks. MATERIALS AND METHODS: The study group comprised 34 kittens aged less than 12 weeks that were presented for surgical desexing. They were aged by dentition, examined and weighed prior to premedication with acepromazine, atropine and morphine. At 20-30 min after premedication, animals were anaesthetised with intravenous alfaxalone administered to effect, using a target maximum expected dose of 5 mg/kg. All cats were intubated: 25 were maintained with isoflurane in oxygen administered with a non-rebreathing circuit and 8 were maintained by supplemental intravenous administration of alfaxalone. Subjective measures of anaesthetic quality and vital signs were recorded from enrolment to recovery. Cats receiving supplemental alfaxalone for maintenance were evaluated for time to first supplemental dose and the total dose of supplemental alfaxalone (mg/kg/h). Descriptive and comparative statistics were used to analyse and present collected data. RESULTS: The mean (+/- SD) dose of alfaxalone for induction was 4.7 +/- 0.5 mg/kg body weight. Subjective measures of anaesthetic quality indicated acceptable induction, maintenance and recovery standards. Measured cardiovascular and respiratory parameters were well maintained. CONCLUSION: Alfaxalone in 2-hydroxypropyl-beta-cyclodextrin (Alfaxan(R)) is a suitable injectable anaesthetic induction agent for juvenile cats aged less than 12 weeks requiring anaesthesia. Maintenance of anaesthesia with supplemental doses of alfaxalone may be a suitable alternative in kittens when the use of inhalant anaesthetic maintenance is not feasible.

Schneeberg, A., M. Rupnik, H. Neubauer, and C. Seyboldt (2012) Anaerobe 18:484-488. Prevalence and distribution of Clostridium difficile PCR ribotypes in cats and dogs from animal shelters in Thuringia, Germany. Clostridium difficile is an important cause of nosocomial diarrhoea in humans. Pet animals and livestock are discussed as potential natural reservoirs and sources of infection. In this study faecal samples from dogs and cats were collected at 10 animal shelters in Thuringia, Germany. C. difficile was isolated from 9 out of 165 (5.5%) canine and 5 out of 135 (3.7%) feline samples. Five PCR ribotypes (010, 014/020, 039, 045, SLO 066) were identified. PCR ribotypes 010 and 014/020 were detected in more than one shelter and PCR ribotypes 014/020 and 045 were isolated from dogs and cats. MLVA profiles of strains of a PCR ribotype from one shelter were identical or closely related, while strains of the same PCR ribotype from different shelters showed significant differences. This study shows that dogs and cats kept in animal shelters are a reservoir of C. difficile PCR ribotypes which can infect also humans.

Nakabayashi, S., T. Nagaoka, T. Tani, K. Sogawa, T. W. Hein, L. Kuo, and A. Yoshida (2012) Exp Eye Res 103:63-70. Retinal arteriolar responses to acute severe elevation in systemic blood pressure in cats: role of endothelium-derived factors. The purpose of this study was to investigate the roles of endothelium-derived factors in the retinal arteriolar responses to acute severe elevation in systemic blood pressure (BP) in cats. Acute elevation of mean arterial BP by 60% for 5 min was achieved by inflating a balloon-tipped catheter in the descending aorta. The retinal arteriolar diameter, flow velocity, wall shear rate (WSR) and blood flow (RBF) changes during BP elevation were assessed with laser Doppler velocimetry 2 h after intravitreal injections of nitric oxide (NO) synthase inhibitor L-NAME, cyclooxygenase inhibitor indomethacin, endothelin-1 receptor antagonists (BQ-123 for type A and BQ-788 for type B), or Rho kinase inhibitor fasudil. BP elevation caused a marked increase in retinal arteriolar flow velocity and WSR with slight vasoconstriction, resulting in an increase in RBF. The increases in velocity, WSR and RBF, but not diameter, were correlated with the increase in ocular perfusion pressure. With L-NAME or indomethacin, the increase in RBF upon BP elevation was significantly attenuated due to enhanced retinal arteriolar vasoconstriction. In contrast, BQ-123 and fasudil potentiated
the increased RBF. BQ-788 had no effect on arteriolar diameter and hemodynamics. Our data suggest that acute elevation of BP by 60% leads to an increase in RBF due to the release of NO and prostanoids probably through a shear stress-induced vasodilation mechanism. The release of endothelin-1 and Rho kinase activation help to limit RBF augmentation by counteracting the vasodilation. It appears that the retinal endothelium, by releasing vasoactive substances, contributes to RBF regulation during acute severe elevation of systemic blood pressure.

Retrospective evaluation of vacuum-assisted peritoneal drainage for the treatment of septic peritonitis in dogs and cats: 8 cases (2003-2010).
OBJECTIVE: To describe the use of vacuum-assisted peritoneal drainage (VAPD) in dogs and cats with septic peritonitis. DESIGN: Retrospective descriptive study. SETTING: University Veterinary Teaching Hospital. ANIMALS: Six dogs and 2 cats with septic peritonitis. INTERVENTIONS: Application of VAPD after abdominal exploration. MEASUREMENTS: Pre- and post-operative physical and clinicopathologic data, surgical findings, treatment, VAPD fluid production, outcome, and survival are reported. MAIN RESULTS: Eight consecutive cases of septic peritonitis, consisting of 6 dogs and 2 cats, were treated surgically and had VAPD applied post-operatively. The mean duration of clinical signs prior to surgical intervention was 4 +/- 3 days. VAPD therapy was applied for a mean of 2 +/- 1.1 days and collected a median of 27 mL/kg/d of abdominal effusate. The median time in hospital was 5 days and abdominal closure was completed in 5 of the 8 patients. All specimens collected at surgery cultured positive for bacteria, most commonly Enterococcus spp. The peritoneum of 4 animals was cultured at the time of abdominal closure; 1 was negative and 3 were positive for Escherichia coli, Enterococcus spp. or gram-positive cocci. Cultures before and after surgery differed in 2 patients. Hypoproteinemia was present in all patients postoperatively. Three patients were considered survivors, all of which were dogs. Five patients died or were euthanized due to cardiopulmonary arrest (n = 3), pyothorax (n = 1), and acute, severe, septic peritonitis (n = 1). CONCLUSIONS: VAPD is available for maintaining abdominal drainage for the treatment of septic peritonitis after surgical intervention; however, similar to open abdominal drainage and closed suction drainage, nosocomial infection and hypoproteinemia remain challenges in the treatment of septic peritonitis.

Cats of the Pharaohs: Genetic Comparison of Egyptian Cat Mummies to their Feline Contemporaries.
The ancient Egyptians mummified an abundance of cats during the Late Period (664 - 332 BC). The overlapping morphology and sizes of developing wildcats and domestic cats confounds the identity of mummified cat species. Genetic analyses should support mummy identification and was conducted on two long bones and a mandible of three cats that were mummified by the ancient Egyptians. The mummy DNA was extracted in a dedicated ancient DNA laboratory at the University of California - Davis, then directly sequencing between 246 and 402 bp of the mtDNA control region from each bone. When compared to a dataset of wildcats (Felis silvestris silvestris, F. s. tristrami, and F. chaus) as well as a previously published worldwide dataset of modern domestic cat samples, including Egypt, the DNA evidence suggests the three mummies represent common contemporary domestic cat mitotypes prevalent in modern Egypt and the Middle East. Divergence estimates date the origin of the mummies’ mitotypes to between two and 7.5 thousand years prior to their mummification, likely prior to or during Egyptian Predyanstic and Early Dynastic Periods. These data are the first genetic evidence supporting that the ancient Egyptians used domesticated cats, F. s. catus, for votive mummies, and likely implies cats were domesticated prior to extensive mummification of cats.

Effect of Three Anesthetic Induction Protocols on Laryngeal Motion during Laryngoscopy in Normal Cats.
OBJECTIVES: To objectively measure and subjectively score the effect of 3 anesthetic induction protocols on laryngeal cartilage motion in normal cats. STUDY DESIGN: Randomized prospective clinical study. ANIMALS: Cats (n = 35) without previous history of respiratory dysfunction. METHODS: Cats were randomly assigned to administration of alfaxalone, propofol, or midazolam and ketamine to induce anesthesia after premedication with methadone. Videolaryngoscopy was performed. Still images at maximum inspiration and expiration were used to measure the area and height of the rima glottidis. Change in rima glottidis area and of normalized glottal gap area (NGGA = area/height(2)) was calculated. Subjective scores for arytenoid movement were obtained. Kruskal-Wallis test was performed on change of NGGA and rima glottidis area. RESULTS: No statistically significant difference was found between groups for age, sex, body weight, and body condition score. Percentage increase of rima glottidis area and change in NGGA were similar for all groups (P =.33 and P =.29). No significant differences were found for subjective scores between groups (P =.54). Arytenoid movement was not detected during videolaryngoscopy and subjective scoring in 3 cats anesthetized with propofol and in 3 cats anesthetized with midazolam and ketamine, despite...
presence of respiratory movements. CONCLUSIONS: No difference in laryngeal motion was observed between the 3 protocols used to induce anesthesia in cats premedicated with methadone.

**Feline superficial pyoderma: a retrospective study of 52 cases (2001-2011).**

BACKGROUND: Superficial pyoderma is traditionally considered rare in cats but may be more prevalent than previously reported. OBJECTIVES: To better characterize superficial pyoderma in cats. ANIMALS: Fifty-two cats from a dermatology referral population over a 10 year period. METHODS: This study was retrospective. Cases were included if neutrophils and intracellular bacteria were reported from surface cytology of skin lesions. Medical records were reviewed for signalment, historical and clinical data, cytology results, primary skin diagnoses and treatment details. RESULTS: Disease prevalence was 20%, with no breed or sex predispositions. The estimated median age of onset was 2 years, affecting 54% of cats by 3 years and 23% after 9 years. Fewer cases presented during winter (15%) compared with other seasons. Skin lesions were typically multifocal, affecting the face (62%), neck (37%), limbs (33%) and ventral abdomen (29%) most commonly. Crusting (83%), alopecia (67%), ulceration/erosion (54%) and erythema (46%) were common lesion types. Pruritus was reported in 92% of cats. Underlying hypersensitivities (confirmed in 60%; suspected in 19%), and atopic dermatitis specifically (confirmed in 48%), were the most frequent primary dermatoses. Cats were treated with a variety of systemic and/or topical antimicrobials. The overall apparent response was considered good in 61% and poor in 27% of cats. Recurrence was confirmed or suspected in 42% of cats. CONCLUSIONS AND CLINICAL IMPORTANCE: Feline superficial pyoderma was more prevalent in this study population than previously reported. Young cats with hypersensitivities and older cats were more commonly affected, and a variety of lesion types and distributions occurred.

**Medial humeral epicondylitis in cats.**

OBJECTIVE: To describe medial humeral epicondylitis in cats based on radiographic, anatomic, and histologic observations. STUDY DESIGN: Prospective cohort study. ANIMALS: Feline cadavers (n = 60). METHODS: Extended craniocaudal, and extended and flexed mediolateral radiographic projections were taken of both elbows of 60 consecutive European shorthair cats that died or were euthanatized. Elbows with new bone formation at the medial epicondyle were dissected and embedded in methyl-methacrylate (MMA). For comparison, both elbows of a cat with no radiographic changes were prepared in a similar manner. Sections of the MMA blocks were Giemsa stained and examined with light microscopy. RESULTS: Bilateral new bone formation was identified radiographically at the medial aspect of the humeral epicondyle in 6 cats (10%). All of these cats had mineral deposition in the humeral head of the flexor carpi ulnaris muscle. Other findings were cartilage damage (n = 3 cats), an additional loose medial joint body (1), and tendinosis (3). The ulnar nerve was flattened and displaced caudally, and signs of chronic epineural fibrosis were present in 2 severely affected cats. CONCLUSIONS: Ten percent of this feline population had radiographic evidence of medial humeral epicondylitis with chronic degeneration, mineralization, and metaplastic bone formation in damaged fibrillar matrix involving the origin of the humeral head of the flexor carpi ulnaris muscle. New bone formation caused displacement and compression of the ulnar nerve in severely affected elbows. Based on our findings, medial humeral epicondylitis appears to be a common disorder in cats with potential clinical sequelae.

**A randomized double-blinded placebo-controlled study to evaluate an effective ciclosporin dose for the treatment of feline hypersensitivity dermatitis.**

BACKGROUND: Hypersensitivity dermatitides (HD) are frequently suspected in cats, but there are few clinical studies on safe and effective treatments in the published literature. OBJECTIVES: To establish a safe and effective dose of ciclosporin in the treatment of feline HD. ANIMALS: One hundred client-owned cats with feline HD. METHODS: Double-blind study, with cats randomly assigned to receive ciclosporin at either 7.0 mg/kg once daily (n = 33) or 2.5 mg/kg once daily (n = 32) or a placebo (n = 35) for 6 weeks. RESULTS: Mean Total Lesion Scores with 7.0 mg/kg ciclosporin were significantly lower than with 2.5 mg/kg ciclosporin (P = 0.0047) or placebo (P = 0.0003) at study end. Individual Total Lesion Scores improved by >50% in 70% of the 7.0 mg/kg group, compared with 47% in the 2.5 mg/kg group and 23% in the placebo group (P = 0.0006). The investigators’ Global Assessment of Improvement was ‘excellent’ or ‘good’ in 61% of cats treated with 7.0 mg/kg ciclosporin, compared with 47% of cats given 2.5 mg/kg and 23% given placebo. The improvement in Investigator Pruritus Scores was significantly greater in cats treated with 7.0 mg/kg ciclosporin (54%) compared with both 2.5 mg/kg ciclosporin (32%; P = 0.0232) and placebo (21%; P = 0.0063). Mild gastrointestinal disorders were the most common adverse events, but these did not require cessation of therapy. CONCLUSIONS AND CLINICAL IMPORTANCE: Results suggest that 7.0 mg/kg ciclosporin once daily in food or per os for 6 weeks is effective and well tolerated in feline HD.
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Feline calicivirus (FCV) is an important pathogen of domestic cats and a frequently used model of human caliciviruses. Here we use an epidemiologically rigorous sampling framework to describe for the first time the phylodynamics of a calicivirus at regional and national scales. A large number of FCV strains cocirculated in the United Kingdom at the national and community levels, with no strain comprising more than 5% and 14% of these populations, respectively. The majority of strains exhibited a relatively restricted geographical range, with only two strains (one field virus and one vaccine virus) spreading further than 100 km. None of the field strains were identified outside the United Kingdom. The majority of strains exhibited a relatively restricted geographical range, with only two strains (one field virus and one vaccine virus) spreading further than 100 km. None of the field strains were identified outside the United Kingdom.

OBJECTIVES: To assess the prevalence of renal abnormalities in ragdoll cats. Ragdoll breeders often warn clients to watch for future renal problems, mainly due to chronic interstitial nephritis and polycystic kidney disease. Therefore, ragdoll screening by abdominal ultrasonography, measurement of serum creatinine and urea concentrations and genetic testing is often performed without documented scientific evidence of increased risk of renal disease. METHODS: Retrospective evaluation of ragdoll screening for renal disease at one institution over an eight-year period. RESULTS: Renal ultrasonography was performed in 244 healthy ragdoll cats. Seven cats were positive for polycystic kidney disease, 21 were suspected to have chronic kidney disease, 8 had abnormalities of unknown significance and 2 cats had only one visible kidney. Cats suspected to have chronic kidney disease were significantly older and had significantly higher serum urea and creatinine concentrations than cats with normal renal ultrasonography. All 125 genetically tested cats were negative for polycystic kidney disease. However, only one of the seven ultrasonographically positive cats underwent genetic testing for polycystic kidney disease. CLINICAL SIGNIFICANCE: Ultrasonographic findings compatible with chronic kidney disease were observed in almost 10% of cats, and polycystic kidney disease occurred at a low prevalence (<3%) in this ragdoll population. Further studies are required to elucidate if ragdoll cats are predisposed to chronic kidney disease.

OBJECTIVES: To evaluate calcium and phosphate homeostasis in hyperthyroid cats and determine if plasma parathyroid hormone and fibroblast growth factor-23 are associated with the presence of -azotaemic chronic kidney disease and/or have prognostic significance. METHODS: Retrospective cohort study. Logistic regression analysis and Cox regression analysis were performed to identify if parathyroid hormone and fibroblast growth factor-23 were predictors of development of azotaemia following treatment and survival time, respectively. RESULTS: Two hundred and seven hyperthyroid cats were included. Elevated plasma parathyroid hormone concentrations, hyperphosphataemia, decreased plasma fibroblast growth factor-23 concentrations and hypocalcaemia were documented; however, all parameters returned to reference intervals following treatment of hyperthyroid cats without azotaemic chronic kidney disease. After adjustment for plasma creatinine concentration, baseline plasma parathyroid hormone and fibroblast growth factor-23 concentrations were not predictors of the development of azotaemia following treatment. Baseline plasma fibroblast growth factor-23 concentrations were associated with all-cause mortality; however, this association was not maintained after adjustment for packed cell volume. CLINICAL SIGNIFICANCE: Changes in plasma parathyroid hormone and fibroblast growth factor-23 concentrations which occur in hyperthyroid cats are not mediators of progression of chronic kidney disease; however, fibroblast growth factor-23 would appear to have some prognostic significance in hyperthyroidism.

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Large-scale spatial and temporal genetic diversity of feline calicivirus.
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Large-scale spatial and temporal genetic diversity of feline calicivirus.

Screening of ragdoll cats for kidney disease: a retrospective evaluation.
OBJECTIVES: To assess the prevalence of renal abnormalities in ragdoll cats. Ragdoll breeders often warn clients to watch for future renal problems, mainly due to chronic interstitial nephritis and polycystic kidney disease. Therefore, ragdoll screening by abdominal ultrasonography, measurement of serum creatinine and urea concentrations and genetic testing is often performed without documented scientific evidence of increased risk of renal disease. METHODS: Retrospective evaluation of ragdoll screening for renal disease at one institution over an eight-year period. RESULTS: Renal ultrasonography was performed in 244 healthy ragdoll cats. Seven cats were positive for polycystic kidney disease, 21 were suspected to have chronic kidney disease, 8 had abnormalities of unknown significance and 2 cats had only one visible kidney. Cats suspected to have chronic kidney disease were significantly older and had significantly higher serum urea and creatinine concentrations than cats with normal renal ultrasonography. All 125 genetically tested cats were negative for polycystic kidney disease. However, only one of the seven ultrasonographically positive cats underwent genetic testing for polycystic kidney disease. CLINICAL SIGNIFICANCE: Ultrasonographic findings compatible with chronic kidney disease were observed in almost 10% of cats, and polycystic kidney disease occurred at a low prevalence (<3%) in this ragdoll population. Further studies are required to elucidate if ragdoll cats are predisposed to chronic kidney disease.


Calcium and phosphate homeostasis in hyperthyroid cats: associations with development of azotaemia and survival time.
OBJECTIVES: To evaluate calcium and phosphate homeostasis in hyperthyroid cats and determine if plasma parathyroid hormone and fibroblast growth factor-23 are associated with the presence of -azotaemic chronic kidney disease and/or have prognostic significance. METHODS: Retrospective cohort study. Logistic regression analysis and Cox regression analysis were performed to identify if parathyroid hormone and fibroblast growth factor-23 were predictors of development of azotaemia following treatment and survival time, respectively. RESULTS: Two hundred and seven hyperthyroid cats were included. Elevated plasma parathyroid hormone concentrations, hyperphosphataemia, decreased plasma fibroblast growth factor-23 concentrations and hypocalcaemia were documented; however, all parameters returned to reference intervals following treatment of hyperthyroid cats without azotaemic chronic kidney disease. After adjustment for plasma creatinine concentration, baseline plasma parathyroid hormone and fibroblast growth factor-23 concentrations were not predictors of the development of azotaemia following treatment. Baseline plasma fibroblast growth factor-23 concentrations were associated with all-cause mortality; however, this association was not maintained after adjustment for packed cell volume. CLINICAL SIGNIFICANCE: Changes in plasma parathyroid hormone and fibroblast growth factor-23 concentrations which occur in hyperthyroid cats are not mediators of progression of chronic kidney disease; however, fibroblast growth factor-23 would appear to have some prognostic significance in hyperthyroidism.
Lentiviral latency in peripheral CD4+ T cells isolated from feline immunodeficiency virus-infected cats during the asymptomatic phase is not associated with hypermethylation of the proviral promoter.

Lentiviral latency remains a principal obstacle to curative AIDS therapy. Transcriptional repression and latency permits lentiviruses to evade host immune responses and antiretroviral drugs. We have established a model of peripheral CD4+ T cell lentiviral latency in cats experimentally infected with feline immunodeficiency virus (FIV). Multiple mechanisms of lentiviral transcriptional repression have been proposed including epigenetic mechanisms resulting in promoter hypermethylation and/or chromatin condensation. Methylation of promoter-associated cytosines in the cytosine-guanine dinucleotide (CpG) has been associated with transcriptional repression in both eukaryotic promoters and integrated retroviral genomes. Using methylcytosine mapping, we examined the CpG methylation patterns in both the 5’ and 3’ long terminal repeats (LTR) of the FIV provirus in peripheral blood mononuclear cells, monocytes and CD4+ T cells isolated during the acute and asymptomatic phases of infection. Here we report no evidence that proviral promoter hypermethylation is associated with lentiviral latency in peripheral CD4+ T cells and monocytes obtained from experimentally FIV-infected cats.

Prognostic histopathological and molecular markers in feline mammary neoplasia.

Feline mammary tumours comprise approximately 11% of feline non-integumentary neoplasms, are more commonly malignant than benign, and carry a poor prognosis attributable to a high probability of local recurrence and metastasis. This review discusses histopathological and molecular markers that could aid in prognostic discrimination, and draws comparisons with studies examining prognostic markers in breast cancer. Tumour grade and mitotic index correlate with survival data and could be useful for prognostication. Although assessment of Ki67 expression might have prognostic potential, further studies are required to corroborate the correlation between expression and clinical outcome. Additional molecular markers that have been investigated for prognostic potential can be grouped according to the ‘hallmarks of cancer’. Many studies utilise ‘surrogate markers’ of clinical outcome, such as correlation with histological grade, to assess the prognostic value of molecular markers, and further investigation is therefore necessary before reaching firm conclusions regarding the prognostic value of some markers. Feline mammary tumours have been proposed as spontaneous models of breast cancer but might only be suitable models for certain molecular sub-types. Compared to humans, cats tend to have a high percentage of mammary tumours which are oestrogen receptor-negative and they might therefore be suitable models for late stage oestrogen receptor-negative breast cancer. The basal-like properties of feline mammary carcinomas offer another avenue for future research in this field of comparative oncology.

Prenatal and early sucking influences on dietary preference in newborn, weaning, and young adult cats.

Early experiences are of potential importance in shaping long-term behavior. This study examined the relative influence of prenatal and/or early postnatal experience of chemosensory stimuli on subsequent olfactory and dietary preferences of cats as newborns, at 9-10 weeks, and at 6 months. Cats were exposed to vanillin or 4-ethylguaiacol via their mother’s diet either prenatally, postnatally, perinatally (prenatal and postnatal), or experienced no exposure to the stimuli (control). Newborns were given a two-choice olfactory test between the familiar “odor” and no odor; 9-10 week olds were tested for their preference between two food treats, one flavored with the familiar stimulus and the other unflavored; at 6 months, cats were given a choice of two bowls of food, one flavored with the familiar stimulus and the other unflavored. At all ages, cats preferred the familiar, and avoided the unfamiliar, stimulus. Perinatal exposure exerted the strongest influence on preference. Prenatal exposure influenced preference at all ages and postnatal exposure exerted a stronger effect as the cat aged. We conclude that long-term chemosensory and dietary preferences of cats are influenced by prenatal and early (nursing) postnatal experience, supporting a natural and biologically relevant mechanism for the safe transmission of diet from mother to young.

Efficacy and safety of imidacloprid 10%/moxidectin 1% spot-on formulation in the treatment of feline infection by Capillaria aerophila.

The nematode Capillaria aerophila (Trichuroidea, Trichuridae) affects the respiratory system of cats and other animals and occasionally of human beings. Infected cats may show bronchovesicular sounds, inflammation, sneezing, wheezing and, chronic cough and, sometimes, bronchopneumonia and respiratory failure. The present study evaluated the efficacy and safety of the antiparasitic spot-on formulation containing imidacloprid 10%/moxidectin 1% (Advocate(R), Bayer Animal Health) in the treatment of natural feline infection with the lungworm C. aerophila. The efficacy of Advocate(R) administered once was tested on days 7 +/- 1 and 11 +/- 1 following treatment at day 0 and compared to
faecal egg counts on days -6 +/- 1 and -2 +/- 1. Overall, 36 cats treated either with Advocate(R) (treatment group, n = 17 cats) or left untreated (control group, n = 19 cats) were included in the study. Geometric means of faecal egg counts values in eggs per gram of faeces were 124.03 prior to treatment and 0.26 posttreatment in treatment group, while 107.03 and 123.94 pre- and posttreatment in the untreated cats. Post-baseline egg counts showed a 99.79 % reduction in Advocate(R)-treated animals in comparison with cats which were left untreated. Also, treated cats showed no adverse events. This trial demonstrated that Advocate(R) spot-on formulation is safe and effective in the treatment of feline lung capillariosis caused by C. aerophila.


**Seroprevalence of subtype H3 influenza A virus in South Korean cats.**

To investigate the potential transmission of subtype H3 influenza virus to cats, a serological survey was carried out in South Korea. Serum samples (n=1027) were obtained from 809 pet cats and 218 domesticated cats living in urban colonies (D-cats) from 2008 to 2010, and tested using an influenza anti-nucleoprotein (NP)-specific enzyme-linked immunosorbent assay (ELISA) and the haemagglutination inhibition (HI) test, which was recommended by the World Organization for Animal Health. Anti-influenza virus antibodies were detected in 3.12% and 2.43% of cat sera tested using the NP-specific ELISA and HI test, respectively. Anti-H3 antibodies were also identified when the HI assay was used for influenza virus serotyping. These data may indicate the sporadic transmission of subtype H3 influenza virus from other infected species to cats in South Korea.


**Double-J ureteral stenting in nine cats with ureteral obstruction.**

Ureteral stenting is a common practice in human medicine and has recently been reported in dogs and cats to provide urinary diversion for ureteral obstructions caused by ureteroliths, strictures, neoplasia, and in an attempt to prevent postoperative complications following ureteral anastomosis. The aim of this report is to describe a surgical technique of ureteral stenting and the follow-up and complications in nine cats. Number 3 French double-J catheters were used during open surgery for ureterotomy/ureterolith removal in eight cats and for segmental ureterectomy/end-to-end anastomosis in one cat for a localized benign stricture. Neoureterocystostomy was necessary in eight of the cats.

Uropertoneum did not occur. Stents were still in place in 7/9 animals after 357-1565 days (median 1277 days). A minor complication (stent migration) occurred in one cat, but stent removal was not required. Major complications were encrustation and persistent stranguria (in one cat each), requiring stent removal at 90 and 123 days, respectively. The first cat had a new stent inserted but was euthanased 3 months later for progressive renal failure. Despite the small number of cats, both the outcome and long-term stent tolerance observed in most cases suggest that ureteral stenting is a safe, adjunctive measure to ureteral surgery, mainly for concomitant ureteral and renal pelvic stones to prevent further obstruction and avoid pyelotomy/nephrectomy. However, smaller stents should be used to decrease the need for ureteral surgery.


**Use of modified ciclosporin in the management of feline pemphigus foliaceus: a retrospective analysis.**

BACKGROUND: Glucocorticoids as sole therapy for pemphigus foliaceus (PF) in cats are not always successful, and it is common to need additional immunomodulating agents to manage the disease. HYPOTHESIS/OBJECTIVES: This retrospective study evaluated the use of modified ciclosporin as an adjuvant or sole immunomodulating drug in cats with PF and compared their response to PF cats managed with chlorambucil. ANIMALS: Fifteen client-owned cats diagnosed with PF that received ciclosporin and/or chlorambucil as part of their treatment and had adequate follow-up to assess treatment response were evaluated. METHODS: Records were reviewed from feline PF patients presented between the years of 1999 and 2009. Cats were divided into two treatment groups: those treated with ciclosporin and those treated with chlorambucil. Most cats in both groups also received concurrent systemic glucocorticoids. Each group contained six patients. Three cats were treated with both medications and are discussed separately. Time to disease remission, remission-inducing glucocorticoid dose, maintenance or final glucocorticoid dose, disease response and adverse effects were assessed. RESULTS: There was no significant difference in remission times or disease response between groups. All six patients maintained with ciclosporin for PF management were weaned off systemic glucocorticoids, while glucocorticoid therapy was stopped in only one of the six cats receiving chlorambucil.

CONCLUSIONS AND CLINICAL IMPORTANCE: Modified ciclosporin is effective in the management of feline pemphigus foliaceus and is glucocorticoid sparing.

Expression of the Bcl-2 apoptotic marker in cats diagnosed with inflammatory bowel disease and gastrointestinal lymphoma.
Immunolabeling for the critical lymphocyte survival factor, Bcl-2, of intestinal biopsies from cats with histologic evidence of inflammatory bowel disease (IBD) or gastrointestinal (GI) lymphoma was evaluated to determine if expression differed significantly between these two disease processes. Immunolabeling for Bcl-2 was performed on small intestinal endoscopic or full thickness biopsy sections from 55 cats. Diagnosis of IBD, T-cell lymphoma or B-cell lymphoma was established previously. The percentage of infiltrating lymphocytes that were positively labeled for Bcl-2 was subjectively determined for each case. Eight cats were diagnosed with IBD and 47 cats with lymphoma. A significantly higher percentage of cells were positively immunolabeled for Bcl-2 in cats with GI lymphoma [median (range); 90 (5-95)\%] compared with cats with IBD [60 (15-95)\%] (P = 0.029). However, the overall degree of positive immunolabeling in both groups tended to be high. This over-expression of Bcl-2 may prove useful as a therapeutic target for IBD and GI lymphoma in cats.


Clinical features and risk factors for development of urinary tract infections in cats.
The clinical and diagnostic features of 155 cats with urinary tract infection (UTI) and 186 controls with negative urine culture/s were characterized retrospectively (signalment, clinical signs, urinalysis, urine culture, concurrent diseases, lower urinary tract diagnostic/therapeutic procedures). Multivariable logistic regression was used to identify risk factors associated with UTI. Cats of all ages were affected by UTI with no sex/breed predisposition. Lower urinary tract signs were absent in 35.5\% of cats with UTI. Pyuria and bacteriuria had sensitivities of 52.9\% and 72.9\%, and specificities of 85.5\% and 67.7\% for detection of UTI, respectively. Risk factors significantly associated with increased odds of UTI were urinary incontinence [odds ratio (OR)=10.78, P=0.0031], transurethral procedures (OR=8.37, P<0.0001), urogenital surgery (OR=6.03, P=0.0085), gastrointestinal disease (OR=2.62, P=0.0331), decreased body weight (OR=0.81, P=0.0259) and decreased urine specific gravity (OR=0.78, P=0.0055). Whilst not independently significant, renal disease and lower urinary tract anatomic abnormalities improved statistical model performance and contributed to UTI.


Non-accidental injuries found in necropsies of domestic cats: a review of 191 cases.
Animal cruelty is defined as a deliberate action that causes pain and suffering to an animal. In Brazil, legislation known as the Environmental Crimes Law states that cruelty toward all animal species is criminal in nature. From 644 domestic cats necropsied between January 1998 and December 2009, 191 (29.66\%) presented lesions highly suggestive of animal cruelty. The main necroscopic finding was exogenous carbamate poisoning (75.39\%) followed by blunt-force injury (21.99\%). Cats from 7 months to 2 years of age were the most affected (50.79\%). In Brazil, violence is a public health problem and there is a high prevalence of domestic violence. Therefore, even if laws provide for animal welfare and protection, animals are common targets for violent acts. Within a context of social violence, cruelty toward animals is an important parameter to be considered, and the non-accidental lesions that were found are evidence of malicious actions.

BACKGROUND: Oral triamcinolone (T) and methylprednisolone (M) have been recommended at various dosages for the control of pruritus associated with feline allergic dermatitis. OBJECTIVES: The first objective was to determine effective dosages of methylprednisolone (Pfizer, New York, NY, USA) and triamcinolone (Boehringer Ingelheim Vetmedica, Inc., St Joseph, MO, USA) required to induce remission from pruritus associated with feline allergic dermatitis. The second objective was to compare efficacy of several different alternate day maintenance dosages. The third objective was to determine whether laboratory abnormalities occurred at effective dosages. ANIMALS: Thirty-two client-owned allergic cats were randomly assigned to the M or T groups. METHODS: Owners reported weekly on pruritus score and behavioural changes. Remission was defined as a pruritus score of \(<=2/10\), with 0 as the least and 10 as the most pruritic. Serum chemistry, complete blood count, fructosamine and urinalysis were assessed on day 0, at the end of the 7-14 day induction phase and at study completion. RESULTS: Mean once daily doses required for induction were 1.41 mg/kg for M and 0.18 mg/kg for T. Mean alternate day maintenance doses were 0.54 mg/kg for M and 0.08 mg/kg for T. There was a statistically significant decrease in eosinophils and increase in fructosamine for both groups from baseline to study completion. Fructosamine levels did not exceed the reference range in any case.
CONCLUSIONS: These results suggest that triamcinolone is approximately seven times as potent as methylprednisolone, and that these dosages are efficacious and well tolerated for the control of pruritus in allergic cats.

Smith, J. R., Z. Vrono, G. S. Rapoport, M. M. Turek, and K. E. Creevy (2012) J Feline Med Surg 14:716-722. A survey of southeastern United States veterinarians’ preferences for managing cats with diabetes mellitus. This study evaluated primary practitioners’ perceptions of managing feline diabetics. Surveys distributed during local continuing education events achieved a response rate of 46% (90/195). A mean of 74% feline diabetics required chronic insulin; 26% were transient diabetics. Choice of insulin was most influenced by duration of action: human recombinant protamine zinc insulin was ranked first (42%) and glargine second (27%). Dietary management was always/usually recommended by 97% respondents, with prescription or proprietary low-carbohydrate, high-protein diets recommended in 93% responses. More recent graduates (P=0.0419), those who worked in larger practices (P=0.0315), and those who saw more transient diabetics (P=0.0288) were more likely to recommend dietary change. In-house blood glucose curves (BGCs) were the most popular method of assessing glycemic control, while at-home BGCs were less popular, although their use correlated positively with annual diabetic caseload (r=0.43, P=0.0239). Owners mishandling insulin was cited as the most common cause of poor glycemic control, while clinical signs of acromegaly were rarely recognized.

Farrow, H., J. S. Rand, J. M. Morton, and G. Sunvold (2012) J Feline Med Surg 14:706-715. Postprandial glycaemia in cats fed a moderate carbohydrate meal persists for a median of 12 hours--female cats have higher peak glucose concentrations. The postprandial increase in glucose concentration is typically not considered in selecting diets to manage diabetic and pre-diabetic cats. This study describes increases in glucose and insulin concentrations in 24 clinically healthy, neutered adult cats following one meal (59 kcal/kg) of a moderate carbohydrate diet (25% of energy). Median time to return to baseline after feeding for glucose was 12.2 h (1.8-24 h) and for insulin was 12.3 h (1.5-24 h). Time to return to baseline for glucose was not different between male (10.2 h) and female (17.2 h) cats. There was evidence female cats had a longer return to baseline for insulin (18.9 h versus 9.8 h) and females had higher (0.9 mmol/l difference) peak glucose than males. This demonstrates that the duration of postprandial glycaemia in cats is markedly longer than in dogs and humans, and should be considered when managing diabetic and pre-diabetic cats.

Kasabalis, D., E. Bodina, and M. N. Saridomichelakis (2012) J Feline Med Surg 14:755-758. Severe hypoglycaemia in a cat with primary hypoadrenocorticism. This case report describes a 3-year-old, castrated male, mixed-breed cat with historical, clinical and laboratory findings compatible with primary hypoadrenocorticism, confirmed by adrenocorticotropic hormone stimulation test. Severe but asymptomatic hypoglycaemia was an unexpected biochemical finding and resolved after fludrocortisone acetate and prednisolone treatment. This case demonstrates that hypoadrenocorticism should be included in the differentials list of severe hypoglycaemia in cats.

Schafgans, K. E., P. J. Armstrong, B. Kramek, and C. P. Ober (2012) J Feline Med Surg 14:759-763. Bilateral choanal atresia in a cat. A 7-month-old female spayed domestic shorthair cat was presented for investigation of stertor, open mouth breathing without apparent distress, and chronic bilateral nasal discharge that was unresponsive to antibiotics. Complete bilateral bony choanal atresia was diagnosed with computed tomography and nasopharyngoscopy. Choanal atresia is an uncommon congenital condition where the choana (nasal passage into the nasopharynx) is blocked by abnormal bone or soft tissue uni- or bilaterally. The cat’s clinical signs improved dramatically immediately after trans-palatal surgical correction. Post-surgical complications included the development of nasopharyngeal scar tissue and subsequent stenosis, persistent right-sided nasal discharge, and permanent damage to the right eye (blindness and cataract formation). Nasopharyngeal stenosis was managed with repeated balloon dilations and temporary stenting, and the owner reported an excellent quality of life at 8-month follow-up. Bilateral bony choanal atresia has not been previously reported in cats. Uni- or bilateral choanal atresia should be considered in young cats presenting with refractory stertor, chronic nasal discharge, and/or open mouth breathing.

Clark, M. H., M. Hoenig, D. C. Ferguson, and L. Dirikolu (2012) J Vet Pharmacol Ther 35:428-436. Pharmacokinetics of pioglitazone in lean and obese cats. Pioglitazone is a thiazolidinedione insulin sensitizer that has shown efficacy in Type 2 diabetes and nonalcoholic fatty liver disease in humans. It may be useful for treatment of similar conditions in cats. The purpose of this study was to investigate the pharmacokinetics of pioglitazone in lean and obese cats, to provide a foundation for assessment of its
to test the efficacy of a new therapeutic diet for cats with diarrhea, compared to the top selling brand. Sixteen adult cats
Dietary therapy plays an important
Evaluation of canned therapeutic diets for the management of cats with naturally occurring chronic diarrhea.
and/or ketamine can be used to facilitate echocardiography in healthy cats.
Effects of sedation on echocardiographic variables of left atrial and left ventricular function in healthy cats.
Effects of a standardized anesthetic protocol on hematologic variables in healthy cats.
This study evaluated the effects of an anesthetic protocol using intravenous ketamine and midazolam, and intramuscular buprenorphine on hematologic variables in cats. Twelve healthy adult cats had blood collected for a complete blood count before and after the induction of anesthesia. There were significant decreases in red blood cell counts, hemoglobin concentrations and hematocrits after the induction of anesthesia. On average, red blood cell counts and hematocrits decreased by 25%, and hemoglobin concentrations decreased by 24%. Based on hematocrit, 3/12 samples (25%) taken while the cats were anesthetized would have been interpreted as belonging to anemic patients while none of the cats would have been considered anemic before anesthesia. This study suggests that a complete blood count performed on blood taken under anesthesia with this anesthetic protocol should be interpreted cautiously in order to not make a false diagnosis of anemia.

Effects of lomustine as a rescue agent for cats with resistant lymphoma.
This retrospective study evaluated the use of lomustine as a rescue agent for 39 cases of resistant feline lymphoma. Parameters assessed included lymphocyte cell size, number of previous chemotherapy drugs and number of previous chemotherapy protocols received, time from lymphoma diagnosis to initiation of lomustine therapy, body weight and anatomic location of lymphoma. Cell size, number of previous chemotherapy drugs, number of previous chemotherapy protocols and anatomic location were all significant prognostic factors for the progression-free interval. Twenty-one cats (54%) received more than one dose of lomustine. The overall median progression-free interval (MPFI) was 39 days (range 7-708 days). The MPFI for large versus small and intermediate cell lymphomas was 21 versus 169 days, respectively. The MPFI for gastrointestinal versus non-gastrointestinal lymphomas was 180 versus 25.5 days, respectively. Lomustine has an acceptable efficacy and safety for use as a rescue agent in feline lymphoma.

Evaluation of lomustine as a rescue agent for cats with resistant lymphoma.

Effects of sedation on echocardiographic variables of left atrial and left ventricular function in healthy cats.

Effects of a standardized anesthetic protocol on hematologic variables in healthy cats.
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Evaluation of canned therapeutic diets for the management of cats with naturally occurring chronic diarrhea.
Dietary therapy plays an important role in the management of most gastrointestinal disorders. This study was designed to test the efficacy of a new therapeutic diet for cats with diarrhea, compared to the top selling brand. Sixteen adult cats
with chronic diarrhea were grouped and assigned to diet X (Hill’s Prescription Diet i/d Feline) or diet Y (Purina Veterinary Diets EN Gastroenteric Feline Formula). Following baseline evaluations, cats were fed their assigned test diet for 4 weeks. Fecal scores (FS; 7=very watery; 1=extremely dry and firm) were recorded daily during the last week on each diet. Each cat was then switched to the alternate test diet and the procedure was repeated. Fifteen cats completed the study. Both therapeutic diets resulted in a significant improvement in average FS and diet Y also resulted in significantly better results compared with diet X. Average FS improved at least one unit in 40% of the cats while fed diet X and in 67% of the cats while fed diet Y, resulting in normal stools (average FS<=3) in 13.3% of cats fed diet X and 46.7% of cats fed diet Y. This study confirms the value of dietary change in the management of chronic diarrhea in cats.


Serum cobalamin concentrations in cats with gastrointestinal signs: correlation with histopathological findings and duration of clinical signs.

The aims of this study were to investigate the prevalence of hypocobalaminaemia in UK cats presented for referral investigation of gastrointestinal signs and to ascertain whether the duration of clinical signs or severity of disease (based on WSAVA Gastrointestinal Standardization histopathological grading) related to cobalamin concentration. The study population comprised 39 cats, of which 11 (28.2%) had hypocobalaminaemia. Eight of these cats were diagnosed with a single cause of gastrointestinal signs: intestinal inflammation (five); alimentary lymphoma (two); and cholangitis (one). Two or more concurrent diseases were diagnosed in the three remaining cases. Alimentary lymphoma and the most severe grade of histological intestinal inflammation were associated most commonly with concurrent hypocobalaminaemia, but there was no statistically significant correlation between serum cobalamin concentrations and histopathological score or duration of clinical signs.


Advances in molecular identification, taxonomy, genetic variation and diagnosis of Toxocara spp.

The genus Toxocara contains parasitic nematodes of human and animal health significance, such as Toxocara canis, Toxocara cati and Toxocara vitulorum. T. canis and T. cati are among the most prevalent parasites of dogs and cats with a worldwide distribution. Human infection with T. canis and T. cati, which can cause a number of clinical manifestations such as visceral larva migrans (VLMs), ocular larva migrans (OLMs), eosinophilic meningoencephalitis (EME), covert toxocariasis (CT) and neurotoxocariasis, is considered the most prevalent neglected helminthiasis in industrialized countries. The accurate identification Toxocara spp. and their unequivocal differentiation from each other and from other ascaridoid nematodes causing VLMs and OLMs has important implications for studying their taxonomy, epidemiology, population genetics, diagnosis and control. Due to the limitations of traditional (morphological) approaches for identification and diagnosis of Toxocara spp., PCR-based techniques utilizing a range of genetic markers in the nuclear and mitochondrial genomes have been developed as useful alternative approaches because of their high sensitivity, specificity, rapidity and utility. In this article, we summarize the current state of knowledge and advances in molecular identification, taxonomy, genetic variation and diagnosis of Toxocara spp. with prospects for further studies.


Feline vaccination practices and protocols used by veterinarians in the United Kingdom.

Vaccination is an important aspect of disease control in the feline population, as it prevents disease or reduces its severity in individual cats. However the types of antigens that should be administered to cats, the frequency of administration of certain antigens and the anatomical location at which vaccines should be administered are controversial. Various groups have developed guidelines to help veterinarians decide vaccine protocols for cats in their care. The aim of this study was to survey veterinarians in the United Kingdom about the vaccination protocols used in 2007-2008. A questionnaire about aspects of feline vaccination was distributed to a 431 veterinary practices taking part in a case-control study of feline injection site sarcomas. A response rate of 72% was achieved. The majority of veterinarians who responded administered the commonly used antigens annually (84-96% of practices). Most of the veterinarians administered most vaccines in the interscapular region (90-96% of practices depending on the antigen). The vaccination practices of the veterinarians were not consistent with the published vaccination guidelines at that time.

Morphological Differentiation of Eggs of *Ancylostoma caninum*, *Ancylostoma tubaeforme*, and *Ancylostoma braziliense* From Dogs and Cats in the United States.

Abstract: The establishment of cat- and dog-derived laboratory strains of *Ancylostoma braziliense* allowed for a morphological comparison of the eggs of *A. braziliense*, *Ancylostoma caninum*, and *Ancylostoma tubaeforme*. The length, width, and perimeter were determined for images of 10 eggs each of *A. braziliense* from the feces of a dog infected with a canine isolate and a cat infected with a feline isolate, *A. caninum* from dog feces, and *A. tubaeforme* from cat feces. The specific identity of the eggs was verified by polymerase chain reaction and restriction fragment length polymorphism by using Hinfl and Rsai restriction digests followed by gel electrophoresis and sequencing. The mean (+/-SD) length, width, and perimeter and the length-to-width ratio (+/-SD) (all measurements are in micrometers) for the eggs of each species were as follows: *A. braziliense* eggs (combined cat and dog source), 53.03 +/- 2.33, 36.37 +/- 1.35, 140.43 +/- 2.56, and 1.46 +/- 0.11; *A. caninum* eggs, 63.92 +/- 5.28, 39.21 +/- 1.52, 161.99 +/- 9.30, and 1.63 +/- 0.13; and *A. tubaeforme* eggs, 61.44 +/- 3.05, 39.14 +/- 1.40, 157.98 +/- 5.81, and 1.57 +/- 0.08. The eggs of *A. braziliense* were significantly (P < 0.001) smaller than the eggs of *A. caninum* and *A. tubaeforme* in all dimensions. Thus, the eggs seem to be readily distinguishable using light microscopy, thereby aiding in species identification in fecal samples for a more comprehensive clinical picture and assessment of zoonotic risk.


Prevalence of *Ancylostoma braziliense* in Cats in Three Northern Counties of Florida, United States.

Abstract: A convenience sampling of fecal specimens from 40 cats in northern Florida was examined for the presence of *Ancylostoma braziliense* eggs by using centrifugal sugar flotation and polymerase chain reaction (PCR)-restriction fragment length polymorphism (RFLP). Of the 40 samples, 26 (65%) contained hookworm eggs. DNA from 24 samples was successfully amplified using PCR; using RFLP, 10 samples were identified as containing DNA of *A. braziliense* (41.7% of the 24 samples that successfully amplified). Of these, 6 samples contained DNA of both *Ancylostoma tubaeforme* and *A. braziliense*, and 4 samples contained only DNA of *A. braziliense*. The remaining samples (n = 14) contained only the DNA of *A. tubaeforme*, except for 1 sample that had no discernible bands after RFLP.


The present study investigated whether renal cyclooxygenase (COX) induction is associated with the severity of chronic kidney disease (CKD) in dogs and cats. The collected kidneys were examined histopathologically and immunohistochemically. The immunoreactivities of COX-1 and COX-2 were evaluated quantitatively, and the correlations to the plasma creatinine concentrations, glomerular size, glomerulosclerosis, interstitial fibrosis, and interstitial cell infiltration were evaluated statistically. Immunoreactivities for COX-2 were heterogeneously observed in the medullary distal tubules and collecting ducts; no correlations with the severity of renal damage were detected. Immunoreactivities for COX-2 were heterogeneously observed in the macula densa (MD) regions. In dogs, the percentage of COX-2-positive MD was significantly correlated with the glomerular size. In cats, glomeruli with COX-2-positive MD had significantly higher sclerosis scores than those with COX-2-negative MD. In conclusion, renal COX-2 is induced in canine and feline CKD, especially in relation to the glomerular changes.


Acute phase proteins in healthy and sick cats.

Serum acute phase protein concentrations are used as diagnostic, therapeutic and prognostic markers in human and, less frequently, in animal medicine. The aim of this study was to determine how the health status and signalment of the cat are associated with concentrations of acute phase proteins. Generally, medians of the positive acute phase proteins appeared to be higher in sick cats compared to healthy cats. In multivariable regression models, log-transformed serum amyloid A concentration was higher in older cats, in sick and in female cats, while log-transformed alpha1-acid glycoprotein and haptoglobin concentrations were higher in older cats and were associated with interactions of health status (sick/healthy) and gender (male/female). The data from healthy cats in this study contribute to the limited knowledge of normal reference ranges for this species. This study highlights the potential of acute phase proteins as diagnostic markers in sick cats, but also emphasises that the signalment of the cat needs to be taken into consideration.


Cryopreservation of cat testicular tissues: effects of storage temperature, freezing protocols and cryoprotective agents.

Cryopreservation of testicular tissue has become a part of gamete preservation in wild animal post-mortem. Using domestic cats as a model for wild felids, this study aimed to (i) investigate the effect of temperature for testicular tissue...
storage on sperm quality; (ii) compare efficiency of freezing protocols; and (iii) evaluate properties of cryoprotective agents to protect testicular sperm quality. A pair of testes from each cat (n = 9) was cut into four pieces. Three randomly selected pieces were allocated to be (i) fresh controls; (ii) stored at 4 degrees C for 24 h; and (iii) stored at room temperature (28 degrees C) for 24 h. After storage, the testicular tissue from each group was cut into 10 small pieces. One piece was assigned to be a control while the others were assigned to three freezing protocols: -80 degrees C (n = 3), vitrification (n = 3) or two-step freezing (kept above liquid nitrogen vapour for 10 min and submerged in liquid nitrogen) (n = 3). Each of three pieces was frozen using dimethyl sulfoxide (DMSO), ethylene glycol (EG) or DMSO combined with EG. Sperm membrane (SYBR-14/EthD-1) and DNA (acridine orange) integrity were evaluated before and after cryopreservation. The storage of testicular tissue at room temperature decreased the percentage of sperm with intact membrane in fresh tissue (59.5 +/- 30.5 vs 87.9 +/- 7.0%, p < 0.05). DNA integrity was decreased after 24-h storage either at 4 degrees C or room temperature (p < 0.05). The two-step freezing resulted in a higher percentage of sperm with intact plasma membrane than the other techniques. Dimethyl sulphoxide, EG and DMSO combined with EG provided similar protection for the sperm membrane and DNA from cryodamages. In conclusion, storage of testicular tissue at 4 degrees C is necessary to maintain sperm membrane integrity during transportation of tissue for cryopreservation in the freezing laboratory. The results provide information for male gamete rescue in felid particularly when they die unexpectedly in the field where freezing facilities are not well equipped.


Comparative pharmacokinetics and pharmacodynamics of tablet, suspension and paste formulations of atenolol in cats.

This study compared the pharmacokinetic and pharmacodynamic profiles of an extemporaneously prepared (compounded) atenolol paste and suspension for oral administration, against the commercially available divided tablet in healthy cats. Eleven healthy cats (mean: age 4 +/- 0.4 year, weight 5.0 +/- 0.7 kg) were dosed twice-daily with 12.5 mg atenolol (tablet, paste or suspension) for 7 days in a randomized cross-over design with a 7-day wash-out period. On day 7, an electrocardiogram was performed before and immediately after stress provocation (jugular venipuncture) at prestudy screening, and at 2, 6 and 12 h after morning dosing. Systolic arterial blood pressure (BP) was assessed following the second electrocardiogram. Plasma was collected at prestudy screening, and at 1, 2, 6 and 12 h to measure atenolol plasma concentrations. Mean atenolol dose was 2.5 mg/kg (range: 2.1-3.3 mg/kg). Stress-induced rise in heart rate was attenuated (P < 0.05) at every time point compared to baseline for all formulations. Although the paste significantly attenuated stress-induced elevation in heart rate at all time points, the effect was not consistently equivalent to the tablet. The BP was not altered (P > 0.05) at any time point by any formulation. In conclusion, there were no significant differences (P > 0.05) in any of the pharmacokinetic parameters or pharmacodynamic profiles of the paste and suspension compared to the commercially available tablet.


Obesity increases initial rate of fibrin formation during blood coagulation in domestic shorthaired cats.

Obesity predisposes to a prothrombotic state in humans, but whether a similar state occurs in obese animals is unknown. The objective of the current study was to examine the effect of body fat percentage (BF) on haemostatic parameters including thromboelastography with tissue factor as activator (TF-TEG) in client owned indoor-confined physically inactive cats. Seventy-two cats were included following an initial thorough health examination, and a complete blood count, biochemistry panel, conventional coagulation panel and a TF-TEG analysis were performed with tissue factor (1:50,000) as activator. The cats were anaesthetized, and SF was measured using Dual-energy X-ray absorptiometry. Significant difference between lean (BF < 35%, n = 26), overweight (35% < BF < 45%, n = 28) and obese (BF > 45%, n = 18) cats was identified using ANOVA. The correlation between BF, serum leptin and total adiponectin, respectively, with individual TEG and conventional coagulation parameters was evaluated. Obese cats showed a faster rate of fibrin formation (TF-TEG(R), p < 0.05), and TF-TEG(R) was positively correlated with plasma leptin levels. Increasing BF did not affect other conventional coagulation or TF-TEG parameters. In conclusion, this study indicates a connection between body fat content and altered haemostasis, also in cats. Whether feline obesity causes a hypercoagulable state of clinical relevance should be further investigated.


Fibre analysis and fibre digestibility in pet foods--a comparison of total dietary fibre, neutral and acid detergent fibre and crude fibre.

Six dry dog foods and six dry cat foods with different carbohydrate sources were investigated in digestion trials. Food and faecal samples were analysed for CF, TDF and starch. In dogs, also neutral detergent fibre (aNDFom) and acid
detergent fibre (ADFom) were analysed. N-free extract (NfE) was calculated for CF, and similarly for all other fibre analyses. Linear regressions were calculated between fibre intake and faecal fibre excretion. True digestibility was calculated from the regression coefficients [true digestibility in % = (1 - regression coefficient)*100], with the intercept of the equation representing excretion of material of non-food origin. Crude fibre analyses gave the lowest values, and TDF the highest, while ADFom and aNDFom were in between. Variation between diets was lowest in CF and highest in TDF. Total dietary fibre, aNDFom and ADFom in food were positively correlated. Crude fibre in food did not correlate with any other method. The NfE analogue for TDF was closest to the starch content. Methods of fibre analyses in faeces did not agree very well with each other. Crude fibre had the lowest apparent digestibility, followed by ADFom, TDF and aNDFom. For all fibre analyses, there was a significant correlation between fibre intake and faecal fibre excretion. True digestibility was close to zero for CF, with a high uniformity in both species. In dogs, true digestibility of aNDFom was 53%, of ADFom 26% and of TDF 37%; in cats, true digestibility of TDF was 31%. Except for CF, the intercept of the regression equations suggest that faecal excretion of some material of non-food origin is analysed as fibre. A combination of TDF and CF analyses might give good information on the content of total (TDF), unfermentable (CF) and partially fermentable fibre (TDF-CF) in pet foods.

Muller, G., A. J. Martino-Andrade, A. S. Santos, A. L. Reghelin, D. M. Garcia, G. R. Sant’Ana, K. M. Spercoski, K. B. Meyer, S. M. Torres, V. A. Silva Junior, and R. N. Morais (2012) Theriogenology 78:1224-1234. Testicular testosterone: estradiol ratio in domestic cats and its relationship to spermatogenesis and epididymal sperm morphology. The phenomenon of teratozoospermia in felids is not fully understood. In this study, we investigated the testicular androgen:estrogen balance in domestic cats and correlated these data with epididymal sperm morphology and the degree of spermatogenic activity. During spring and summer, testes and blood samples were obtained from 37 mixed-breed domestic cats (12 to 48 mo). The epididymal sperm were harvested and evaluated for sperm counts, motility, and morphology. Distal cytoplasmic droplets were not considered a defect, and samples were considered normozoospermic if they contained more than 60% normal sperm (N = 25) or teratozoospermic if they contained less than 45% normal sperm (N = 12). The testicular and serum concentrations of testosterone (T) and 17beta-estradiol (E2) were determined with an enzyme immunoassay. The gonadosomatic index and epididymal sperm numbers and motility did not differ between groups. The percentage of normal sperm was higher in normozoospermic (74.3 +/- 2.0, mean +/- SEM) than in teratozoospermic samples (43.1 +/- 1.4). The most prevalent sperm defects in the teratozoospermic group were abnormal acrosomes (9.7 +/- 2.0) and bent midpieces (12.2 +/- 2.0) or tails (24.0 +/- 2.7) with cytoplasmic droplets. Histomorphometric data were similar between groups, although there was a lower Leydig cell nuclear volume in teratozoospermic samples. Normozoospermic samples contained a higher percentage of haploid cells and had a higher index of total spermatogenic transformation than teratozoospermic samples. Serum concentrations of T (0.5 +/- 0.1 vs. 0.8 +/- 0.4 ng/mL) and E2 (9.5 +/- 1.2 vs. 11.4 +/- 2.3 pg/mL) and testicular T concentrations (471.6 +/- 65.3 vs. 313.4 +/- 57.6 ng/g) were similar between groups. However, compared with normozoospermic samples, teratozoospermic samples had higher testicular E2 concentrations (8.5 +/- 3.6 vs. 5.4 +/- 0.5 ng/g) and a lower T:E2 ratio (31.8 +/- 4.1 vs. 87.2 +/- 11.6). There were significant correlations between testicular E2 values and percentages of normal sperm (r = -0.55) as well as those with primary sperm defects (r = 0.58) or abnormal acrosomes (r = 0.64). The T:E2 ratio was also correlated with meiotic index (r = 0.45) and percentage of normal sperm (r = 0.58). In conclusion, a high testicular E2 concentration and a reduced T:E2 ratio were significantly associated with higher ratios of abnormal sperm types, suggesting that the balance between androgens and estrogens is an important endocrine component in the genesis of teratozoospermia in felids.

Ramirez, G. A., J. Altimira, B. Garcia-Gonzalez, and M. Vilafranca (2012) J Comp Pathol Intrapancreatic Ectopic Splenic Tissue in Dogs and Cats. Ectopic splenic tissue in the pancreas is a rare incidental finding in man that is often mistaken for pancreatic neoplasia. This condition is documented rarely in animals. This report describes the clinical and pathological features of four cases of intrapancreatic accessory spleens in dogs and cats. This is the first description of this lesion in the dog. The lesions comprised firm, well-demarcated, dark red, spherical masses that were composed microscopically of normal splenic tissue. The possible origin, differential diagnoses and potential practical significance of these lesions are discussed.

Hafner, M., T. A. Lutz, C. E. Reusch, and E. Zini (2012) J Feline Med Surg Evaluation of sensor sites for continuous glucose monitoring in cats with diabetes mellitus. The continuous glucose monitoring system allows generation of detailed glucose curves via measurement of glucose concentration in interstitial fluid. The conventional site for sensor placement in diabetic cats is the subcutaneous tissue of the lateral chest wall. The aim of this study was to investigate the feasibility and accuracy of sensors placed in the lateral chest wall and in two alternative sites - the dorsal neck and lateral knee fold - of diabetic cats. Initialisation was
successful in 15/20 lateral chest wall sensors, 9/10 neck sensors and 3/10 knee fold sensors. Compared with the reference portable blood glucose meter, 0.8% of measurements from lateral chest wall sensors, 0.7% from knee fold sensors and 0% from neck sensors would have resulted in erroneous treatment. This preliminary study suggests that dorsal neck placement may be superior to lateral chest wall and lateral knee fold; however, further investigation with a larger number of cases would be required to confirm this finding.


With the use of perfusion tracers, in vivo examination of the regional cerebral blood flow in cats can be performed with single photon emission computed tomography (SPECT). Reliable perfusion data of normal, healthy cats are necessary for future clinical studies or other research use. Therefore, this dataset of the regional perfusion pattern of the normal feline brain was created. Twelve cats were used in this study. Technetium-99m-ethyl cysteinate dimer ([99m]Tc-ECD) was injected intravenously and the acquisition, using a triple head gamma camera equipped with three multi-pinhole collimators (pinhole SPECT), was started 40 mins after tracer administration under general anaesthesia. Nineteen regions of interest were defined using T1 magnetic resonance images of the feline brain and a topographical atlas. Regional counts were normalised to the counts of two reference regions: the total brain and the cerebellum. The highest tracer uptake was noticed in the subcortical structures, and the lowest in the frontal cortex and a topographical atlas. Left-right asymmetry in the temporal cortex and a rostrocaudal gradient of 5% were observed.


The aims of this prospective study were to describe the normal sonographic size and appearance of the feline spleen, and to test effects of sevoflurane anesthesia and blood collection on sonographic characteristics. Sonographic evaluations were performed in 60 healthy blood donor cats prior to anesthesia and blood collection (baseline), after anesthesia induction, after completion of blood collection while under anesthesia, and 7-10 days after blood collection. Transverse sonographic images of the splenic mid-body were made. Splenic height, width, cross-sectional area, echogenicity relative to the left renal cortex, and echotexture were recorded. Height, width, and cross-sectional area were compared across time periods using linear-mixed effects models. Holm’s method was applied to adjust for multiplicity and control the overall Type 1 error rate at alpha = 0.05. Normal transverse sonographic splenic measurements (mean +/- standard deviation) at baseline were: height 8.2 +/- 1.4 mm; width 26.7 +/- 4.4 mm; and CSA 1.6 +/- 0.5 cm². While there were statistically significant differences in splenic height, width, and cross-sectional area after sevoflurane anesthesia and/or blood collection, differences were of low magnitude. The spleen was diffusely homogenous and subjectively isoechoic or mildly hyperechoic relative to the left renal cortex. In 77% of castrated male cats, the spleen was isoechoic to the left renal cortex. We conclude that sevoflurane anesthesia and blood donation do not subjectively alter splenic dimensions, echogenicity and echotexture in normal cats.


Objective Guinea pigs have a very low threshold of corneal sensitivity and at the same time nearly no reflex tearing compared to dogs, cats, and horses. The question arose whether there is a general correlation between corneal sensitivity and the quantity of reflex tearing. Animals studied Totally 160 animals of 8 different species (20 animals per species) were investigated. Procedures The corneal touch threshold (CTT) was measured with a Cochet-Bonnet aesthesiometer. The palpebral fissure length (PFL) was measured with a calliper ruler. The Schirmer tear test (STT) was modified by adapting the width of the STT strip to the PFL of every species. For the STT II, 0.4% oxybuprocaine was applied. Results Corneal touch threshold: Cows (1.67 g/mm²), horses (1.23 g/mm²), sheep (1.13 g/mm²), goats (1.44 g/mm²), dogs (2.16 g/mm²), and cats (1.33 g/mm²) show similar CTT values. In contrast, rabbits (6.21 g/mm²) and guinea pigs (7.75 g/mm²) show a significantly lower CTT. Tear Production Difference STT I - STT II: Rabbits have the greatest decline in tear production with 38.4%, followed by sheep (33.3%), dogs (31.1%), cats (24.7%), cows (23.7%), horses (18.0%), and goats (14.0%). Guinea pigs have no decline, but a slight increase of -16.0%. Correlation CTT and STT II - STT I Difference: Pearson’s correlation coefficient shows a small, but significant correlation. The coefficient of determination can only forecast a value with 7.1% certainty. Conclusions The high variance and low reproducibility of results suggest that the measuring devices are inappropriate to assess the evaluated parameters. Therefore, no assured correlation between the corneal sensitivity and the quantity of reflex tearing could be found.
Factors Related to Type of Companion Pet Owned by Older Women.

Although pets can be valuable companions for older adults, little is known about why older adults select a specific kind of pet. This study examined demographic (e.g., marital status, health status), health (i.e., well-being, loneliness), and environmental characteristics (i.e., living arrangement, type of housing) of 159 older women in terms of whether they had a companion dog or cat. Significantly more women who were married/partnered had dogs, whereas more single women had cats. Significantly more women who lived alone had cats, whereas more women who lived with someone had dogs. Women with companion dogs had significantly lower depressed mood and higher levels of general health, vitality, and total well-being than those with cats. Although loneliness was somewhat greater among women with cats, the difference was not statistically significant. More women living in 55-and-older communities had cats, whereas more women living in private homes had dogs. Practicing psychiatric nurses can use the information generated from this research to advocate for pet companionship in order to enhance well-being in older women.

Evaluation of Cytauxzoon felis infection status in captive-born wild felids housed in an area endemic for the pathogen.

Objective-To determine whether apparently healthy captive-born wild felids that were not native to North America and were housed in an area endemic for Cytauxzoon felis harbored the pathogen. Design-Prospective observational case series. Animals-11 captive-born wild felids that were (1 bobcat [Lynx rufus] and 1 cougar [Puma concolor]) or were not (1 lion [Panthera leo] and 8 tigers [Panthera tigris]) native to North America and 6 domestic cats (5 pets and 1 feral). Procedures-Blood was collected, and a PCR assay for C felis was performed. The C felis 18S rRNA gene sequence was characterized in samples that tested positive. Blood smears were evaluated microscopically for intraerythrocytic organisms consistent with C felis. Blood smears from an additional 6 feral domestic cats found dead on the study premises were also evaluated. Results-4 tigers and 6 domestic cats without clinical signs of disease tested positive for C felis infection via PCR assay; intraerythrocytic organisms consistent with C felis were identified in smears from 1 C felis-infected tiger (which also had azotemia) and in smears from 11 of 12 domestic cats. Possible erythrocytic inclusions were identified in 1 tiger that tested negative for C felis. Sequences of C felis 18S rRNA ampiclons from all infected tigers shared > 99.8% identity with reported C felis sequences from North American domestic cats and were identical to amplicons from domestic cats on the premises. Conclusions and Clinical Relevance-Captive tigers without clinical signs of disease tested positive for C felis. The PCR assay for C felis appeared to be more reliable than cytologic detection of piroplasms in tigers.


Objective-To identify dogs and cats with baclofen toxicosis and characterize the patient population, clinical signs, and outcome. Design-Retrospective case series. Animals-140 dogs and 5 cats with baclofen toxicosis. Procedures-An animal poison control center electronic database was reviewed from November 2004 through April 2010 to identify dogs and cats with baclofen toxicosis. Information on signalment, clinical signs, and amount of baclofen ingested was obtained. Clinical signs were categorized as CNS, gastrointestinal, general malaise, cardiovascular, respiratory, or urogenital. Follow-up communications were performed to determine overall outcome. Results-Dogs had a median age of 0.67 years (range, 0.1 to 15 years) and cats of 1 year (range, 0.7 to 16 years). Of 145 patients, 133 (92%) developed clinical signs of baclofen toxicosis. A total of 259 signs fell within defined categories: CNS (121/259 [46.7%]), gastrointestinal (69/259 [26.6%]), general malaise (27/259 [10.4%]), cardiovascular (23/259 [8.9%]), respiratory (14/259 [5.4%]), and urogenital (5/259 [1.9%]). For 68 dogs with known survival status, survival rate was 83.8% (57/68); of these dogs, the amount of baclofen ingested was known for 53 (46 survivors and 7 nonsurvivors). Amount of baclofen ingested was significantly lower in survivor dogs (median, 4.2 mg/kg [1.91 mg/lb]; range, 0.61 to 61 mg/kg [0.28 to 27.7 mg/lb]), compared with nonsurvivor dogs (median, 14 mg/kg [6.4 mg/lb]; range, 2.3 to 52.3 mg/kg [1.04 to 23.77 mg/lb]. Of 5 cats, 2 survived, 1 died, and 2 had unknown outcomes. Conclusions and Clinical Relevance- Clinical signs of baclofen toxicosis occurred in most patients, with the CNS being the system most commonly affected.


Evaluation of Cytauxzoon felis infection status in captive-born wild felids housed in an area endemic for the pathogen.

Objective-To determine whether apparently healthy captive-born wild felids that were not native to North America and were housed in an area endemic for Cytauxzoon felis harbored the pathogen. Design-Prospective observational case series. Animals-11 captive-born wild felids that were (1 bobcat [Lynx rufus] and 1 cougar [Puma concolor]) or were not (1 lion [Panthera leo] and 8 tigers [Panthera tigris]) native to North America and 6 domestic cats (5 pets and 1 feral). Procedures-Blood was collected, and a PCR assay for C felis was performed. The C felis 18S rRNA gene sequence was characterized in samples that tested positive. Blood smears were evaluated microscopically for intraerythrocytic organisms consistent with C felis. Blood smears from an additional 6 feral domestic cats found dead on the study premises were also evaluated. Results-4 tigers and 6 domestic cats without clinical signs of disease tested positive for C felis infection via PCR assay; intraerythrocytic organisms consistent with C felis were identified in smears from 1 C felis-infected tiger (which also had azotemia) and in smears from 11 of 12 domestic cats. Possible erythrocytic inclusions were identified in 1 tiger that tested negative for C felis. Sequences of C felis 18S rRNA ampiclons from all infected tigers shared > 99.8% identity with reported C felis sequences from North American domestic cats and were identical to amplicons from domestic cats on the premises. Conclusions and Clinical Relevance-Captive tigers without clinical signs of disease tested positive for C felis. The PCR assay for C felis appeared to be more reliable than cytologic detection of piroplasms in tigers.


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ranging feline species with high prevalences in Iberian lynxes (Lynx pardinus), Eurasian lynxes (Lynx lynx), European wildcats (Felis silvestris silvestris), African lions (Panthera leo) in Tanzania and domestic cats in South Africa. The prevalence of hemoplasmas has not yet been investigated in free-ranging felids in southern Africa. In this study we screened 73 blood samples from 61 cheetahs in central Namibia for the presence of hemoplasmas using quantitative real-time PCR. One of the cheetahs tested PCR-positive. Phylogenetic analysis based on partial sequencing of the 16S rRNA and RNAse P genes revealed that the isolate belongs to the Mycoplasma haemofelis/haemocanis group. This is the first molecular evidence of a hemoplasma infection in a free-ranging cheetah.


Pain recognition in cats is difficult and requires a multidisciplinary approach for diagnosis. A total of 103 client-owned cats were enrolled in this prospective, blinded clinical trial. Cats were invited to the clinic, or presented for annual rechecks/vaccinations, or gastrointestinal, dental, or locomotor problems. The cats were of different breeds; both shorthaired and longhaired cats were included. Those cats that tolerated it were palpated and all cats were examined with the non-invasive method of thermographic imaging. Owners filled out a questionnaire about their cat’s behaviour and estimated whether the cat was in any pain. The agreement between a questionnaire and thermographic imaging or palpation was low. Also, the agreement between the owner’s estimation of pain and thermographic imaging or palpation was low. The agreement between palpation and thermographic imaging was moderate, suggesting that thermographic imaging is a potential tool in clinical practice for detecting and screening cats that are, potentially, in pain.


Four cats with gastrointestinal eosinophilic sclerosing fibroplasia (FEGSF) are described. Clinical signs included decreased appetite, weight loss, vomiting, and diarrhea. Bloodwork abnormalities included mild neutrophilia (n = 2) and hyperglobulinemia with concurrent hyperproteinemia (n = 2). Ultrasonographically, a total of five solitary masses with mural thickening and loss of layering were identified in the stomach, duodenum, jejunum and colon. In one cat a second, separate lesion was diagnosed 3 weeks following surgical resection of one mass. Histopathologically, lesions were characterized by collagen trabeculae and mixed inflammatory cell infiltrates, predominantly eosinophils. Multiple areas of necrosis were also noted, which contained bacteria in 2/4 cats. In two cats, changes consistent with FEGSF were also noted in the liver. All cats had surgical resection of their lesions. Two cats are still living at time of publication (43 and 24 months post-surgery). FEGSF should be considered as a differential for intestinal masses in cats.

The ecological distribution of Cytauxzoon felis, an often-fatal tick-borne apicomplexan that infects domestic cats, has not been evaluated or identified despite its continued emergence. Infection of C. felis is characterized by lethargy, icterus, fever, anorexia, anemia, and death. The natural vertebrate reservoir of C. felis is the bobcat (Lynx rufus). To determine the possible distribution of C. felis in three states where infection is common (Oklahoma, Missouri, and Arkansas), two separate approaches to ecological niche modeling were implemented. First, a model relating several different climatic layers to geographic locations where cases of C. felis infection were confirmed in domestic cats was developed to predict the possible distribution of the parasite. The second model incorporated occurrences of bobcats with environmental layers and land cover suitable for tick vectors to identify areas of overlap where C. felis transmission was likely. Results of both models indicated a high probability of C. felis from central Oklahoma to southeastern Missouri. However, other predicted areas of C. felis occurrence varied between the two modeling approaches. Modeling the vertebrate reservoir and the tick vector predicted a broader possible distribution compared to modeling cases of C. felis infection in domestic cats. Our results suggest that C. felis is likely to extend beyond areas predicted by case modeling due to the presence of both the vector and reservoir.


The thymidine kinases are enzymes that convert deoxythymidine to deoxythymidine monophosphate and have a function in DNA synthesis. Rapidly proliferating cells will have higher levels of thymidine kinase. Serum thymidine kinase activity (sTK) is a useful tumour marker in humans and dogs, with utility as a prognostic indicator in lymphoma.
In the current study serum samples were collected from 49 clinically healthy cats, 33 with lymphoma, 55 with inflammatory disease and 34 with non-haematopoietic neoplasia (NHPN). sTK was measured using a radioenzyme assay and a reference interval (1.96 x SD) was established from the clinically healthy cats (<5.5 U/l). Mean sTK activity for healthy cats was 2.2 U/l (range 0.8-8.4, +/- SD 1.7). Mean sTK activity for cats with lymphoma was 17.5 U/l (range 1.0-100.0 SD +/- 27.4). Mean sTK activity for cats with NHPN was 4.2 U/l (range 1.0-45.0, SD +/- 8.6). Mean sTK activity for the inflammatory group was 3.4 U/l (range 1.0-19.6, SD 3.9). Cats with lymphoma had significantly higher sTK activity than healthy cats or cats with inflammatory disease (P <0.0001) and cats with NHPN (P <0.0002). sTK activity is a potentially useful biomarker for feline lymphoma and further study is required to assess it’s utility as a prognostic indicator.

Objective: Computed tomographic examination of the skull of cats with craniofacial trauma. Analysis of diagnostic findings with regard to the occurrence of isolated and combined maxillary and orbital fractures. Material and methods: Prospective study (August 2006 - June 2010): Computed tomography (CT) of the skull of cats with craniofacial trauma. Results: Thirty-eight cats met the inclusion criteria. Breeds were 36 Domestic Shorthair cats, one Maine Coon and one Somali cat. Age at admission ranged from 11 to 187 months. The ratio of the numbers of males to females was 22:16 (1.4). Computed tomographic examination revealed a maxillary fracture in 27 (71%) animals. Sixteen (42%) cats had multiple maxillary fractures (>2). Twenty-eight animals (74%) displayed orbital fractures. Combined maxillary and orbital fractures occurred in 26 (68%) patients. The odds ratio of this combined occurrence was 87 (p<0.001). Sixteen (57%) of 28 cats with orbital fractures showed multiple orbital fractures (>2). The incidence of bilateral orbital fractures was 67% (25 patients). The medial orbital wall was the most commonly fractured orbital wall (66%), and the orbital floor the second most common (61%). Conclusion: Computed tomographic examination of the skull of cats with craniofacial trauma showed that maxillary and orbital fractures are more common than previously described. Combined maxillary and orbital fractures occurred in more than half of the patients. In cats, orbital fractures mainly affect the medial orbital wall and the orbital floor. Clinical relevance: Cats with craniofacial trauma often have maxillary and orbital fractures. The additional information taken from the computed tomographic examination could lead to an optimised therapeutic concept.

Arunmozhi Balajee, S., S. F. Hurst, L. S. Chang, M. Miles, E. Beeler, C. Hale, T. Kasuga, K. Benedict, T. Chiller, and M. D. Lindsey (2012) Med Mycol Multilocus sequence typing of Histoplasma capsulatum in formalin-fixed paraffin-embedded tissues from cats living in non-endemic regions reveals a new phylogenetic clade. Infections caused by Histoplasma capsulatum are found most often in endemic regions of North, Central, and South America. H. capsulatum has been divided into eight geographic clades by multi-locus sequence typing (MLST). Recently, one isolate and five formalin-fixed paraffin-embedded (FFPE) tissue samples were received from six of 15 suspected cases of histoplasmosis in cats residing in areas not known to be endemic for H. capsulatum. Polymerase chain reaction (PCR) amplification and sequence analysis of the rDNA ITS-2 region confirmed the diagnosis of H. capsulatum. Since these cases were not, as noted, from the accepted endemic areas, it was of interest to understand the molecular epidemiology of these isolates. Results of molecular analysis indicated that the H. capsulatum recovered from the cats were most closely related to the North American-1 clade, but clustered separately outside this clade, suggesting that the H. capsulatum infecting the animals may represent a separate clade or phylogenetic species. This study also demonstrated the utility of obtaining valuable molecular subtype data directly from archived FFPE tissue blocks, particularly when a fungus culture was not performed or is otherwise unavailable.

Courcier, E. A., D. J. Mellor, E. Pendlebury, C. Evans, and P. S. Yam (2012) Vet Rec An investigation into the epidemiology of feline obesity in Great Britain: results of a cross-sectional study of 47 companion animal practices. Previous epidemiological studies of feline obesity have been restricted to small geographical areas of Great Britain. This study represents the first published description of the prevalence and risk factors for obesity from a nationally distributed population of cats. Data were gathered from 3227 cats through 47 primary companion animal veterinary practices. The overall prevalence of overweight/obesity was 11.5 per cent (95% confidence interval 10.4 per cent to 12.6 per cent) in cats attending the charity’s clinics. Cats in Scotland appeared to have a greater age and neutered-adjusted prevalence compared with cats in England. Neutered status, being male and middle age (around 7 years), were all significant risk factors for feline overweight/obesity, although they did not fully explain an individual cat’s risk of overweight/obesity. Breed was not found to be a statistically significant risk factor. Partial attributable fractions were calculated from each of the significant risk factors. Neutered status appeared to contribute the most to the prevalence of

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obesity, followed by prime/mature lifestage (3-10 years of age). Any interpretations of these findings should take into account the multitude of biases inherent in this study. Nevertheless, weight management following neutering appears to be very important to reduce the overall prevalence of overweight/obesity in this population of cats.


Squamous cell carcinoma (SCC) is the most common feline oral tumor. Standard radiation protocols have been reported to achieve tumor control durations of 1.5-5.5 months (45-165 days). The purpose of this study was to describe the efficacy and toxicity of an accelerated hypofractionated radiation therapy protocol in cats with oral SCC. Twenty-one cats with histologically confirmed oral SCC and T1-3N0M0 were treated with 10 once-daily fractions (Monday-Friday) of 4.8 Gy. Seventeen cats had macroscopic disease and four were microscopic after incomplete excision. Acute toxicity consisted of grade 2 mucositis in all cats and this was effectively managed using esophageal or gastric tube feeding, pain medication, and antibiotics. Late toxicity effects for cats with available follow-up data included alopecia (4 cats), leukotrícia (6), tongue ulceration (1), and oronasal fistula (1). Response could be assessed in 17 cats (seven complete response and five partial response). Four cats (19%) developed metastatic disease without evidence of local progression. The median progression-free survival (PFS) was 105 days (1 year PFS of 23%), median local progression-free survival (LPFS) was 219 days (1 year LPFS of 41%), and median overall survival (OS) was 174 days (1 year OS of 29%). Only tumor stage was prognostic, with T1 having a median PFS of 590 days. Findings indicated that this accelerated hypofractionated radiation therapy protocol was well tolerated in cats with oral SCC, with manageable adverse events. Tumor response was observed in most cats and long tumor control durations were achieved in some cats.


We report an evaluation of the treatment and outcome of cats with suspected primary epilepsy. Phenobarbital therapy was used alone or in combination with other anti-epileptic drugs. Outcome after treatment was evaluated mainly on the basis of number of seizures per year and categorised into four groups: seizure-free, good control (1-5 seizures per year), moderate control (6-10 seizures per year) and poor control (more than 10 seizures per year). About 40-50% of cases became seizure-free, 20-30% were considered good-to-moderately controlled and about 30% were poorly controlled depending on the year of treatment considered. The duration of seizure events after treatment decreased in 26/36 cats and was unchanged in eight cats. The subjective severity of seizure also decreased in 25 cats and was unchanged in nine cats. Twenty-six cats had a good quality of life, nine cats an impaired quality of life and one cat a bad quality of life. Despite being free of seizures for years, cessation of treatment may lead to recurrence of seizures in most cats.


Measurement of body temperature is a routine part of the clinical assessment of a patient. However, this procedure may be time-consuming and stressful to most animals because the standard site of temperature acquisition remains the rectal mucosa. Although an increasing number of clinicians have been using auricular temperature to estimate core body temperature, evidence is still lacking regarding agreement between these two methods in cats. In this investigation, we evaluated the agreement between temperatures measured in the rectum and ear in 29 healthy cats over a 2-week period. Temperatures were measured in the rectum (using digital and mercury-in-glass thermometers) and ear once a day for 14 consecutive days, producing 406 temperature readings for each thermometer. Mean temperature and confidence intervals were similar between methods, and Bland-Altman plots showed small biases and narrow limits of agreement acceptable for clinical purposes. The interobserver variability was also checked, which indicated a strong correlation between two near-simultaneous temperature readings. Results are consistent with auricular thermometry being a reliable alternative to rectal thermometry for assessing core body temperature in healthy cats.


As the only domesticated species known to exhibit both induced and spontaneous ovulation, the cat is a model for understanding the nuances of ovarian control. To explore ovarian sensitivity to exogenous gonadotropins and the influence of progestin priming, we conducted a study of queens that were down-regulated with oral progestin or allowed to cycle normally, followed by ‘low’ or ‘high’ doses of equine chorionic gonadotropin (eCG) and human chorionic gonadotropin (hCG). Our metrics included 1) fecal steroid metabolite profiles before and after ovulation.
induction, 2) laparoscopic examination of ovarian follicles and corpora lutea (CL) on Days 2 and 17 (Day 0 = hCG administration), and 3) ovariohysterectomy (Day 17) to assess CL progesterone concentrations, morphometrics, and histology. Reproductive tracts from time-matched, naturally-mated queens (n = 6) served as controls. Every progestin-primed cat (n = 12) produced the desired response of morphologically-similar, fresh CL (regardless of eCG/hCG dose) by Day 2, whereas 41.7% of unprimed counterparts (n = 12) failed to ovulate or had variable-aged CL suggestive of prior spontaneous ovulation (P < 0.05). The ovarian response to ‘low’, but not ‘high’, eCG/hCG was improved (P < 0.05) in primed compared to unprimed cats, indicating increased sensitivity to gonadotropin in the progestin-primed ovary. Progestin priming prevented hyper-elevated fecal steroid metabolites and normalized CL progesterone capacity, but only when combined with ‘low’ eCG/hCG. However, priming failed to prevent ancillary CL formation, smaller CL mass, or abnormal luteal cell density, which were common to all eCG/hCG-treated cats. Thus, the domestic cat exposed to eCG/hCG produces CL with structural and functional aberrations. These anomalies can be partially mitigated by progestin priming, possibly due to a protective effect of progestin associated with enhanced ovarian sensitivity to gonadotropins.

Feline inappropriate elimination (periuria and/or periczezia) remains a very common behavioral complaint of cat owners. Treatment recommendations often include improving the attractiveness of the litter boxes available to the cat. One frequent recommendation is to avoid covered litter boxes, although this has not previously been tested experimentally. The goal of this study was to assess whether, all else being equal, cats preferentially used uncovered litter boxes over covered litter boxes. Twenty-eight cats were enrolled in the study and offered the choice of a covered or uncovered box. Waste was scooped daily from each box, and the weight of waste in the different box styles was compared and evaluated using paired t-tests and chi(2) analyses. Overall, there was no significant difference between use of the two box styles. Eight individual cats did exhibit a preference (four for covered, four for uncovered), but individual preference results are not evenly distributed, with more cats than expected showing no preference between litter box types. We postulate that, if boxes are kept sufficiently clean (ie, once daily minimum cleaning), most cats will not show a preference for either box type. The observation that a minority of cats in the study exhibited a preference supports the recommendation of providing individual cats a ‘cafeteria’ of litter box styles, including a covered box, to determine whether such a preference exists. These findings add to existing literature on the topic of feline inappropriate elimination and provide additional information for clinicians providing treatment recommendations for cats exhibiting this behavior.

The objective of this study was to determine and compare the assemblages of Giardia duodenalis isolated from mammalian fecal samples using the beta-giardin (bg), glutamate dehydrogenase (gdh) and triosephosphate isomerase (tpi) genes. A total of 202 samples, either submitted to the Veterinary Diagnostic Laboratory (Parasitology) at Colorado State University or part of ongoing research studies, were typed. A subset of 50 dog samples were also assessed by the tpi-D-specific primers. Of these, 183 were from dogs, 13 were from cats, two were from llamas, and one each was from a calf, an alpaca, a sheep, and a horse. The majority of the dogs (171 of 183 isolates) in this study were infected with only dog-adapted Assemblage C or D. The tpi-D-specific primers confirmed that 28 of the samples that typed as Assemblage D by the bg and gdh genes were also Assemblage D by the tpi-D-specific primers. Only 12 isolates were Assemblage A alone or Assemblage A and Assemblage C or D. Of the 13 cat isolates, seven were Assemblage F, two were Assemblage D, three were Assemblage A and 1 contained both Assemblages C and D. The calf isolate was Assemblage E (gdh, tpi) and the alpaca (bg, gdh), llamas (gdh), sheep (bg, gdh, tpi) and horse (tpi) isolates were all Assemblage A. When the assemblage could be determined for more than one gene, 91 of 117 dog isolates gave consistent results and 8 of 9 cat isolates gave consistent results.

OBJECTIVE: To describe the pharmacokinetics of oral pimobendan in healthy cats. ANIMALS: 18 purpose-bred cats. METHODS: In 10 cats, blood samples were collected before, and at multiple time points after, a single oral dose of pimobendan (0.28 +/- 0.04 mg/kg). In 8 cats, blood samples were collected at 3 various time points on the first and third days of twice daily oral dosing of pimobendan for a total of 7 doses (0.31 +/- 0.04 mg/kg). Plasma concentrations of pimobendan were quantified by high pressure liquid chromatography coupled to tandem mass spectrometry. RESULTS: A 1-compartment open model with first order absorption in and elimination from the central compartment with a lag

In this case series we describe the diagnosis and surgical treatment of five cats affected by clinical cauda equina syndrome as a result of degenerative dorsal lumbosacral stenosis. Radiographic and magnetic resonance imaging findings confirmed the suspected diagnosis of disc-associated lumbosacral disease. Cauda equina decompression was achieved by dorsal laminectomy followed by dorsal annullectomy and nuclear extirpation. Dorsal stabilization was achieved using miniature positive-profile pins inserted into the vertebral body of L7 and the wings of S1 with the free ends of the pins being embedded in a bolus of gentamicin-impregnated polymethylmethacrylate. Reassessment two years postoperatively using a previously validated feline specific owner questionnaire indicated satisfactory outcome with complete return to normal activity and resolution of signs of pain in all cases.


Toxoplasmosis is caused by the protozoan parasite T. gondii. Humans and other warm-blooded animals are its hosts. The infection has a worldwide distribution; one-third of the world’s population has been exposed to this parasite. There are three primary ways of transmission: ingesting uncooked meat containing tissue cysts, ingesting food and water contaminated with oocysts from infected cat feces and congenitally. Those particularly at risk of developing clinical illness include pregnant women, given that the parasite can pose a serious threat to the unborn child if the mother becomes infected while pregnant, and immunosuppressed individuals such as tissue transplant subjects, AIDS subjects, those with certain types of cancer and those undergoing certain forms of cancer therapy. Maternal infections early in pregnancy are less likely to be transmitted to the fetus than infections later in pregnancy, but early fetal infections are more likely to be severe than later infections. In the absence of an effective human vaccine, prevention of zoonotic transmission might be the best way to approach the problem of toxoplasmosis and must be done by limiting exposure to oocysts or tissue cysts. Vaccine development to prevent feline oocyst shedding is ongoing, mostly with live vaccines. The S48 strain Toxovax is a live vaccine originally developed for use in sheep, but when used in cats inhibits sexual development of T. gondii. This vaccine is used in sheep to reduce tissue cyst development. The T-263 strain of T. gondii is a live mutant strain designed to reduce or prevent oocyst shedding by cats by developing only partial infection in the feline intestinal tract.
**Erythrocyte Pyruvate Kinase Deficiency mutation identified in multiple breeds of domestic cats.**

**ABSTRACT:** BACKGROUND: Erythrocyte Pyruvate Kinase Deficiency (PK deficiency) is an inherited hemolytic anemia that has been documented in the Abyssinian and Somali breeds as well as random bred domestic shorthair cats. The disease results from mutations in PKLR, the gene encoding the regulatory glycolytic enzyme pyruvate kinase (PK). Multiple isoforms are produced by tissue-specific differential processing of PKLR mRNA. Perturbation of PK decreases erythrocyte longevity resulting in anemia. Additional signs include: severe lethargy, weakness, weight loss, jaundice, and abdominal enlargement. In domestic cats, PK deficiency has an autosomal recessive mode of inheritance with high variability in onset and severity of clinical symptoms. RESULTS: Sequence analysis of PKLR revealed an intron 5 single nucleotide polymorphism (SNP) at position 304 concordant with the disease phenotype in Abyssinian and Somali cats. Located 53 nucleotides upstream of the exon 6 splice site, cats with this SNP produce liver and blood processed mRNA with a 13 bp deletion at the 3’ end of exon 5. The frame-shift mutation creates a stop codon at amino acid position 248 in exon 6. The frequency of the intrinsic SNP in 14,179 American and European cats representing 38 breeds, 76 western random bred cats and 111 cats of unknown breed is 6.31% and 9.35% when restricted to the 15 groups carrying the concordant SNP. CONCLUSIONS: PK testing is recommended Bengals, Egyptian Maus, La Perms, Maine Coon cats, Norwegian Forest cats, Savannahs, Siberians, and Singapuras, in addition to Abyssinians and Somalis as well as any new breeds using those mentioned above in out crossing or development programs.


**Steroidogenic capacity of the placenta as a supplemental source of progesterone during pregnancy in domestic cats.**

**ABSTRACT:** BACKGROUND: Until recently, the corpus luteum (CL) was considered to be the main source of progesterone (P4) during pregnancy in the domestic cat (Felis catus). However, other possible sources of P4 have not been ruled out. Although feline placental homogenates were found to be capable of synthesizing P4, expression of the respective steroidogenic enzymes has not been investigated at the molecular level. Therefore, in the present study, expression of the two major factors involved in the synthesis of P4 - 3beta-hydroxysteroid dehydrogenase (3betaHSD) and steroidogenic acute regulatory protein (StAR) - was investigated in the feline CL and placenta during the course of pseudopregnancy and pregnancy. METHODS: The mRNA levels of StAR and 3betaHSD were determined using Real Time PCR and their localizations were determined by immunohistochemistry. Placental P4 concentrations, after ethyl extraction, were measured by EIA. RESULTS: Luteal 3betaHSD and StAR mRNA levels were strongly time-dependent, peaking during mid-pregnancy. The placental 3betaHSD mRNA level was significantly upregulated towards the end of pregnancy. In the CL, 3betaHSD and StAR protein were localized in the luteal cells whereas in the placenta they were localized to the maternal decidual cells. Placental P4 concentrations were low in early pregnant queens, but increased along with gestational age. CONCLUSIONS: These results confirm that the placenta is an additional source of P4 in pregnant queens and can thereby be considered as an important endocrine organ supporting feline pregnancy.


**OBJECTIVE:** To describe the use of intravenous lipid emulsion (IVLE) as an adjunctive therapy in 3 cats with permethrin toxicosis. **CASE SERIES SUMMARY:** Three cats with permethrin toxicosis were treated with IVLE in addition to the current accepted treatment regime. All 3 cats demonstrated a subjective rapid clinical improvement after the administration of IVLE, with no adverse reactions observed. NEW OR UNIQUE INFORMATION PROVIDED: This is the first reported use of IVLE for feline permethrin toxicosis, with encouraging results. A possible reduction in costs associated with treatment may contribute to a reduction in euthanasia. Further investigation of the use of IVLEs in permethrin toxicosis is warranted.


**OBJECTIVES:** To report outcomes and complications of dog and cat fractures treated with the polyaxial locking plate system (PAX). **STUDY DESIGN:** Case series. **ANIMALS:** Dogs (n = 60) and 2 cats. **METHODS:** Medical records (December 2009–March 2011) of dogs and cats with fractures treated with the PAX system were reviewed. Cases with adequate follow-up to document a functional union, had surgery performed by an author, had no prior treatment of the fracture(s), and with complete operative records were included. Signalment, body weight, bone(s) fractured, area of bone fractured, fracture classification, concurrent orthopedic injuries, complications, time to functional union, if minimally invasive plate osteosynthesis (MIPO) techniques were used, plate size, number of plates, bone graft use, and ancillary methods of fixation were recorded. Additionally, fracture segment: plate length, screw, number of plate holes,
number of empty screw holes overlying/adjacent to the fractures, number of cortices engaged above/below the fracture was evaluated. Variables were evaluated statistically for effect on complications and functional union. RESULTS: Sixty-two animals were included. Mean time to functional union was 7.1 weeks. Complications occurred in 12 animals (19%) and plate failure occurred in 3 (5%). Statistically significant factors that affected time to functional union were the presence of multiple injuries and age. Those associated with complications were double plates and number of cortices engaged above and below fractures. CONCLUSIONS: The PAX system allows for multidirectional screw insertion with an overall complication rate and time to functional union similar to other fracture repair implant systems.

Papich, M. G., D. N. Levine, J. L. Gookin, G. S. Davidson, W. C. Stagner, and R. B. Hayes (2012) J Vet Pharmacol Ther Ronidazole pharmacoekinetics in cats following delivery of a delayed-release guar gum formulation. Ronidazole (RDZ) is the only known effective treatment for feline diarrhea caused by Trichomonas foetus. This study aimed to develop guar gum-coated colon-targeted tablets of RDZ and to determine the pharmacoekinetics of this delayed-release formulation in cats. Guar gum-coated tablets were administered orally once to five healthy cats (mean dose 32.3 mg/kg). The tablets were then administered once daily for 5 days to four cats (mean dose 34.5 mg/kg), and absorption studies repeated on day 5. Plasma was collected and analyzed for RDZ concentration, and pharmacoekinetic noncompartmental and deconvolution analysis were performed on the data. There was negligible RDZ release until after 6 h, and a delayed peak plasma concentration (mean C(max) 28.9 μg/mL) at approximately 14.5 h, which coincides with colonic arrival in cats. Maximum input rate (mg/kg per hour) occurred between 6 and 16 h. This delayed release of ronidazole from guar gum-coated tablets indicates that release of RDZ may be delayed to deliver the medication to a targeted area of the intestine. Repeated dosing with guar gum tablets to steady-state did not inhibit drug bioavailability or alter the pharmacoekinetics. Such targeted RDZ drug delivery may provide improved efficacy and reduce adverse effects in cats.

Gil, S., R. O. Leal, A. Duarte, D. McGahie, N. Sepulveda, I. Siborro, J. Cravo, C. Cartaxeiro, and L. M. Tavares (2012) Res Vet Sci Relevance of feline interferon omega for clinical improvement and reduction of concurrent viral excretion in retrovirus infected cats from a rescue shelter. Feline Immunodeficiency (FIV) and Feline Leukemia (FeLV) viruses are common infectious agents in stray cats and shelter environments. Recombinant feline interferon-omega (rFeIFNomega) has shown an antiviral action not only against FIV and FeLV but also against herpesvirus (FHV-1) and calicivirus (FCV). Sixteen naturally infected FIV/FeLV cats were followed during rFeIFNomega therapy in order to monitor clinical signs and to correlate with excretion of concomitant viruses (FCV, FHV-1, feline coronavirus (FCoV) and parvovirus (FPV)). Cats were submitted to clinical evaluations and concomitant virus excretion assessment. Comparing D0-D65, 10/16 cats improved clinical scores. Of the 10 cats positive for FHV-1 on D0, 4 were negative and 6 reduced viral loads. Of the 11 FCoV positive cats, 9 reduced viral loads. The 13 FCoV positive cats and the FPV positive cat were negative on D65. In conclusion, rFeIFNomega improves clinical signs and reduces concurrent viral excretion in naturally infected retroviral cats.

Lamb, V., J. Gray, T. Parkin, and I. Ramsey (2012) Vet Rec Measurement of the radioactivity in the excreta of cats treated with iodine-131 for hyperthyroidism. When hyperthyroidism is treated with radioiodine, up to 75 per cent of the injected dose is excreted in the faeces and urine, which poses hazards to handlers. Three groups of hyperthyroid cats were treated with 120, 150 and 200 megabecquerel (MBq) of radioiodine, and samples of faeces and urine-soaked litter (USL) were collected over a 24-hour period, once a week, for four weeks. The amount of radioactivity in each homogenised sample was then measured using a sodium iodide detector. Radioactivity significantly decreased in both the faecal and USL samples over the first three weeks. Regardless of dose, there was no significant difference in faecal and USL samples between weeks 3 and 4. Faecal radioactivity was generally higher than the USL, but both were variable between cats at each time point. There were some significant differences in radioactivity between doses at various time points, but these were very small compared with the differences between time points. From the results, the maximum likely exposure to a worker or owner handling the waste was calculated. For cats treated with up to 200 MBq, radioactivity levels after two weeks were such that the waste could be designated as ‘very low level waste’ (a UK statutory definition) for disposal purposes.

Su, S., L. Yuan, H. Li, J. D. Chen, J. X. Xie, Z. Huang, K. Jia, and S. J. Li (2012) Clin Vaccine Immunol Serologic Evidence of Pandemic (H1N1) 2009 Infection in Cats, China. Infection of domestic cats with pandemic (H1N1) 2009 has recently been documented. In this study, we report for the first time the sporadically current seroprevalence of influenza A (H1N1) pdm09 infection in cats in China. Thirteen (13/1080) sera were found positive by NP-specific ELISA in different cat populations in southern China. It is very important to stress further surveillance of the pandemic (H1N1) 2009 in cats in southern China.
Prevalence and risk factors for the development of diabetes mellitus in Swedish cats.

ABSTRACT: BACKGROUND: The prevalence and risk factors for the development of feline diabetes mellitus (FDM) in Swedish cats have not previously been reported. The objective of the present pilot study was to indicate prevalence and possible risk factors for FDM in Swedish cats. Twenty diabetic cats from the database at the University Animal Hospital in Uppsala participated in the study, and these were matched with 20 healthy controls on sex and age. A mail-and-telephone questionnaire focusing on diet, activity and obesity was used. RESULTS: The prevalence of FDM during the years 2000–2004 based on the results of the hospital records in the present study was 21 per 10,000 cats. The diabetic cats were on average 9 years old when the disease signs were discovered (median, min-max 2–15). Among FDM cases, it was more common to be male (n=17 males vs n=3 females; P≤0.05). Ten out of twenty owners to cases (50%) reported their cats to be obese at the time of the diagnosis (median 9 years, min-max 2–15), as compared to five out of twenty (25%) controls at the same age. The median BW at the time for diagnosis was 5.5 kg (min-max 2.0-9.0) for cases, and 5.0 kg (min-max 3.0-8.0 kg) for controls, respectively. Despite that both cases and controls had the same median age at the time of the study (13 years, min-max 3–18), a significantly higher number of controls were alive at that age (n=16 controls vs 8 cases; P≤0.05). A significantly higher proportion of cases that were obese at the time of the FDM diagnosis were dead at the time of the study compared to the proportion of controls that were obese at a similar age (P≤0.05). The diets given at the time for diagnosis for cases compared to diet of the controls at a similar time were mainly commercial foods, and controls consumed a higher proportion of dry foods compared to cases (medians 79 vs 44% of DM intake/d, respectively; P≤0.05). Cases were less active compared to the controls (2.3 and 3.2 h/d, respectively; P≤0.05). CONCLUSIONS: The results indicate that the proportions of dry foods in the diet, to perform low activity and to be obese could be identified as preliminary risk factors for FDM in Swedish cats, and should be taken into account in preventive measures as well as in the design of future epidemiological studies in this population.


Objective To evaluate the usefulness of intratesticular and subcutaneous lidocaine in alleviating the intraoperative nociceptive response to castration, measured by pulse rate (PR) and mean arterial pressure (MAP), and to test the applicability of heart rate variability (HRV) analysis in assessing this response. Study design Randomized, controlled, observer-blinded experimental trial. Animals Thirty-nine healthy male cats admitted for castration. Methods One group received general anaesthesia and served as control group (GA), while the treatment group (LA) additionally received local anaesthesia (lidocaine 2 mg kg(-1)) intratesticularly and subcutaneously. PR and MAP were recorded at anaesthesia baseline (T0), treatment (T1), incision left testicle (T2), traction on spermatic cord (T3), tightening of the autoligature and resection of the cord (T4), incision on the right side (T5), traction on spermatic cord (T6), and tightening of the autoligature and resection of cord (T7). HRV analysis was divided into three 5-minute intervals: baseline (H0), treatment (H1), and surgery (H2). Results There were significant increases in PR and MAP for both groups during surgery from T3 onwards; however, the increase in the treatment group (LA) was significantly lower than for the control group (GA). For HRV analysis, significant differences were found between groups in the following parameters during surgery: TP (total power), VLF (very low frequency), SDNN (standard deviation of NN intervals [=the interval between two consecutive R-waves in the ECG]), and TI (triangular index), which were lower in the LA group. Mean NN was significantly lower in the GA group, whereas LF (low frequency) and LFn (low frequency, normalized value) were lower in the LA group. HF (high frequency) and HFn (high frequency, normalized value) decreased significantly from H1 to H2 in both groups. Conclusions and clinical relevance The study showed that the nociceptive response to surgery was alleviated by the use of intratesticular and subcutaneous lidocaine and that HRV analysis is a promising research tool to estimate intraoperative nociception in cats during general anaesthesia.


OBJECTIVE: Although not previously reported, experience suggests that dentoalveolar injury is -common among patients with maxillofacial fractures. The objective of this study was to evaluate and describe the prevalence and nature of dentoalveolar injuries in patients identified with maxillofacial fractures. METHODS: Medical records of 43 dogs and cats diagnosed with maxillofacial fractures between 2005 and 2012 were reviewed to identify patients with concurrent dentoalveolar injury. Medical records of patients with dentoalveolar injury were abstracted for the following information: signalment (including sex, age and skull type), mechanism of maxillofacial trauma, location and number of maxillofacial fractures, dentoalveolar injury type and location and the number of dentoalveolar injury per patient.
Statistical evaluation was performed to determine associations between signalment, mechanism of trauma, location and number of maxillofacial fractures and the prevalence and nature of concurrent dentoalveolar injury. **RESULTS:**

Dentoalveolar injuries are common among patients with maxillofacial trauma. Age and mechanism of trauma are significant predictors of the presence of dentoalveolar injuries in patients with maxillofacial trauma. **CONCLUSIONS AND CLINICAL RELEVANCE:** The findings of this study serve to encourage veterinarians to fully assess the oral cavity in patients with maxillofacial fractures as dentoalveolar injuries are common and can be predicted by age and mechanism of trauma.


Risk of toxoplasmosis from cats and undercooked meat.


Cats, foxes and scabies: the epidemiological puzzle of sarcoptic mange.


Changes in prevalence of progressive feline leukaemia virus infection in cats with lymphoma in Germany.

Progressive infection with feline leukaemia virus (FeLV) is considered one of the major risk factors for development of feline lymphoma. The aim of this study was to compare cats with lymphoma between 1980 and 1994 (first period) and between 1995 and 2009 (second period) concerning FeLV antigenemia and age distribution. In addition, differences between FeLV antigen-positive and antigen-negative cats with lymphoma regarding patients’ characteristics, tumour location and outcome were evaluated. There was a significant decrease in the percentage of lymphoma cases associated with progressive FeLV infection from the first (59 per cent) to the second (13 per cent) observation period. FeLV antigen-positive cats were significantly younger (median 3.7 v 11.3 years), and had significantly shorter response duration (median 25 days v 472 days) with therapy. In the cats of the second period, gastrointestinal and extranodal lymphomas were the most common anatomical sites, and the majority of those cats were FeLV antigen-negative. Thus, other aetiologies than progressive FeLV infection must have a greater impact on cancerogenesis among affected cats with lymphoma to date.


Our objective was to evaluate raw-meat diets for captive exotic and domestic carnivores containing traditional and alternative raw meat sources, specifically, beef trimmings, bison trimmings, elk muscle meat, and horse trimmings. We aimed to examine: diet composition and protein quality; apparent total tract energy and macronutrient digestibility in domestic cats, African wildcats, jaguars, and Malayan tigers; and ME and fecal fermentative end-products in domestic cats. Because of variation in the meat sources, dietary proximate, AA, and long chain fatty acid composition were variable. Our analyses indicated that all diets had essential fatty acid deficiencies, and the elk diet (i.e., trimmed muscle meat) was deficient in total fat. Standardized AA digestibilities measured utilizing the cecectomized rooster assay were high (>87%). Utilizing the NRC minimum requirements for the growth of kittens, the first limiting AA of all diets was the combined requirement of Met and Cys (AA score: 81 to 95; protein digestibility corrected AA score: 75 to 90). All diets were highly digestible (88 to 89% OM digestibility). There was no effect of diet or felid species on DM (85 to 87%), OM, and GE (90 to 91%) digestibilities. Apparent CP digestibility was greater (P < 0.05) in cats fed elk (97%) compared to those fed bison (96%), and greater (P < 0.05) in wildcats (97%) and domestic cats (97%) compared to tigers (95%). The diet and species interaction (P < 0.05) was observed for apparent fat digestibility. In domestic cats, the fresh fecal pH and proportions of acetate and butyrate were altered (P < 0.05) due to diet. Diet also affected (P < 0.05) fresh fecal concentrations of total branched-chain fatty acids, valerate, and Lactobacillus genus. In conclusion, although the raw meat diets were highly digestible, because of variation in raw meat sources the nutrient composition of the diets was variable. Thus, compositional analysis of raw-meat sources is necessary for proper diet formulation. The types of meat commonly used in raw-meat diets may be deficient in total fat (trimmed muscle meat) and essential fatty acids (trimmings and muscle meats). Additionally, differences in raw-meat source nutrient composition and digestibility affect the beneficial and putrefactive fermentative end-products found in feces.


A 3-year-old domestic shorthair cat was witnessed ingesting mushrooms and developed signs of muscarine intoxication. After stabilisation and treatment with atropine the cat recovered well and was discharged from hospital in 2 days. This report describes the features and successful management of this unusual toxicosis in cats.
Theobald, A., H. A. Volk, R. Dennis, D. Berlato, and L. De Risio (2012) J Feline Med Surg Clinical outcome in 19 cats with clinical and magnetic resonance imaging diagnosis of ischaemic myelopathy (2000-2011). Previous publications on ischaemic myelopathy in cats are limited to single case reports and small case series. The overall prognosis appears poor, with 42% of cats being euthanased. In this study the clinical outcome of 19 cats with a presumptive diagnosis of ischaemic myelopathy [based on clinical and magnetic resonance imaging (MRI) findings] was evaluated retrospectively. The degree of neurological dysfunction at the time of presentation was similar to previously reported cases, ranging from ambulatory paresis to plegia with intact nociception. The most common lesion localisations (based on MRI) were to the C1-C5 (30%) and C6-T2 (30%) spinal cord segments with the T3-L3 and L4-S1 spinal cord segments accounting for 25% and 15%, respectively. Potential inciting or predisposing causes for development of spinal infarction were identified in 12 cats, including physical exertion, trauma, general anaesthesia, renal disease, hyperthyroidism, hypertension and hypertrophic cardiomyopathy. The median time to recovery of ambulation was 3.5 days (3-19 days). Four cats (21%) were euthanased within 2 months of diagnosis. The remaining 15 (79%) cats had a favourable outcome. Follow-up ranged from 6 months to 10 years and 4 months with a median of 3 years and 1 month. Even when plegia was present at the time of presentation, all surviving cats with long-term, owner-derived follow-up were reported to return to a normal quality of life, suggesting that the long-term prognosis for recovery from presumed ischaemic myelopathy is favourable in the majority of cats.

Renal Alterations in Feline Immunodeficiency Virus (FIV)-Infected Cats: A Natural Model of Lentivirus-Induced Renal Disease Changes.
Human immunodeficiency virus (HIV) is associated with several renal syndromes including acute and chronic renal failures, but the underlying pathogenic mechanisms are unclear. HIV and feline immunodeficiency virus (FIV) share numerous biological and pathological features, including renal alterations. We investigated and compared the morphological changes of renal tissue of 51 experimentally and 21 naturally infected cats. Compared to the latter, the experimentally infected cats exhibited some mesangial widening and glomerulonephritis, milder proteinuria, and lower tubular and interstitial alterations. The numbers of giant protein tubular casts and tubular microcysts were also lower. In contrast, diffuse interstitial infiltrates and glomerular and interstitial amyloidosis were detected only in naturally infected cats. Similar alterations are found in HIV infected patients, thus supporting the idea of a causative role of FIV infection in renal disease, and underlining the relevance of the FIV and its natural host as an animal model for investigating lentivirus-associated nephropathy.

Detection of hemoplasma and Bartonella species and co-infection with retroviruses in cats subjected to a spaying/neutering program in Jaboticabal, SP, Brazil.
Hemotropic mycoplasmas and Bartonella species are important pathogens that circulate between cats and invertebrate hosts, occasionally causing diseases in humans. Nevertheless, there are few reports on occurrences of these agents in cats in Brazil. The present study aimed to detect the presence of hemoplasma and Bartonella DNA by means of PCR and sequencing. FIV antigens and anti-FeLV antibodies, were studied by using a commercial kit on blood and serum samples, respectively, among 46 cats that were sampled during a spaying/neutering campaign conducted in Jaboticabal, SP. Three (6.5%) cats were positive for hemoplasmas: two (4.3%) for ‘Candidatus M. haemominutum’ and one (2.2%) for both M. haemofelis and ‘Candidatus M. turicensis’. One of the two ‘Candidatus M. haemominutum’-infected cats was also positive for FeLV antigens and showed antibodies for FIV. Two cats (4.3%) were positive for B. henselae. One of them was also positive for FeLV antigens. Eight cats (17.4%) were positive for FeLV, and just one (2.2%) showed anti-FIV antibodies. Bartonella species and hemoplasmas associated with infection due to retroviruses can circulate among apparently healthy cats.

Percutaneous plate arthrodesis in small animals.
Arthrodesis is an elective surgical procedure designed to eliminate articular pain and dysfunction by deliberate osseous fusion. A percutaneous approach can be used to perform tarsal and carpal arthrodeses in dogs and cats. Intraoperative imaging facilitates cartilage debridement performed with a burr inserted through stab incisions. The plate is introduced through an epiperiosteal tunnel and secured with screws inserted through the skin insertion incisions. Additional screws can be placed through separate stab incisions. The primary advantage of this technique is a decreased risk of soft tissue complications such as plantar necrosis or wound dehiscence. Preliminary clinical results are promising.
Minimally invasive plate osteosynthesis: tibia and fibula.

Fractures of the tibia and fibula are common in dogs and cats and occur most commonly as a result of substantial trauma. Tibial fractures are often amenable to repair using the minimally invasive plate osteosynthesis (MIPO) technique because of the minimal soft tissue covering of the tibia and relative ease of indirect reduction and application of the implant system to the tibia. Treatment of tibial fractures by MIPO has been found to reduce surgical time, reduce the time for fracture healing, and decrease patient morbidity, while at the same time reducing complications compared with traditional open reduction and internal fixation.


Percutaneous pinning for fracture repair in dogs and cats.

This article describes the technique of percutaneous pinning in dogs and cats. Only acute fractures evaluated within the first 48 hours after trauma are selected for percutaneous pinning. Reduction is performed with careful manipulation of the fracture to minimize the trauma to the growth plate. After ensuring the fracture is reduced anatomically, smooth pins of appropriate size are inserted through stab incisions. Depending on the anatomic location, the pins are cut flush with bone or bent. The main advantages of this technique are the minimal surgical trauma and lower perioperative morbidity.


Molecular characterisation of Bartonella species in cats from Sao Luis, state of Maranhao, north-eastern Brazil.

Bartonella species are fastidious bacteria that predominantly infect mammalian erythrocytes and endothelial cells and cause long-lasting bacteraemia in their reservoir hosts. Reports that describe the epidemiology of bartonellosis in Brazil are limited. This study aimed to detect and characterise Bartonella spp DNA from cat blood samples in Sao Luis, Maranhao, north-eastern Brazil. Among 200 cats tested for multiple genes, nine (4.5%) were positive for Bartonella spp: six cats for Bartonella henselae and three for Bartonella clarridgeiae. Based on the phylogenetic analysis of four genes, the B. henselae strain matched strains previously observed in Brazil and was positioned in the same clade as B. henselae isolates from the United States of America. Moreover, sequence alignment demonstrated that the B. clarridgeiae isolate detected in the present study was the same as the one recently detected in cats from southern Brazil.


Ultrasoundography and noncontrast computed tomography of medial retropharyngeal lymph nodes in healthy cats.

OBJECTIVE: To determine various measurements of medial retropharyngeal lymph nodes (MRPLNs) in healthy cats via ultrasonography and CT. ANIMALS: 45 cats (age range, 2 to 8 years). PROCEDURES: Cats underwent CT of the head and ultrasonography of the cervical region. Various measurements of MRPLNs were obtained, and parenchymal heterogeneity, presence of a hilus, appearance of margins, and attenuation of MRPLNs were determined. RESULTS: Data for 7 cats were excluded because they did not meet inclusion criteria; data for 38 cats were evaluated. Measurements of left and right MRPLNs were not significantly different. Mean length x rostral height x rostral width dimensions of MRPLNs were 20.7 x 12.4 x 3.7 mm and 20.7 x 13.1 x 4.7 mm in ultrasonographic and CT images, respectively. Maximum MRPLN dimensions were approximately 32 x 20 x 7 mm. Mean attenuation of MRPLNs was 40.2 Hounsfield units. Parenchyma of MRPLNs was mildly (via CT) to moderately (via ultrasonography) heterogeneous. A hilus was identified in 95% (via ultrasonography) and 24% or 92% (via CT [depending on criteria used to define a hilus]) of MRPLNs. Lymph node margins were smooth in CT images and mildly irregular in ultrasonographic images. A negative linear correlation was detected between age of cat and MRPLN volume. CONCLUSIONS AND CLINICAL RELEVANCE: MRPLNs in cats were easily imaged via ultrasonography and CT. Left and right MRPLNs were symmetric, and MRPLNs were larger in young adult cats versus old cats. Data were intended to serve as references for evaluation of MRPLNs in healthy cats.


Simplified procedure for the estimation of glomerular filtration rate following intravenous administration of iodixanol in cats.

OBJECTIVE: To compare the use of a single-sample method involving IV administration of iodixanol with a multisample method involving inulin for the estimation of glomerular filtration rate (GFR) in cats. ANIMALS: 24 cats, including 15 healthy cats and 9 cats with naturally occurring renal diseases. PROCEDURES: Each cat was coadministered iodixanol (a nonionic contrast medium; dose providing 40 mg of I/kg) and inulin (50 mg/kg), IV, and
blood samples were collected 60, 90, and 120 minutes later. Serum iodixanol and inulin concentrations were determined by means of high-performance liquid chromatography and colorimetry, respectively. Serum urea nitrogen and creatinine concentrations were also measured. RESULTS: Analysis of the data from healthy cats and cats with naturally occurring renal diseases revealed an excellent correlation between GFR values estimated by the multisample and single-sample methods with iodixanol. Likewise, GFR values estimated from the single-sample method with iodixan were closely correlated with those calculated from the multisample method with inulin. CONCLUSIONS AND CLINICAL RELEVANCE: For estimation of GFR in cats, use of a single-sample method with iodixanol, instead of a multisample procedure, may be an expedient tool in both clinical and research settings because of its benefits to patient well-being as a result of reduced stress associated with blood sample collection.

Feline physiotherapy and rehabilitation: 2. clinical application.
PRACTICAL RELEVANCE: There is an increasing demand for effective postoperative and post-injury rehabilitation for any cat with compromised physical function due to injury, surgery or disease. CLINICAL CHALLENGES: The design of a suitable rehabilitation programme that will assist the recovery process, as well as ensure the return of neuromusculoskeletal control to the highest levels of function possible, requires a good understanding of feline behaviour, accurate assessment of the cat’s condition and the correct implementation of a range of physiotherapeutic modalities. AUDIENCE: This two-part review article is directed at the primary care veterinary team. The clinical application of a variety of physiotherapeutic modalities in the rehabilitation of cats is examined in this second part. EVIDENCE BASE: Although evidence supporting the benefits of physiotherapy and rehabilitation with cats is sparse, many techniques, treatments and rehabilitation regimes successfully used on human patients are being readily adapted for animal use. Treatment recommendations described in this review are primarily based on the author’s experience, and that of colleagues, except where specific reference is made to published evidence.

Feline physiotherapy and rehabilitation: 1. principles and potential.
PRACTICAL RELEVANCE: Physiotherapy is highly valued within human medicine and relatively well established for canine patients. Despite a popular misconception that feline patients will not cooperate with such treatment, physiotherapy is now increasingly being performed with cats. With cat ownership increasing in many countries, and an emergence of specialist physiotherapy practitioners, there is demand for effective postoperative and post-injury rehabilitation for any cat with compromised physical function due to injury, surgery or disease. CLINICAL CHALLENGES: While physiotherapy and rehabilitation are potentially beneficial for cats, due to their independent nature feline patients certainly present a greater challenge in the pursuit of effective therapy than their canine counterparts. AUDIENCE: This two-part review article is directed at the primary care veterinary team. The benefits of physiotherapy and the various treatment modalities available to the qualified veterinary physiotherapist, as well as the non-specialist veterinarian and veterinary nurse or technician, are examined in this first part. EVIDENCE BASE: The benefits of human physiotherapeutic intervention are well documented, and there is good evidence for the effectiveness of most treatment modalities. Animal studies are still in their infancy, although some preliminary studies in dogs have shown good results.

Chronic Bartonellosis in cats: what are the potential implications?
PRACTICAL RELEVANCE: Bartonellae are small, vector-transmitted Gram-negative intracellular bacteria that are well adapted to one or more mammalian reservoir hosts. Cats are the natural reservoir for Bartonella henselae, which is a (re-)emerging bacterial pathogen. It can cause cat scratch disease in humans and, in immunocompromised people, may lead to severe systemic diseases, such as bacillary angiomatosis. Cats bacteraemic with B henselae constitute the main reservoir from which humans become infected. Most cats naturally infected with B henselae show no clinical signs themselves, but other Bartonella species for which cats are accidental hosts appear to have more pathogenicity. GLOBAL IMPORTANCE: Several studies have reported a prevalence of previous or current Bartonella species infection in cats of up to 36%. B henselae is common in cats worldwide, and bacteraemia can be documented by blood culture in about a quarter of healthy cats. The distribution of B henselae to various parts of the world has largely occurred through humans migrating with their pet cats. The pathogen is mainly transmitted from cat to cat by fleas, and the majority of infected cats derive from areas with high flea exposure. No significant difference in B henselae prevalence has been determined between male and female cats. In studies on both naturally and experimentally infected cats, chronic bacteraemia has mainly been found in cats under the age of 2 years, while those over 2 years of age are rarely chronically bacteraemic. EVIDENCE BASE: This article reviews published studies and case reports on bartonellosis to explore the clinical significance of the infection in cats and its impact on humans. The article also
discusses possible treatment options for cats and means of minimising the zoonotic potential.


**European consensus document on mast cell tumours in dogs and cats.**

In preparing this document the Authors aimed to pool current information on canine and feline mast cell disease. The information was gathered from international studies and a emphasis was placed on material and opinion with a strong evidence base. We intend it to form the basis of our understanding in this disease at the current time and we anticipate that it will be particularly useful for the general practitioner. It should be emphasized that the authors are presenting this work from a European perspective.


**Canine and feline pancreatic lipase immunoreactivity.**

The diagnosis of pancreatitis in dogs and cats can be challenging. Several diagnostic tests have been evaluated over the years, but the majority have been shown to be of limited utility owing to poor performance or limited availability or because invasive procedures are required. Assays for the measurement of pancreatic lipase immunoreactivity (cPLI for dogs and IPLI for cats) were first developed over a decade ago and now include Spec cPL and SNAP cPL for dogs and Spec IPL and SNAP IPL for cats. Owing to their high sensitivity and specificity for pancreatitis compared with those of other serum tests, concentrations of cPLI and IPLI have been demonstrated to be the serum tests of choice for evaluation of dogs and cats, respectively, suspected of having pancreatitis. False-positive and false-negative results can occur, and recognition of the limitations of pancreatic lipase immunoreactivity assays is important. As there is currently no gold standard for antemortem diagnosis of pancreatitis in dogs and cats, the combination of a complete history and physical examination, measurement of pancreatic lipase immunoreactivity, and ultrasonographic examination of the pancreas is the best approach for an accurate noninvasive diagnosis of pancreatitis.


**Two-dimensionally-guided M-mode and pulsed wave Doppler echocardiographic evaluation of the ventricles of apparently healthy cats.**

OBJECTIVE: To determine two-dimensionally-guided (2D-guided) M-mode and pulsed-wave (PW) Doppler echocardiographic reference intervals of healthy non-sedated cats. ANIMALS: Fifty-three healthy, unsedated domestic cats. MATERIALS AND METHODS: Cats were interrogated via standard imaging planes with 2D-guided PW Doppler, using 5.0 and 7.5 MHz duplex imaging transducers. Left ventricular (LV) M-mode measurements and intracardiac PW Doppler data were acquired using ACVIM guidelines for echocardiography. Doppler variables of the same region, measured from different views, were compared for agreement where appropriate. Descriptive statistics were provided for all measured variables. Statistical comparisons of selected M-mode and PW Doppler echocardiographic variables and correlations with weight or age were made, with significance set at P < 0.01. 

RESULTS: Most cats (42/51) had diastolic LV septal and posterior wall diastolic dimensions <4.5 mm (maximum = 5.7 mm). Only septal diastolic wall dimension correlated weakly with body weight (rho = 0.36). Median peak transvalvular velocities (m/s) were: aorta 1.04 (range: 0.77-1.40); LV inflow 0.60 (range: 0.43-0.95) (E wave), 0.47 (range: 0.32-0.76) (A wave), RV inflow 0.56 (range: 0.37-0.85), pulmonic valve (right) 0.96 (range: 0.65-1.21). For mitral valve inflow, the E and A waves were usually separately measurable at heart rates approximately <180/min, merging into a single diastolic wave (EA) at heart rates approximately >190/min. Peak E wave velocity correlated with heart rate. No variables correlated with age. CONCLUSIONS: Our study provides comprehensive 2D-guided echocardiographic M-mode and PW Doppler reference data for apparently healthy cats.


**Selkirk rex: morphological and genetic characterization of a new cat breed.**

Rexoid, curly hair mutations have been selected to develop new domestic cat breeds. The Selkirk Rex is the most recently established curly-coated cat breed originating from a spontaneous mutation that was discovered in the United States in 1987. Unlike the earlier and well-established Cornish and Devon Rex breeds with curly-coat mutations, the Selkirk Rex mutation is suggested as autosomal dominant and has a different curl phenotype. This study provides a genetic analysis of the Selkirk Rex breed. An informal segregation analysis of genetically proven matings supported an autosomal, incomplete dominant expression of the curly trait in the Selkirk Rex. Homozygous curl cats can be distinguished from heterozygous cats by head and body type, as well as the presentation of the hair curl. Bayesian clustering of short tandem repeat (STR) genotypes from 31 cats that represent the future breeding stock supported the
close relationship of the Selkirk Rex to the British Shorthair, Scottish Fold, Persian, and Exotic Shorthair, suggesting the Selkirk as part of the Persian breed family. The high heterozygosity of 0.630 and the low mean inbreeding coefficient of 0.057 suggest that Selkirk Rex has a diverse genetic foundation. A new locus for Selkirk autosomal dominant Rex, SADRE, is suggested for the curly trait.


Involvement of opioid receptors in inhibition of bladder overactivity induced by foot stimulation in cats.

PURPOSE: We examined the role of opioid receptors in the inhibition of bladder overactivity induced by electrical stimulation of the foot. MATERIALS AND METHODS: Experiments were done in 6 cats under alpha-chloralose anesthesia when the bladder was infused with saline or 0.25% acetic acid. Naloxone (1 mg/kg intravenously) was administered to block opioid receptors. To modulate reflex bladder activity electrical stimulation (5 Hz, 0.2 millisecond pulse width) was applied to the foot via skin surface electrodes at intensities of multiple times the threshold needed to induce observable toe movement. RESULTS: Acetic acid irritated the bladder, induced bladder overactivity and significantly decreased bladder capacity to a mean +/- SE 25.3% +/- 5.9% that of saline control capacity (p = 0.0001). Foot stimulation at 4T suppressed acetic acid induced bladder overactivity and significantly increased bladder capacity to 47.1% +/- 5.9% of control (p = 0.0007). Naloxone did not significantly change bladder capacity during acetic acid irritation but it completely eliminated the inhibition of bladder overactivity induced by foot stimulation. CONCLUSIONS: Results indicate that opioid receptors have an important role in foot afferent inhibition of bladder overactivity. This raises the possibility that opioid receptors might be used as a pharmacological target to enhance the efficacy of foot stimulation for inhibiting bladder overactivity.


Errors in abdominal ultrasonography in dogs and cats.

OBJECTIVES: To compare ultrasonographic diagnoses with the findings of surgical exploration to identify and classify potential diagnostic errors. METHODS: A cross-sectional prospective study of surgically confirmed ultrasound findings was conducted over a period of 29 months in two veterinary hospitals. Any errors in diagnosis made by the sonographer were classified as perceptual, cognitive, equipment-related, inevitable or multifactorial. RESULTS: One hundred and five ultrasound examinations were performed in 88 dogs and 17 cats. Errors in ultrasound diagnosis occurred in 17 animals (16.2%). These errors were identified as cognitive in 10 animals, inevitable in 5 and multifactorial in 2. CLINICAL SIGNIFICANCE: This study demonstrates that whilst errors of diagnosis do occur during ultrasonographic examination of the abdomen, understanding the causes of these errors will contribute to the development of this imaging modality.


Feline infectious peritonitis virus with a large deletion in the 5’-terminal region of the spike gene retains its virulence for cats.

In this study, the Japanese strain of type I feline infectious peritonitis virus (FIPV), C3663, was found to have a large deletion of 735 bp within the gene encoding the spike (S) protein, with a deduced loss of 245 aa of the N-terminal region of the S protein. This deletion is similar to that observed in porcine respiratory coronavirus (PRCoV) when compared to transmissible gastroenteritis virus, which correlates with reduced virulence. By analogy to PRCoV, we expected that the pathogenicity of C3663 may be attenuated in cats. However, two of four cats inoculated with C3663 died of FIP, and a third C3663-inoculated cat showed FIP lesions at 91 days after challenge. These results indicate that the 5’-terminal region of the S gene is not essential for the development of FIP.


Use of a combined slit-lamp SD-OCT to obtain anterior and posterior segment images in selected animal species.

OBJECTIVE: To obtain images of anterior and posterior segments of the eye using a slit-lamp (SL)/spectral domain (SD) optical coherence tomography (OCT) integrated system designed for the human eye, in the cat, dog, minipig and monkey. ANIMALS STUDIED: One healthy adult monkey, one healthy adult minipig, one healthy adult dog, one healthy adult cat, and three cats and four dogs affected by corneal or retinal diseases. PROCEDURE: A SL SCAN-1 SD-OCT, which is a slit-lamp SL-D7 that contains an integrated OCT module and a fundus viewer, was used to generate OCT images (512-2048), while simultaneously taking ‘en-face’ slit-lamp images (efSL). OCT images were obtained under sedation or anesthesia. These images were compared to histological retinal sections obtained from a
monkey, a minipig, a dog, and a cat. RESULTS: ‘en-face’ slit-lamp images and OCT images of the ocular tissues were obtained allowing for the identification of different corneal and retinal layers in all animal species. Measurements of the total retinal thickness (TRT) from the inner limiting membrane to the retinal pigment epithelium were performed in various regions throughout the retina. Reduction in TRT was consistent with clinical features of retinal degeneration identified in dogs and cats. CONCLUSION: This noninvasive procedure is useful for both experimental and clinical assessments of ocular tissue damage. Images of anterior and posterior segments are readily obtained under routine clinical conditions. Future studies are warranted to establish normal OCT data in our patients with this new instrument.


Detection of different Leishmania spp. and Trypanosoma cruzi antibodies in cats from the Yucatan Peninsula (Mexico) using an iron superoxide dismutase excreted as antigen.

Although human leishmaniasis has been reported in 20 states in Mexico, no case of leishmaniasis has been reported in cats to date. In the Yucatan Peninsula, it has been found that dogs may act as reservoirs for at least three Leishmania species (Leishmania mexicana, Leishmania braziliensis, and Leishmania panamensis). In this study we identified specific antibodies against these three Leishmania spp. and Trypanosoma cruzi in the sera from 95 cats from two States on the Yucatan Peninsula, namely Quintana Roo and Yucatan, by ELISA and Western blot techniques using whole extract and an iron superoxide dismutase excreted by the parasites as antigens. As well as demonstrating the presence of trypanosomatid antibodies in the feline population on the Yucatan Peninsula, we were also able to confirm the high sensitivity and specificity of the iron superoxide dismutase antigen secreted by them, which may prove to be very useful in epidemiological studies.


Complex adnexal tumours of the skin: a report of three cases and review of literature.

AIMS: Complex or composite adnexal tumours of the skin (CATS) are unusual neoplasms composed of two or more histopathologically distinct subtypes of appendageal neoplasms coexisting in a single cutaneous lesion. The authors report three examples of CATS, review literature and discuss their probable histogenesis. METHODS AND RESULTS: Of the three tumours described, one tumour showed a mixture of a proliferating pilar tumour and syringocystadenoma papilliferum, the second lesion was composed of a proliferating pilar tumour and tubulopapillary hidradenoma and the third tumour exhibited a syringocystadenoma papilliferum and tubulopapillary hidradenoma in combination. CONCLUSIONS: CATS are rare tumours. The authors reported three unique cases in addition to the 10 other reported cases. These three cases further strengthen the hypothesis of a ‘folliculosebaceous apocrine’ unit as the most likely point of origin of CATS.


Pharmacokinetics of famciclovir and penciclovir in tears following oral administration of famciclovir to cats: a pilot study.

OBJECTIVE: To validate a means of collecting tears from cats, develop an assay for quantifying famciclovir and penciclovir in tears, and to assess famciclovir and penciclovir concentrations and pharmacokinetics in the tears of cats being treated orally with famciclovir for suspected herpetic disease. ANIMALS: Seven client-owned cats. PROCEDURES: Cats were treated orally with a median (range) dose of 40 (39-72) mg of famciclovir/kg three times daily for at least 24 h. At various time points following famciclovir administration, tear samples were collected using Schirmer tear test strips. Tear famciclovir and penciclovir concentrations were measured using liquid chromatography-mass spectrometry, and concentration-time profiles were analyzed noncompartmentally. The relationship between famciclovir dose and tear penciclovir concentration near its maximum was evaluated using least squares linear regression. RESULTS: Maximum tear famciclovir concentration of 0.305 mug/mL occurred at 2.64 h; elimination half-life was 2.28 h. Maximum tear penciclovir concentration (0.981 mug/mL) occurred 2.25 h following oral administration of famciclovir; elimination half-life was 2.77 h. A significant positive correlation was noted between famciclovir dose and tear penciclovir concentration at various time points between 0.5 and 3.75 h following drug administration (P = 0.025). Tear penciclovir concentration exceeded the concentration shown to have in vitro efficacy against feline herpesvirus (FHV-1) (0.304 mug/mL) in about half of samples collected. CONCLUSIONS: Oral administration of 40 mg of famciclovir/kg to cats resulted in a tear penciclovir concentration-time profile that approximated the plasma penciclovir concentration-time profile and frequently achieved a penciclovir concentration at the ocular surface likely to be effective against FHV-1.
**Surveillance of feral cats for influenza A virus in north central Florida.**

BACKGROUND: Transmission of highly pathogenic avian influenza and the recent pandemic H1N1 viruses to domestic cats and other felids creates concern because of the morbidity and mortality associated with human infections as well as disease in the infected animals. Experimental infections have demonstrated transmission of influenza viruses in cats. OBJECTIVES: An epidemiologic survey of feral cats was conducted to determine their exposure to influenza A virus. METHODS: Feral cat sera and oropharyngeal and rectal swabs were collected from November 2008 through July 2010 in Alachua County, FL and were tested for evidence of influenza A virus infection by virus isolation, PCR, and serological assay. RESULTS AND CONCLUSIONS: No virus was isolated from any of 927 cats examined using MDCK cell or embryonated chicken egg culture methods, nor was viral RNA detected by RT-PCR in 200 samples tested. However, 0.43% of cats tested antibody positive for influenza A by commercial ELISA. These results suggest feral cats in this region are at minimal risk for influenza A virus infection.


**Bacteriologic and nutritional evaluation of a commercial raw meat diet as part of a raw meat safety program.**

This study evaluated selected bacteriologic and nutritional components of a commercially prepared ground raw horsemeat diet as part of a raw meat safety program. Six lots of meat were analyzed in triplicate. Frozen meat samples were thawed for 44 hr at 5 degrees C. Meat samples were tested at three times during thawing (t = 0, 24, 44 hr) for selected bacteria. Samples were screened for Salmonella sp. using an enzyme-linked immunosorbent assay. Escherichia coli and total coliform bacteria were quantified using a ready-made culture medium system. Proximate, energy, macro and trace mineral content was determined at a reference laboratory. Salmonella sp. antigen was detected in one sample of meat at t = 0 hr. Frozen meat samples had low average maximum expected numbers of E. coli and coliforms. The average maximum number of E. coli did not change significantly at t = 24 or 44 hr, but the average maximum number of coliforms increased significantly by t = 44 hr. These bacteriologic tests were easily incorporated into a raw meat safety program. Median concentrations of moisture, dry matter, crude protein, crude fat, ash, calcium, and phosphorus conformed to the guaranteed analysis but median crude fiber exceeded the guaranteed maximum. Median magnesium, potassium, and sodium concentrations conformed to the approximate nutrient content. Median concentrations of copper exceeded, whereas iron, zinc, and manganese fell below, the approximate nutrient content. Median copper and manganese concentrations exceeded the National Research Council’s recommendation for adult domestic cats, whereas iron and zinc were below the National Research Council’s recommendations for adult cats. Zoo Biol 31:574-585, 2012. (c) 2011 Wiley Periodicals, Inc.


**Managing hyperthyroidism in cats.**


**Toxoplasma gondii and elevated suicide risk.**


**Use of fluoroscopically guided percutaneous antegrade urethral catheterization for the treatment of urethral obstruction in male cats: 9 cases (2000-2009).**

OBJECTIVE: To describe the technique and determine outcome for male cats with urethral obstruction treated with fluoroscopically guided percutaneous antegrade urethral catheterization (PAUC). DESIGN: Retrospective case series. ANIMALS: 9 client-owned neutered male cats with urethral obstruction and inability to pass a retrograde urinary catheter. PROCEDURES: Information regarding the procedure and hospitalization was obtained from medical records. Long-term follow-up was obtained via medical record review or telephone interview. RESULTS: Diagnoses included iatrogenic urethral tear (n = 6), obstructive urethral calculi (1), urethral ulceration (1), and urethral stricture (1). Seven of the 9 procedures were successful. The 2 patients in which PAUC failed had mechanical obstructions preventing guide wire access across the urethral obstruction. Procedure times ranged from 25 to 120 minutes. No complications were noted in any patients during the procedure. One patient was euthanized because of unrelated disease. Follow-up information was available for 6 of 8 surviving patients. No complications that could be directly attributed to the procedure were noted. All 6 patients had a perineal urethrostomy performed 0 days to 6 weeks following the procedure because of reobstruction of the lower urinary tract. None of these patients had documented urethral strictures and none had recurrence of clinical signs following perineal urethrostomy. CONCLUSIONS AND CLINICAL RELEVANCE: Results suggested that PAUC can be a simple, rapid, minimally invasive, and safe technique to facilitate transurethral catheterization in select cases. Patients with iatrogenic urethral tears may be good candidates. Patients with impacted urethral calculi, severe strictures or ulcerations, or a nondistended urinary bladder may be less amenable to PAUC.


**Surveillance of feral cats for influenza A virus in north central Florida.**

BACKGROUND: Transmission of highly pathogenic avian influenza and the recent pandemic H1N1 viruses to domestic cats and other felids creates concern because of the morbidity and mortality associated with human infections as well as disease in the infected animals. Experimental infections have demonstrated transmission of influenza viruses in cats. OBJECTIVES: An epidemiologic survey of feral cats was conducted to determine their exposure to influenza A virus. METHODS: Feral cat sera and oropharyngeal and rectal swabs were collected from November 2008 through July 2010 in Alachua County, FL and were tested for evidence of influenza A virus infection by virus isolation, PCR, and serological assay. RESULTS AND CONCLUSIONS: No virus was isolated from any of 927 cats examined using MDCK cell or embryonated chicken egg culture methods, nor was viral RNA detected by RT-PCR in 200 samples tested. However, 0.43% of cats tested antibody positive for influenza A by commercial ELISA. These results suggest feral cats in this region are at minimal risk for influenza A virus infection.
Ovarian activity reversibility after the use of deslorelin acetate as a short-term contraceptive in domestic queens.

The objective was to evaluate ovarian activity reversibility in domestic queens after short-term contraceptive treatment with deslorelin acetate. METHOD: Subjects were prospectively obtained from a large pathology database. Demographic, tumor location, and histologic evaluation data were documented by use of a questionnaire and used to define case, control, and exposure status. Three control groups were included: cats with sarcomas at non-vaccine sites, cats with basal cell tumors, and a combined group of cats with sarcomas at non-vaccine sites and cats with basal cell tumors. chi(2) tests, marginal homogeneity tests, and exact logistic regression were performed. RESULTS: In the broad interscapular region, the frequency of administration of long-acting corticosteroid injections (dexamethasone, methylprednisolone, and triamcinolone) was significantly higher in cases than in controls. In the broad rear limb region, case cats were significantly less likely to have received recombinant vaccines than inactivated vaccines; ORs from logistic regression analyses equaled 0.1, with 95% confidence intervals ranging from 0 to 0.4 and 0 to 0.7, depending on control group and time period of exposure used. CONCLUSIONS AND CLINICAL RELEVANCE: This case-control study, monitoring temporal and spatial exposures efficiently detected associations between administrations of various types of vaccines (recombinant vs inactivated rabies) and other injectable products (ie, long-acting corticosteroids) with sarcoma development without the need to directly measure incidence. These findings nevertheless also indicated that no vaccines were risk free. The study is informative in allowing practitioners to weigh the relative merits and risks of commonly used pharmaceutical products.

with deslorelin acetate. Ten mature queens were used. In all queens, the estrous cycle was evaluated every 72 h by vaginal cytology (VC) and behavior assessments. When queens had VC characteristic of interestrus or diestrus, one deslorelin acetate implant (4.7 mg) was placed in the subcutaneous tissue of the interscapular region (day of insertion = Day 0). Thereafter, VC was performed every 48 h and on Day 90, implants were removed. At Day 100, estrus and ovulation were induced with 100 IU eCG (im), followed by 100 IU hCG (im), 84 h later (Day 103.5). Queens were ovariohysterectomized on Day 106. Corpora lutea (CL) were counted, oviducts were flushed, and oocytes were identified, isolated and stained to assess viability. In all queens, blood samples for plasma progesterone concentrations were collected once a week, from Days -21 to 106. After deslorelin acetate application, four queens had VC and behavior typical of estrus, and one ovulated. Furthermore, ovulation occurred in three queens that did not have VC or behavior consistent with estrus. After the initial ovarian stimulation, all females had anestrous VC during the deslorelin treatment period. Implants were readily removed. Following implant removal, all females responded to treatments to induce estrus and ovulation. There were (mean +/- SEM) 13.1 +/- 5.5 CL and 8.1 +/- 5.5 oocytes per queen; the oocYTE recovery rate was 56.8 +/- 25.4% and all recovered oocytes were viable. We concluded that deslorelin acetate can be used as a reversible short-term contraceptive in domestic cats, because estrus and ovulation were successfully induced following implant removal.

Monitoring of the performance of flea control products under conditions of natural challenge is valuable in assessing continued effectiveness and determining the ongoing relevance of laboratory studies. A multi-clinic, investigator-blinded study was undertaken in client-owned dogs to investigate and compare the flea control provided by 3 consecutive monthly treatments of oral spinosad (SPN) or fipronil/(S)-methoprene topical (FSM) spot-on. The first household dog meeting enrollment criteria and with at least 10 fleas (whole-body flea count) served as the index dog in a household against which primary objectives were set. Stratification was based on pruritus scores at the enrollment visit and on single or multiple pet household. Index pets were randomized to treatment with either SPN or FSM, dispensed on day 0 for at-home administration by owners. All other household dogs and cats, maximum 4 pets per household, were dispensed the same treatment as the index dog (spinetoram was dispensed for cats in SPN households). Subsequent treatments were dispensed when index dogs were returned for whole-body flea counts and pruritus-scoring at visits on days 30 and 60, with final assessments on day 90 (+/- 5 days on each occasion). Primary endpoints were the number of flea-free index dogs in each group one month after the final treatment, the reduction in owner-reported pruritus, and the reduction from baseline mean flea counts. One hundred twenty eight index dogs were enrolled (65 in the SPN arm; 63 in the FSM arm) at 10 clinics in FL (6), NC (2), LA (1), and TX (1). On day 0, geometric mean flea counts were 57.7 (range: 10-1469) and 44.8 (10-717) for the SPN and FSM groups, respectively. On Day 90, 55 of 58 (95%) and 21 of 55 (38%) index dogs completing the study were flea-free in SPN and FSM groups, respectively; mean SPN pruritus scores declined to 0.92 (6.67 on day 0), and to 3.83 (6.33 on day 0) for FSM; geometric mean flea counts (% control) were 0.08 (99.9%) and 5.19 (88.4%), for SPN and FSM groups, respectively. Between-treatment differences were highly statistically significant (p<0.0001). In conclusion, SPN provided reliable flea control in client-owned dogs, regardless of challenge level.

Whitney, J., J. A. Beatty, P. Martin, N. K. Dhand, K. Briscoe, and V. R. Barrs (2012) Vet Microbiol Evaluation of serum galactomannan detection for diagnosis of feline upper respiratory tract aspergillosis. Measurement of serum galactomannan (GM), a polysaccharide fungal cell-wall component, is a non-invasive test for early diagnosis of invasive aspergillosis in humans. Feline upper respiratory tract (URT) aspergillosis is an emerging infectious disease in cats. Diagnosis requires biopsy for procurement of tissue specimens for cytological or histological detection of fungal hyphae and for fungal culture. The aim of this study was to evaluate serum GM measurement as a non-invasive diagnostic test for URT aspergillosis in cats. A one-stage, immunoenzymatic sandwich ELISA was used to detect serum GM in 4 groups of cats; Group 1 (URT aspergillosis) - confirmed URT aspergillosis (n=13, sinonasal aspergillosis (SNA) n=6 and sino-orbital aspergillosis (SOA) n=7), Group 2 (URT other) - other URT diseases (n=15), Group 3 (beta-lactam) - cats treated with beta-lactam antibiotics for non-respiratory tract disease (n=14), Group 4a - healthy young cats (<1-1y of age, n=28), Group 4b - healthy adult cats (>1y of age, n=16). One cat with SNA and two cats with SOA caused by an Aspergillus fumigatus-mimetic species, tested positive for serum GM. For a cut-off optical density index of 1.5, the overall sensitivity and specificity of the assay was 23% and 78% respectively. False positive results occurred in 29% of cats in Group 3 and 32% of cats in Group 4a. Specificity increased to 90% when Groups 3 and 4a were excluded from the analysis. Overall, serum GM measurement has a poor sensitivity but is a moderately specific, non-invasive screening test to rule out infection in patients with suspected feline upper respiratory tract aspergillosis.

Demographics and economic burden of un-owned cats and dogs in the UK: results of a 2010 census.

ABSTRACT: BACKGROUND: The population of dogs and cats passing through rescue shelters may be subject to compromised welfare and increased susceptibility to disease. Little information exists to describe this population, its dynamics and associated management practices. The aim of this study was to carry out a census of un-owned cats and dogs in the UK in 2010, and to document the origins, destinations, husbandry and costs associated with the care of these animals.

RESULTS: A sampling frame was constructed by searching the databases of publicly registered charities for England, Scotland and Wales, registers of breed rescues, and by internet searches of animal welfare websites. Overall, 2,352 contacts for 1,380 organisations were identified. All were sent a postal questionnaire asking for data on the number of dogs and cats housed, their origins and eventual outcomes, and details of husbandry between January 1st and December 31st 2010. For those which were registered charities (595), financial records were also obtained. A response rate of 38.8% was obtained. Overall, in 2010, 89,571 dogs and 156,826 cats entered the care of the participating organisations. Approximately half of these animals were relinquished by their owners. Other origins included being found as strays or confiscated for welfare purposes. Seventy-five per cent of dogs and 77.1% of cats were rehomed.

The next most common outcome was euthanasia, accounting for 10.4% of dogs and 13.2% cats. For dogs and cats, 44.3% and 62% of participants respectively reported having a waiting list, which frequently exceeded the actual capacity of the facility. Over 19,000 people were involved in the care of these animals, on a paid or voluntary basis. Financial records were available for 519/595 (87.2%) of the registered charities, and their total expenditure in 2010 was GBP340 million. CONCLUSIONS: This study showed that a large number of animals become un-owned each year, which could have considerable implications for their welfare. Despite the resources expended, demand still exceeds capacity for many organisations, and a substantial number of both cats and dogs are euthanased, suggesting that further understanding of how and why these animals become un-owned is essential in order to target interventions.


The association of renin and angiotensin II, which are potent components of the renin-angiotensin system, with the severity of chronic renal disease was investigated immunohistochemically in dogs and cats. Immunoreactivities of renin and angiotensin II were evaluated quantitatively, and their correlations with the degrees of glomerulosclerosis, glomerular hypertrophy, interstitial cell infiltration, and interstitial fibrosis were statistically analyzed. Immunoreactivities for renin were detected in afferent arteries in both dogs and cats. The score of renin-positive signals showed no correlation with plasma creatinine concentration or any of the histopathological parameters, except for the diameter of glomeruli in dogs. Immunoreactivities for angiotensin II were detected in tubules (primarily proximal tubules) and interstitial mononuclear cells in both dogs and cats. The score of tubular angiotensin II correlated with glomerulosclerosis and cell infiltration in cats but not in dogs. The score of interstitial angiotensin II correlated with plasma creatinine concentration, glomerulosclerosis, cell infiltration, and fibrosis in dogs and with glomerulosclerosis and cell infiltration in cats. In conclusion, the results of the study suggest that intrarenal renin-angiotensin system is correlated with the severity of kidney disease, with the underlying mechanism differing between dogs and cats.


Xenotransfusion (the transfusion of blood from another species) of canine blood to cats has, been historically performed commonly and is still performed nowadays in some countries. Considering the current lack of commercial availability of haemoglobin-based oxygen carrier solution (Oxyglobin), there may be rare occasions when treating an anaemic cat when compatible feline blood cannot be obtained, and where a transfusion with canine blood may need to be considered as a life-saving procedure. This article reviews the published evidence about feline xenotransfusion with canine blood and the results that can be expected with this procedure. Published evidence in a limited number of cases (62 cats) indicates that cats do not appear to have naturally-occurring antibodies against canine red blood cell antigens: compatibility tests prior to the first transfusion did not demonstrate any evidence of agglutination or haemolysis of canine red cells in feline serum or plasma. No severe acute adverse reactions have been reported in cats receiving a single transfusion with canine whole blood. Anaemic cats receiving canine blood are reported to improve clinically within hours. However, antibodies against canine red blood cells are produced rapidly and can be detected within 4-7 days of the transfusion, leading to the destruction of the transfused canine red cells in a delayed haemolytic reaction. The average lifespan of the transfused canine red cells is less than 4 days. Any repeated transfusion with canine blood later than 4-6 days after the first transfusion causes anaphylaxis, which is frequently fatal.

Raw food policy draws debate: AVMA advises against feeding dogs, cats raw animal proteins.


Toxoplasmosis: BVA says risk from cats should not be overplayed.


Use of a spiral rectal diaphragm technique to control anal sphincter incontinence in a cat.

CASE DESCRIPTION: A 10-year-old castrated male domestic shorthair cat was examined for a mass involving the right anal sac region. CLINICAL FINDINGS: The mass was diagnosed as a fibrosarcoma, and resulted in progressive tenesmus, requiring repeated resection. TREATMENT AND OUTCOME: Surgical removal of the fibrosarcoma was performed on 4 occasions, including complete resection of the anal sphincter muscles and portions of the rectum. A perineal urethrostomy was required during the third surgical procedure secondary to tumor invasion of the preputial tissues. To reduce involuntary loss of feces, the remaining rectal wall was rotated approximately 225 degrees prior to surgical closure during the second, third, and fourth surgical procedures. This procedure created a natural spiral diaphragm within the rectal lumen. The elastic spiral barrier reduced inadvertent fecal loss and facilitated fecal distention of the terminal portion of the colon, allowing the patient to anticipate the impending passage of feces and to use the litter tray on a daily basis. CLINICAL RELEVANCE: With complete loss of the terminal portion of the rectum and anal sphincter muscles, spiraling the rectum created a deformable threshold barrier to reduce excessive loss of stool secondary to fecal incontinence. On the basis of the positive outcome in this patient, this novel technique may be a useful option to consider for the treatment of cats with loss of anal sphincter function.


Rabies surveillance in the United States during 2011.

During 2011, 49 states and Puerto Rico reported 6,031 rabid animals and 6 human rabies cases to the CDC, representing a 1.9% decrease from the 6,153 rabid animals and 2 human cases reported in 2010. Approximately 92% of reported rabid animals were wildlife. Relative contributions by the major animal groups were as follows: 1,981 raccoons (32.8%), 1,627 skunks (27.0%), 1,380 bats (22.9%), 427 foxes (7.1%), 303 cats (5.0%), 65 cattle (1.1%), and 70 dogs (1.2%). Compared with 2010, there was a substantial increase in the number of rabid skunks reported. Six cases of rabies involving humans were reported from California, Massachusetts, New Jersey, New York, and South Carolina. Three cases reported from Massachusetts, New Jersey, and New York were determined to be a result of canine rabies virus variants acquired outside the United States.


Mycobacterium malmoense as an extrapulmonary pathogen of cats.


Flow cytometric determination of allergen-specific T lymphocyte proliferation from whole blood in experimentally asthmatic cats.

The ability to quantify feline lymphocyte proliferation, especially to specific antigen or allergen, would be valuable in experimental models and naturally developing disease where activated lymphocytes drive immune responses. Traditional proliferation assays may pose radioactivity hazards, lack the ability to distinguish viable from non-viable cells, and cannot discriminate individual populations of proliferating lymphocytes (e.g., the CD4+ T cell class). We hypothesized that in an experimental model of feline allergic asthma a four-color flow cytometric assay capable of simultaneously detecting division, viability and cell surface markers (pan T cell marker CD5 or CD4) would allow characterization of lymphocytes stimulated ex vivo using the sensitizing allergen, Bermuda grass (BGA). Peripheral blood mononuclear cells were harvested from eight experimentally asthmatic cats to validate and optimize use of a cell proliferation dye or bromodeoxyuridine (BrdU) with BGA-specific stimulation in a lymphocyte proliferation flow cytometric assay. Only the latter reagent was suitable in the cat. After a 3 day incubation, antibodies with different fluorochromes were used to identify BrdU, viable cells, CD5 and CD4 for subsequent flow cytometric analysis. In asthmatic cats, the group mean +/- SEM of proliferating CD5+ lymphocytes was 2.3 +/- 0.5%. The group mean +/- SEM of proliferating CD4+ lymphocytes was 1.2 +/- 0.3%. Flow cytometry is a sensitive method for detecting simultaneous proliferation and viability of very minor populations of allergen-specific lymphocytes in experimentally asthmatic cats.


The study comprised 180 anaemic cats. Descriptive and survival data were obtained. Cats were classified by aetiology
This study was conducted to describe and validate a dorsal ultrasound-guided dorsal approach for femoral nerve blockade in cats: An imaging study.

This study was conducted to describe and validate a dorsal ultrasound-guided approach to block the femoral nerve (FN) of anaemia development and degenerative, anomalous, metabolic, miscellaneous, neoplastic, infectious, inflammatory, immune-mediated, toxic, traumatic or vascular disease (DAMNITV) classification and anaemia severity. Sixty-four (35.6%) cats had mild [packed cell volume (PCV)/haematocrit (HCT) 20-24.9%], 58 (32.2%) moderate (14-19.9%), 23 (12.8%) severe (11-13.9%) and 35 (19.4%) very severe (<10.9%) anaemia. By aetiology of anaemia development, bone marrow (BM) abnormalities were more common (95, 52.8%) than haemorrhage (37, 20.6%) or haemolysis (19, 10.6%). By DAMNITV classification, infectious diseases were more common (39, 21.7%) than neoplasia (36, 20%), metabolic (21, 11.7%), trauma (15, 8.3%), miscellaneous (14, 7.8%), inflammatory (11, 6.1%), immune-mediated (11, 6.1%), anomalous (8, 4.4%), toxic (2, 1.1%) or vascular disease (1, 0.6%). BM abnormalities were significantly associated with more severe anaemia (P = 0.003). Most cats (112, 62.2%) survived to discharge whereas 55 (30.6%) were euthanased and 13 (7.2%) died. Survival to discharge was not associated with anaemia severity but was associated significantly with aetiology of anaemia development (P = 0.046), as cats with haemolysis were more likely to survive to discharge than cats with BM abnormalities. Survival to discharge was also associated significantly with DAMNITV classification (P = 0.010) with cats with neoplasia being less likely, and cats with immune-mediated disease more likely, to survive to discharge. Cox regression analysis found that survival was not associated with anaemia severity, but was associated with DAMNITV classification (P = 0.011) and age (P = 0.082), with cats with immune-mediated disease and younger cats more likely to survive.


Persistent right aortic arch (PRAA) in cats is an uncommon vascular anomaly with clinical signs referable to oesophageal obstruction. To our knowledge no reports of axial skeletal malformations concomitant to PRAA have been reported in cats. The aim of this case series is to depict a new clinical feature in cats affected by PRAA. In the study six cats with a diagnosis of vascular ring anomaly were enrolled. A complete physical examination, a neurological examination and a total body radiograph were performed on each animal. Four of the six cats showed contemporary PRAA and skeletal malformations. Additionally, for the first time, a genetic test was performed on one subject to detect DNA alterations in the homologous DiGeorge region of cat. The percentage of skeletal malformations reported in the normal population was compared with animals with PRAA and showed a higher frequency. Genetic testing failed to demonstrate a correlation between PRAA and DiGeorge genomic deletion. A review of veterinary and human diseases that presented both conditions was assessed. The few animals enrolled do not allow definitive conclusions. Further studies are required to corroborate the correlation between PRAA and axial skeletal malformations in cats.


Chronic kidney disease (CKD) is a common cause of illness and death in cats. The hallmark of CKD in cats is chronic tubulointerstitial nephritis, and inflammation contributes to the progression of renal fibrosis. However, at present, it is difficult to assess directly the degree of intra-renal inflammation without renal biopsy. Measurement of inflammatory cytokine levels in urine may provide a non-invasive means of assessing intra-renal inflammation. Urine cytokine levels (urine cytokine/urine creatinine ratio) were measured in 18 healthy cats and 26 cats with CKD. When urine cytokine levels in healthy and CKD cats were compared, we found significantly higher levels of IL-8 and transforming growth factor-beta 1 (TGF-beta 1) in urine of CKD cats, along with significantly lower vascular endothelial growth factor (VEGF) levels. A significant positive correlation between serum creatinine and TGF-beta 1 levels was found in CKD cats. Urinary cytokine measurement may, potentially, be a useful means of assessing intra-renal inflammation, fibrosis and vascular health in cats with CKD.


We report two feline cases of patent ductus arteriosus (PDA) with pulmonary hypertension (PH). The subjects were both intact domestic shorthair cats, a 4-month-old, 2.5 kg male (case 1) and an 8-month-old, 2.12 kg female (case 2). At the first presentation, left-sided congestive heart failure was diagnosed in case 1 and severe aortic stenosis (AS) in case 2. Following surgical ligation of the ductus arteriosus (DA), furosemide therapy was no longer required in case 1, and the severe AS improved to mild status in case 2 perhaps because of reduced volume overload. In case 2, severe hypoxemia was revealed after surgery; however, this normalized within 96 days after surgery.


This study was conducted to describe and validate a dorsal ultrasound-guided approach to block the femoral nerve (FN)
in cats by means of anatomical and computed tomography (CT) studies. The anatomical study was carried out in four fresh feline cadavers to determine the anatomical landmarks to approach this nerve. Then, an ultrasonographic study of the FN was performed in another eight cadavers using a 13-MHz linear transducer. The accuracy of the neurolocation by ultrasonography (US) was determined in four cadavers by the injection of 1 ml blue ink around the FN. The staining of the nerve was evaluated in anatomical studies. The feasibility of this technique was also evaluated by CT after injecting 1 ml of an iodinated contrast media (150 mg/ml) around the FN in the other four cadavers. The landmarks to approach the FN were the cranial border of the iliac crest and the dorsal processes of L6 and L7. The FN was visualized as a round hypechogenic structure surrounded by a hypeechochogenic rim located within the iliopsoas muscle on transverse scans. The anatomical and CT studies confirmed the accuracy of the US location of the FN. The dorsal ultrasound-guided approach may allow feasible and accurate access to the FN in cats and it could be useful in producing successful blockade. 

Freeman, L. M., J. E. Rush, K. M. Meurs, B. J. Bulmer, and S. M. Cunningham (2012) J Feline Med Surg Body size and metabolic differences in Maine Coon cats with and without hypertrophic cardiomyopathy* An interplay between growth, glucose regulation and hypertrophic cardiomyopathy (HCM) may exist, but has not been studied in detail. The purpose of this study was to characterize morphometric features, insulin-like growth factor-1 (IGF-1) and glucose metabolism in Maine Coon cats with HCM. Body weight, body condition score (BCS), head length and width, and abdominal circumference were measured in Maine Coon cats >2 years of age. Echocardiography and thoracic radiography (for measurement of humerus length, and fourth and twelfth vertebrae length) were also performed. Blood was collected for biochemistry profile, DNA testing, insulin and IGF-1. Sixteen of 63 cats had HCM [myosin binding protein C (MYBPC)(+), n = 3 and MYBPC(-), n = 13] and 47/63 were echocardiographically normal (MYBPC(+), n = 17 and MYBPC(-), n = 30). There were no significant differences in any measured parameter between MYBPC(+) and MYBPC(-) cats. Cats with HCM were significantly older (P < 0.001), heavier (P = 0.006), more obese (P = 0.008), and had longer humeri (P = 0.02) compared with the HCM(-) group. Cats with HCM also had higher serum glucose (P = 0.01), homeostasis model assessment (HOMA) and IGF-1 (P = 0.01) concentrations were from smaller litters (P = 0.04), and were larger at 6 months (P = 0.02) and at 1 year of age (P = 0.03). Multivariate analysis revealed that age (P < 0.001), BCS (P = 0.03) and HOMA (P = 0.047) remained significantly associated with HCM. These results support the hypothesis that early growth and nutrition, larger body size and obesity may be environmental modifiers of genetic predisposition to HCM. Further studies are warranted to evaluate the effects of early nutrition on the phenotypic expression of HCM. 

Kaelin, C. B., X. Xu, L. Z. Hong, V. A. David, K. A. McGowan, A. Schmidt-Kuntzel, M. E. Roelke, J. Pino, J. Pontius, G. M. Cooper, H. Manuel, W. F. Swanson, L. Marker, C. K. Harper, A. van Dyk, B. Yue, J. C. Mullikin, W. C. Warren, E. Eizirik, L. Kos, S. J. O’Brien, G. S. Barsh, and M. Menotti-Raymond (2012) Science 337:1536-1541. Specifying and sustaining pigmentation patterns in domestic and wild cats. Color markings among felid species display both a remarkable diversity and a common underlying periodicity. A similar range of patterns in domestic cats suggests a conserved mechanism whose appearance can be altered by selection. We identified the gene responsible for tabby pattern variation in domestic cats as Transmembrane aminopeptidase Q (Taqpep), which encodes a membrane-bound metalloprotease. Analyzing 31 other felid species, we identified Taqpep as the cause of the rare king cheetah phenotype, in which spots coalesce into blotches and stripes. Histologic, genomic expression, and transgenic mouse studies indicate that paracrine expression of Endothelin3 (Edn3) coordinates localized color differences. We propose a two-stage model in which Taqpep helps to establish a periodic pre-pattern during skin development that is later implemented by differential expression of Edn3. 


Sato, H., K. Amagase, S. Ebara, Y. Akiba, and K. Takeuchi (2012) J Pharmacol Exp Ther Cyclooxygenase (COX)-1 and COX-2 both play an important role in the protection of the duodenal mucosa in cats. Though NSAIDs often cause ulcers in the duodenum in humans, the role of cyclooxygenase (COX) isoforms in the pathogenesis of duodenal ulcers has not been fully elucidated. We examined in cats the (1) ulcerogenic effects of selective COX-1 (SC-560, ketorolac) and COX-2 (celecoxib, meloxicam) inhibitors on the gastrointestinal mucosa, (2) effect of feeding and cimetidine on the expression of COX isoforms and PGE(2) level in the duodenum, and (3) localization of COX isoforms in the duodenum. COX inhibitors were administered after the morning meal in cats once
daily for 3 days. Gastrointestinal lesions were examined on day 4. Localization and expression of COX isoforms (by immunohistochemistry, western blot) and PGE(2) level (by EIA) were examined. Results were as follows. (1) Selective COX-1 or COX-2 inhibitors alone produced marked ulcers in the duodenum but did not cause obvious lesions in the small intestine. Co-administration of SC-560 and celecoxib produced marked lesions in the small intestine. (2) Feeding increased both the expression of COX isoforms and PGE(2) level in the duodenum, and the effects were markedly inhibited by pretreatment with cimetidine. (3) COX-1 was localized in goblet and Brunner’s gland cells, Meissner’s and Auerbach’s plexus, smooth muscle cells, and arterioles; and COX-2 was observed in capillaries, venules and basal granulated cells. The expression of COX isoforms in the duodenum is up-regulated by feeding, and inhibition of either COX-1 or COX-2 causes ulcers in the duodenum, suggesting that both isoforms play an important role in the protection of the duodenal mucosa.


Our goal was to determine whether it is more cost-effective to control feral cat abundance with trap-neuter-release programs or trap and euthanize programs. Using STELLA 7, systems modeling software, we modeled changes over 30 years in abundance of cats in a feral colony in response to each management method and the costs and benefits associated with each method. We included costs associated with providing food, veterinary care, and microchips to the colony cats and the cost of euthanasia, wages, and trapping equipment in the model. Due to a lack of data on predation rates and disease transmission by feral cats the only benefits incorporated into the analyses were reduced predation on Wedge-tailed Shearwaters (Puffinus pacificus). When no additional domestic cats were abandoned by owners and the trap and euthanize program removed 30,000 cats in the first year, the colony was extirpated in at least 75% of model simulations within the second year. It took 30 years for trap-neuter-release to extirpate the colony. When the cat population was supplemented with 10% of the initial population size per year, the colony returned to carrying capacity within 6 years and the trap and euthanize program had to be repeated, whereas trap-neuter-release never reduced the number of cats to near zero within the 30-year time frame of the model. The abandonment of domestic cats reduced the cost effectiveness of both trap-neuter-release and trap and euthanize. Trap-neuter-release was approximately twice as expensive to implement as a trap and euthanize program. Results of sensitivity analyses suggested trap-neuter-release programs that employ volunteers are still less cost-effective than trap and euthanize programs that employ paid professionals and that trap-neuter-release was only effective when the total number of colony cats in an area was below 1000. Reducing the rate of abandonment of domestic cats appears to be a more effective solution for reducing the abundance of feral cats.

Acute kidney injury (AKI) has been shown to be a predictor of mortality in human medicine.


Acute azotemia as a predictor of mortality in dogs and cats.

BACKGROUND: Acute kidney injury (AKI) has been shown to be a predictor of mortality in human medicine.

Episodes Following Xylazine Administration.
Vomiting is a common problem of administration of xylazine in cats. This study was conducted to evaluate prophylactic antiemetic efficacy of vitamin B6 in sedated cats with xylazine. Eight adult cats were administered with intramuscular injection of normal saline or four increasing dosages of vitamin B6 an hour prior to administration of xylazine with one week intervals. All the cats were monitored after injection of xylazine for 30 min to record the onset of first emesis, frequency of emetic episodes and the onset of recumbency. Frequency of emetic episodes significantly decreased with each mentioned dosage of vitamin B6. This study showed that pretreatment of cats with vitamin B6 may reduce episodes of xylazine induced emesis without compromising its sedative effect.


The minute anatomy of the temporomandibular joint (TMJ) is of great clinical relevance in cats owing to a high number of lesions involving this articulation. However, the precise anatomy is poorly documented in textbooks and scientific articles. The aim of this study was to describe, in detail, the TMJ anatomy and its relationship with other adjacent anatomical structures in the cat. Different anatomical preparations, including vascular and articular injection, microdissection, cryosection and plastination, were performed in 12 cadaveric cats. All TMJ anatomical structures were identified and described in detail. A thorough understanding of the TMJ anatomy is essential to understand the clinical signs associated with TMJ disorders, to locate lesions precisely and to accurately interpret the results in all diagnostic imaging techniques.


A 12-year-old female neutered ragdoll crossbred cat was presented for investigation of generalised weakness and regurgitation. The cat was being treated with transdermal methimazole for hyper-thyroidism, which had been diagnosed 10 weeks previously. An acetylcholine receptor antibody titre was consistent with acquired myasthenia gravis. Withdrawal of methimazole and treatment with pyridostigmine was followed by resolution of clinical signs and reduction of the acetylcholine -receptor antibody titre. Medical control of hyperthyroidism was subsequently achieved with carbimazole, administered in conjunction with pyridostigmine, and no recurrence of clinical signs was observed. Myasthenia gravis is an uncommon but clinically significant adverse effect of methimazole therapy in cats, and may be caused by immunomodulatory properties of this drug. An adverse drug reaction should be considered in cats receiving methimazole that develop myasthenia gravis, and potentially also other immune-mediated disorders.


[Prevalence of haemotropic Mycoplasma spp., Bartonella spp. and Anaplasma phagocytophilum in cats in Berlin/Brandenburg (Northeast Germany)].

Aim of this study was to evaluate the occurrence of Mycoplasma (M.) haemofelis, Candidatus Mycoplasma (C. M.) turicensis, C. M. haemominutum, Bartonella spp. (B. henselae, B. clarridgeiae and B. quintana) and Anaplasma (A.) phagocytophilum in cats in Northeast Germany in relation to their living conditions (indoor/outdoor/ stray cat), and tick/flea exposure. 265 cats were included in the study (150 indoor, 99 outdoor access, 16 stray cats). A questionnaire provided the following data: derivation, housing environment, and previous flea/tick exposure. Serum antibody titers against A. phagocytophilum, B. henselae, and B. quintana were determined by an immunofluorescence test (IFT). PCR tests (EDTA blood) were used to test for A. phagocytophilum, M. haemofelis, C. M. turicensis, C. M. haemominutum, B. henselae and B. clarridgeiae. In 19 of 265 cats (7.2%) DNA of one or more Mycoplasma spp. was detected: C M. haemominutum (5.3%), M. haemofelis (1.5%) and C M. turicensis (1.1%); three of the cats were tested positive for the feline immunodeficiency virus. All cats were B. henselae and B. clarridgeiae PCR-negative in peripheral blood. However, 91 of 245 cats (37.1%) had antibody titers > 1:200 for B. henselae (Houston I, Marseille type) and 46 (18.8%) for B. quintana. Antibody titers > 1:64 against A. phagocytophilum were detected in 24 cats (9.1%); one cat (0.4%) was PCR-positive. Since infections with haemotropic Mycoplasma spp. and also with arthropodborne organisms (Bartonella spp., A. phagocytophilum) occur in cats from the area Berlin/Brandenburg (Germany) an appropriate arthropod-control is recommended. Further studies are needed to evaluate the relevance of these infectious agents for the individual cat.


Acute azotemia as a predictor of mortality in dogs and cats.

BACKGROUND: Acute kidney injury (AKI) has been shown to be a predictor of mortality in human medicine.

Efficacy of intranasal administration of a modified live feline herpesvirus 1 and feline calicivirus vaccine against disease caused by Bordetella bronchiseptica after experimental challenge.

BACKGROUND: Studies suggest that intranasal vaccination can stimulate nonspecific immunity against agents not contained within the vaccine, but this effect is not reported for cats. HYPOTHESIS: A modified live feline herpesvirus-1 (FHV-1) and feline calicivirus (FCV) intranasal vaccine will reduce clinical signs of disease caused by experimental infection with Bordetella bronchiseptica. ANIMALS: Twenty specific pathogen-free 12-week-old kittens. METHODS: Experimental study. Cats were randomized into 2 groups of 10 cats each. The vaccinated group was administered a single intranasal dose of a commercially available vaccine containing modified live strains of FHV-1 and FCV, and the control group remained unvaccinated. All 20 cats were administered B. bronchiseptica by nasal inoculation 7 days later and were observed daily for clinical signs of illness for 20 days. RESULTS: In the first 10 days after B. bronchiseptica challenge, vaccinated cats were less likely to be clinically ill than control cats with a median clinical score of 0/180 (range 0-5) versus 2/180 (range 0-8) (P =.01). Nine of 10 control cats and 2 of 10 vaccinated cats were recorded as sneezing during days 1-10 after challenge (P =.006). CONCLUSIONS AND CLINICAL IMPORTANCE: Intranasal vaccination against FHV-1 and FCV decreased signs of illness due to an infectious agent not contained in the vaccine. This nonspecific immunity could be beneficial for protection against organisms for which vaccines are not available and as protection before development of vaccine-induced humoral immunity.


Corynebacterium spp. in dogs and cats with otitis externa and/or media: a retrospective study.

The role of Corynebacterium spp. in the pathogenesis of canine and feline otitis externa/media and their appropriate antimicrobial therapy are unclear. The objectives of this study were to (1) better establish the pathogenicity of Corynebacterium spp. in otitis utilizing reported criteria and by assessing clinical response to antibiotic therapy and (2) to determine the antimicrobial susceptibility patterns of Corynebacterium spp. associated with otitis. The study was retrospective, targeting cultures positive for Corynebacterium spp. Corynebacterium spp. were part of mixed microbial
populations in 79/81 cultures. Corynebacterium spp. pathogenicity was highly questionable because of their almost invariable presence with other microbes and the observation that Corynebacterium spp. usually disappear from the ear with resolution of other infections, even when the Corynebacterium spp. are resistant to the prescribed antibiotic(s). However, 2/81 cultures came from two canine ears wherein Corynebacterium spp. may have been pathogenic. Antimicrobial sensitivities for Corynebacterium spp. were available for 54 isolates. Most isolates were susceptible to chloramphenicol (53/54), amikacin (50/54), tetracycline (50/54), gentamicin (46/54), and enrofloxacin (32/54). Among those antibiotics available in otic products, gentamicin and enrofloxacin would be rational choices for the empirical, topical therapy of Corynebacterium spp.


Left atrial function in cats with left-sided cardiac disease and pleural effusion or pulmonary edema.

BACKGROUND: Congestive heart failure (CHF) in cats with left-sided heart disease is sometimes manifest as pleural effusion, in other cases as pulmonary edema. HYPOTHESIS: Those cats with pleural effusion have more severe left atrial (LA) dysfunction than cats with pulmonary edema. ANIMALS: 30 healthy cats, 22 cats with pleural effusion, and 12 cats with pulmonary edema. All cats were client owned. METHODS: Retrospective study. Measurements of LA size and function were made using commercial software on archived echocardiograms. Cases were identified through searches of medical records and of archived echocardiograms for cats with these conditions. RESULTS: There was no difference (P =.3) in LA size between cats with pleural effusion and cats with pulmonary edema. Cats with pleural effusion had poorer (P =.04) LA active emptying and increased (P =.006) right ventricular (RV) diameter when compared with cats with pulmonary edema and healthy cats. Cats that exhibited LA active emptying of <13.6% (diameter) or <19.4% (area), or RV diameter of >3.6 mm were significantly (P <.001) more likely to manifest pleural effusion. CONCLUSIONS AND CLINICAL IMPORTANCE: Poorer LA function and increased RV dimensions are associated with pleural effusion in cats with left-sided heart disease.


Use of ultrasound to locate retained testes in dogs and cats.

Ultrasound was used to locate undescended testes in 30 dogs and 4 cats where the final testicular location was determined surgically. Time between ultrasound and surgery ranged between 0 and 17 days. Forty-three testes (63.2%) were retained and 42/43 (97.7%) were detected ultrasonographically. Retained testes were located in the abdomen (n = 28) and inguinal region (n = 14). One retained testis could not be identified with use of ultrasound. Locations of retained testes ranged from the caudal pole of the kidney to the inguinal region. Descriptions of testicular echogenicity and size were not available for all testes. A 100% positive predictive value was found for all testes with use of ultrasound in both abdominal and inguinal regions. The sensitivity of ultrasound was 96.6% for abdominal and 100% for inguinal testes. Ultrasound is a sensitive test for location of retained testes, and supports the opinion that preoperative ultrasound can help facilitate location of retained testes prior to surgical exploration or laparoscopy. (c) 2012 Veterinary Radiology & Ultrasound.


CT and MRI evaluation of skull bones and soft tissues in six cats with presumed acromegaly versus 12 unaffected cats.

Feline acromegaly is predominantly caused by an adenoma of the pituitary gland, resulting in excessive growth hormone and insulin-like growth factor (IGF-1) secretion. In advanced cases, cats will display prominent facial features and upper airway congestion secondary to bony and soft tissue proliferation. The purpose of this study was to describe CT and MRI characteristics of soft tissues and skull bones in six cats with presumed acromegaly and to compare findings with those observed in 12 unaffected cats. In the five acromegalic cats with CT or MRI evidence of a pituitary tumor, frontal bone thickness was greater than age-matched controls with and without a history of upper airway disease. These five cats also had evidence of soft tissue accumulation in the nasal cavity, sinuses, and pharynx. One cat with insulin-resistant diabetes mellitus, elevated IGF-1, and a normal pituitary size did not have evidence of frontal bone thickening or upper airway congestion.


Characterization of the blood-oxygen level-dependent (BOLD) response in cat auditory cortex using high-field fMRI.

Much of what is known about the cortical organization for audition in humans draws from studies of auditory cortex in
the cat. However, these data build largely on electrophysiological recordings that are both highly invasive and provide less evidence concerning macroscopic patterns of brain activation. Optical imaging, using intrinsic signals or dyes, allows visualization of surface-based activity but is also quite invasive. Functional magnetic resonance imaging (fMRI) overcomes these limitations by providing a large-scale perspective of distributed activity across the brain in a non-invasive manner. The present study used fMRI to characterize stimulus-evoked activity in auditory cortex of an anesthetized (ketamine/isoflurane) cat, focusing specifically on the blood-oxygen-level-dependent (BOLD) signal time course. Functional images were acquired for adult cats in a 7T MRI scanner. To determine the BOLD signal time course, we presented 1s broadband noise bursts between widely spaced scan acquisitions at randomized delays (1-12s in 1s increments) prior to each scan. Baseline trials in which no stimulus was presented were also acquired. Our results indicate that the BOLD response peaks at about 3.5s in primary auditory cortex (AI) and at about 4.5s in non-primary areas (AII, PAF) of cat auditory cortex. The observed peak latency is within the range reported for humans and non-human primates (3-4s). The time course of hemodynamic activity in cat auditory cortex also occurs on a comparatively shorter scale than in cat visual cortex. The results of this study will provide a foundation for future auditory fMRI studies in the cat to incorporate these hemodynamic response properties into appropriate analyses of cat auditory cortex.


Comparative efficacy of a spot-on formulation containing emodepside and praziquantel (Profender((R)), Bayer) and praziquantel and pyrantel oral tablets (Drontal((R)) for Cats) against experimental Ancylostoma ceylanicum infections in cats.

Ancylostoma ceylanicum is a common zoonotic hookworm of dogs and cats throughout Asia and has also been reported to occur within the Australasian region. The aim of this study to was to determine the efficacy of a spot-on formulation containing emodepside and praziquantel (Profender((R)), Bayer) and praziquantel and pyrantel oral tablets (Drontal((R)) for Cats, Bayer) against experimental A. ceylanicum infections in cats. Twenty-four kittens were each subcutaneously injected with 100 infective third-stage larvae of A. ceylanicum. Kittens were stratified by egg count and randomly allocated equally into control and two treatment groups. The first group were treated with emodepside 2.1%/praziquantel 8.6% (Profender(R), Bayer) at the recommended label dose. The second group was treated with 80mg pyrantel and 20mg praziquantel (Drontal((R)) for Cats, Bayer) at the recommended label dose. The kittens in the control group were not treated. Egg counts were performed daily until the end of the study period and compared for the treated and control groups. No eggs were detected in the treated group of kittens within 4 days of treatment and faecal samples from this group remained negative throughout the rest of the study, resulting in a treatment efficacy (egg reduction) of 100% (P<0.0001). The egg counts remained high (993+/−666epg) in the untreated control group for the rest of the study period. This study demonstrated that both combination products containing topical emodepside/praziquantel (Profender((R)), Bayer) and praziquantel/pyrantel oral tablets (Drontal((R)) for Cats, Bayer) given at the recommended dose is highly effective against infection with A. ceylanicum in cats.


Genetic characterisation of Toxoplasma gondii isolates from European beavers (Castor fiber) and European wildcats (Felis silvestris silvestris).

Six free-ranging European beavers (Castor fiber) from Berlin greater metropolitan area and twelve European wildcats (Felis silvestris silvestris) originating from the German Federal State of Saxony-Anhalt were found dead and their carcasses were submitted for necropsy. Brain and lung samples were analysed for the presence of Toxoplasma gondii DNA. Histo-pathologic analysis of one beaver revealed several cyst-like protozoal structures in parts of the brain. Tissue DNA isolated from all animal samples was analysed by a specific T. gondii-PCR. Two beavers and four wildcats tested T. gondii-positive. DNA of the parasites was further analysed by PCR-RFLP typing using nine markers (nSAG2, SAG3, BTUB, GRA6, c22-8, c29-2, L358, PK1 and Apico). Only T. gondii type II alleles were detected, except for the Apico locus, where type I alleles were observed in two isolates from beavers and in three from wild cats. The results of this study indicate that type II T. gondii (including type II variant strain) is the most common genotype infecting wildcats and beavers from Germany.