Small Animal Article Summaries – INTERNAL MEDICINE

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October 2012 Abstracts

Journal of Small Animal Practice

Calcium and phosphate homeostasis in hyperthyroid cats – associations with development of azotaemia and survival time (pages 561–571)
T. L. Williams, J. Elliott and H. M. Syme

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.

Screening of ragdoll cats for kidney disease: a retrospective evaluation (pages 572–577)

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.

Investigation into scatter radiation dose levels received by a restrainer in small animal radiography (pages 578–585)
J. Barber and J. P. McNulty

Objectives; To measure the intensity and distribution of scatter radiation received by a restrainer in veterinary radiography including the intensity of scatter radiation passing through lead protective devices at pre-defined positions. Methods; Anthropomorphic phantoms and a Labrador dog cadaver were used to simulate a restrainer and patient. Scatter dose measurements were recorded at the position of the restraining hands, thyroid, breast and gonads with and without appropriate lead protection. This was repeated for the eight most common projections as identified in an initial retrospective survey. Results; Manual restraint of an animal for a radiographic procedure will result in a scatter radiation dose to the restrainer. The level of radiation dose varies between body regions and between projections. The use of appropriate lead protection resulted in statistically significant dose reductions to all body regions with maximum scatter dose reductions between 93 and 100%. Clinical Significance; While the doses recorded were small (μGy) in terms of associated risk, they are nonetheless cumulative which can result in a more significant dose. Therefore manual restraint should be avoided and forms of immobilisation should be used such as mechanical means, sedation or general anaesthesia. However, if completely necessary both principles of distance and adequate lead protection should be employed.
Rectal lymphoma in 11 dogs – a retrospective study (pages 586–591)
Objectives; To retrospectively evaluate the clinical behaviour and immunophenotype of lymphoma of the rectum in dogs. Methods; Eleven dogs diagnosed with lymphoma of the rectum on histopathology were retrospectively reviewed. Immunohistochemistry with CD3 and CD79a antibodies was performed at diagnosis or retrospectively. Results; Treatment protocol varied with six dogs undergoing surgery and adjuvant chemotherapy, two received chemotherapy after only incisional biopsy, one had surgical resection only, one was treated symptomatically and one dog was not treated. Chemotherapy treatment consisted of either a -low-dose COP (cyclophosphamide - prednisolone - vincristine) protocol (four dogs) or a six-week CHOP-based (cyclophosphamide - vincristine - -prednisolone - anthracycline) protocol (four dogs). Dogs that received chemotherapy lived significantly longer than dogs that did not receive chemotherapy (2352 versus 70 days). Median survival time was not reached, and there was an overall mean survival time of 1697 days. Immunohistochemistry was performed in 10 of 11 samples, and was consistent with B-cell -lymphoma in all cases. Clinical Significance; Canine lymphoma of the rectum is associated with a favourable prognosis. Immunohistochemical evaluation of these lesions was consistent with B-cell lymphoma in all cases in which it was examined.

Pedicle ligation in ovariohysterectomy: an in vitro study of ligation techniques (pages 592–598)
B. J. Leitch, J. P. Bray, N. J. G. Kim, B. Cann and N. Lopez-Vilalobos
Objectives; Ligature failure is an important complication following ovariohysterectomy in the bitch. The aim of this study was to assess the differences between five individual ligation techniques in their ability to attenuate a bulky vascular model. Methods; A vascular model was constructed that enabled the occlusive ability of five different ligation techniques to be measured including the square knot, surgeon's knot, slip knot, modified transfixing ligature and the single-double other side knot. Each was constructed using both USP-0 polyglyconate and polyglactin 910 suture material. The extent of attenuation of the vascular model that was achieved by each technique was assessed using pressure transducers. Results; In this model, the slip knot, modified transfixing ligature and the single-double other side knot outperformed the square and surgeon's knots. Clinical Significance; The results of this study suggest that utilising a knot design that has more inherent resistance to slippage of the first throw (e.g. the modified transfixing ligature, slip or single-double other side knots) may be preferable over square and surgeon's knots when tying a ligature on a bulky vascular pedicle like the ovarian stump in a large bitch.

The susceptibility of Pseudomonas spp. isolated from dogs with otitis to topical ear cleaners (pages 599–603)
S. I. Steen and S. Paterson
Objective; To investigate the in vitro efficacy of commercially available topical otic preparations (“ear cleaners”) against Pseudomonas spp. isolated from canine ear infections. Methods; Between January and May 2011, 50 isolates that were morphologically and phenotypically confirmed as Pseudomonas spp. were isolated from 48 dogs that had been identified with clinical signs of otitis externa and media at a referral dermatology clinic in the north west of the UK. The in vitro efficacy of eight different topical preparations against these isolates was investigated using an in-agar inhibition test. Results; Of the eight preparations tested, three showed consistently good in vitro activity against Pseudomonas spp., while a further three were consistently ineffective. For the remaining two -preparations, in vitro efficacy was variable and inconsistent. Clinical Significance; Topical treatment with ear cleaners is considered to be a valuable adjunct in the treatment of canine otitis that involves multi-antimicrobial-resistant organisms such as Pseudomonas spp. Where treatment with antimicrobials is not an option, the use of these preparations, as a sole form of therapy, may be effective in some cases. As a comparison with other similar studies looking at the activity of ear cleaners against bacterial isolates from otitis, this study uses isolates from 50 ears from 48 dogs providing a significant number of isolates for analysis.

Suspected primary glioblastoma multiforme in the canine spinal cord (pages 604–607)
A. Röthlisberger, A. Lehmbecker, A. Beineke, R. Mischke, P. Dziallas, A. Meyer-Lindenberg and A. Tipold
An eight-year-old mixed-breed dog was presented with progressive paraparesis. Neurological examination revealed a painful diffuse lesion between spinal cord segments T3 and L3. Magnetic resonance images displayed multi-focal contrast enhancing spinal cord and meningeal lesions. Cytology of these lesions revealed a malignant tumour prompting euthanasia of the dog. Histopathology confirmed the cytological diagnosis and a final diagnosis of a glioblastoma multiforme was made based on immunohistochemistry.
Centronuclear myopathy in a Border collie dog (pages 608–612)
S. Eminaga, G. B. Cherubini and G. D. Shelton
A two-year old, male entire Border collie was presented with a one-year history of exercise-induced collapsing on the pelvic limbs. Physical examination revealed generalised muscle atrophy. Neurological examination supported a generalised neuromuscular disorder. Electromyography revealed spontaneous electrical activity in almost all muscles. Unfixed and formaldehyde-fixed biopsy samples were collected from the triceps brachii, longissimus and vastus lateralis muscles. Histopathological, histochemical and ultrastructural examinations of biopsy specimens were consistent with either centronuclear or myotubular myopathy. The dog clinically improved with supportive treatment with L-carnitine, co-enzyme Q10 and vitamin B compound. To the authors’ knowledge, this is the first report of centronuclear/myotubular myopathy in a Border collie.

Cervicothoracic syringohydromyelia associated with a prosencephalic mass in a dog (pages 613–617)
D. Szabo, T. C. Saveraid and S. Rodenas
A five-year-old, female, neutered boxer, with neuroanatomical signs consistent with a C1-C5 myelopathy, was diagnosed with a prosencephalic mass and associated severe cervicothoracic syringohydromyelia. After treatment with corticosteroids and lomustine, neurological examination was normal. Imaging repeated three months later showed significant reduction in both the size of the mass and the syringohydromyelia. To the authors’ knowledge, this is the first reported case of a dog with syringohydromyelia secondary to a rostral brain mass that had clinical signs on presentation solely due to the syrinx, and the first reported case in a dog of partial resolution of syringohydromyelia after treatment solely with chemotherapy.

Journal of American Veterinary Medical Association
Todd M. Erfourth, Elizabeth A. McNiel, Michael A. Scott, Deborah V. Wilson
Objective—To evaluate changes in serial hemograms and serum biochemical profiles in tumor-bearing dogs undergoing daily anesthesia with propofol as an induction agent for radiation therapy. Design—Retrospective case series. Animals—31 dogs with cutaneous or subcutaneous malignancies over the trunk or limbs. Procedures—Radiation therapy consisted of 18 daily treatments administered Monday through Friday over a period of 24 days. Propofol was administered IV to effect for induction of anesthesia. Complete blood count and serum biochemical data were generated at the beginning, middle, and end of radiation therapy and compared to identify changes over time via either a repeated-measures ANOVA or Friedman test. Results—Leukocyte and platelet parameters did not differ significantly over time. Calculated Hct, erythrocyte count, hemoglobin concentration, and mean corpuscular hemoglobin concentration decreased overtime, whereas mean corpuscular volume increased overtime. Conclusions and Clinical Relevance—Dogs receiving propofol for induction of anesthesia and radiation therapy had a decrease in RBC count, although these changes were not determined to be of clinical importance in this patient population. The cause of these alterations was not immediately apparent. Propofol appeared to be a safe choice for induction of anesthesia in dogs during daily radiation therapy.

Philipp D. Mayhew, William T. N. Culp, Kelli N. Mayhew, Oliver D. E. Morgan
Objective—To describe a technique and evaluate the outcome of thoracoscopic thoracic duct ligation (TDL) and subphrenic pericardiectomy (SPP) for treatment of idiopathic chylothorax (IC) in dogs. Design—Retrospective case series. Animals—6 client-owned dogs. Procedures—Medical records of dogs with a diagnosis of IC that were subsequently treated by thoracoscopic TDL and SPP and that had not undergone previous surgical treatment were reviewed. Thoracoscopic TDL was performed via a 3-portal technique with the patient in lateral recumbency. Subphrenic pericardiectomy was subsequently performed via a 3-portal technique with the patient in dorsal recumbency. If visualization during SPP was suboptimal, 1-lung ventilation was used to ensure that pericardial resection was close to the phrenic nerves bilaterally but without risk of iatrogenic nerve injury. Results—All TDL and SPP procedures were completed successfully in a median surgical time of 177 minutes (range, 135 to 210 minutes). All 6 dogs showed resolution of clinical signs of chylothorax with no recurrence during a median follow-up period of 39 months (range, 19 to 60 months). Final postoperative thoracic radiographic evaluation was performed at a median of 14.5 months (range, 7 to 25 months). Complete resolution of pleural effusion occurred in all but 1 dog. In 1 dog, a small volume of pleural effusion was persistent at a 7-month postoperative radiographic follow-up but was not associated with clinical signs and did not require thoracentesis at any time during the dog’s 25-month follow-up period. Conclusions and Clinical
Geri A. Lake-Bakaar, Eric G. Johnson, Leigh G. Griffiths

Objective—To describe clinical signs, treatment, and outcome of aortic thrombosis in dogs. Design—Retrospective case series. Animals—31 dogs with aortic thrombosis. Procedures—Records were retrospectively reviewed and data collected regarding signalment, historical signs, physical examination findings, laboratory testing, definitive diagnosis, and presence of concurrent disease. Results—The records of 31 dogs with clinical or postmortem diagnosis of aortic thrombosis were reviewed. Onset of clinical signs was acute in 14 (45%) dogs, chronic in 15 (48%), and not documented in 2 (6%). Femoral pulses were subjectively weak in 6 (19%) dogs and absent in 17 (55%). Frequent laboratory abnormalities included high BUN concentration (n = 13), creatinine concentration (6), creatine kinase activity (10), and D-dimer concentration (10) and proteinuria with a urine protein-to-creatinine concentration ratio > 0.5 (12). Concurrent conditions included neoplasia (n = 6), recent administration of corticosteroids (6), and renal (8) or cardiac (6) disease. Median survival time was significantly longer for dogs with chronic onset of disease (30 days; range, 0 to 959 days) than for those with acute onset of clinical signs (1.5 days; range, 0 to 120 days). Conclusions and Clinical Relevance—Results suggested that aortic thrombosis is a rare condition in dogs and accounted for only 0.0005% of hospital admissions during the study period. The clinical signs for dogs with aortic thrombosis differed from those seen in feline patients with aortic thromboembolism. Median survival time was significantly longer for dogs with chronic disease than for dogs with acute disease. Despite treatment, outcomes were typically poor, although protracted periods of survival were achieved in some dogs.

Accuracy of radiographic vertebral heart score and sphericity index in the detection of pericardial effusion in dogs
Carlo Guglielmini, Alessia Diana, Giorgia Santarelli, Alessandra Torbidone, Morena Di Tommaso, Marco Baron Toaldo, Mario Cipone

Objective—To evaluate the diagnostic accuracy of radiographically derived measurements of vertebral heart score (VHS) and sphericity index (SI) in the detection of pericardial effusion (PE) in dogs. Design—Retrospective case-control study. Animals—51 dogs with PE associated with various cardiac disorders, 50 dogs with left- or right-sided cardiac disorders without PE, 50 dogs with bilateral cardiac disorders without PE, and 50 healthy dogs. Procedures—Measurements of VHS on lateral (lateral VHS) and ventrodorsal (ventrodorsal VHS) radiographs, SI on lateral (lateral SI) and ventrodorsal (ventrodorsal SI) radiographs, and global SI (mean of lateral SI and ventrodorsal SI) were obtained. Receiver operating characteristic curves were calculated to evaluate the diagnostic accuracy of the radiographic indexes at differentiating dogs with PE from those with other cardiac disorders without PE. Results—Measurements of lateral and ventrodorsal VHS were significantly higher in dogs with PE, compared with values for all dogs without PE. Measurements of lateral, ventrodorsal, and global SI were significantly lower in dogs with PE, compared with values for all dogs without PE. Cutoff values of ≥ 11.9, > 12.3, and ≤ 1.17 for lateral VHS, ventrodorsal VHS, and global SI, respectively, were the most accurate radiographic indexes for identifying dogs with PE. Conclusions and Clinical Relevance—Cardiac silhouettes of dogs with PE were larger and more rounded, compared with those of dogs with other cardiac disorders without PE. Objective radiographic indexes of cardiac size and roundness were only moderately accurate at distinguishing dogs with PE from dogs with other cardiac disorders without PE.

Baclofen toxicity in dogs and cats: 145 cases (2004–2010)
Roxanna Khorzad, Justine A. Lee, Megan Whelan, Ahna G. Brutlag, Elizabeth P. Martin, Lee T. Miyahara, Lynn R. Hovda

Objective—To identify dogs and cats with baclofen toxicity and characterize the patient population, clinical signs, and outcome. Design—Retrospective case series. Animals—140 dogs and 5 cats with baclofen toxicity. Procedures—An animal poison control center electronic database was reviewed from November 2004 through April 2010 to identify dogs and cats with baclofen toxicity. 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 toxicity. 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...
amplitude differed from baseline values on days 1 and 4, although many thromboelastographic variables were from reaction time until the amplitude of the thromboelastography tracing is 20 mm, α-angle, and maximum whereas the platelet function parameter did not change on day 1 but did on day 4. The R (reaction time), time clotting time and clot rate for the dynamic viscoelastic coagulometer differed significantly from baseline values, Results (days 1 through 4). Viscoelastic coagulation monitoring was performed hourly on the first and last days of healthy adult mixed-breed dogs. Animals—6 coagulation monitoring with a thromboelastograph and a dynamic viscoelastic coagulometer. Objective—To evaluate the pharmacodynamic effects of dalteparin in dogs by means of viscoelastic thromboelastography parameters may preclude routine use of this technique in clinical practice. use had no effect on measured thromboelastography values. The high intraindividual variation in some fibrinogen concentration and a decrease in antithrombin activity. Concurrent ultralow-dose acetylsalicylic acid administration resulted in hypercoagulability in healthy dogs as indicated by an increase in MA and plasma percentage lysis 60 minutes after attainment of the MA was significantly lower than at baseline. For all parameters for research dogs, there was no difference between groups for change from baseline. Intraindividual variation in findings for client-owned dogs was similar to the variation for research dogs. Intraindividual variation in thromboelastography results for research dogs differed significantly from baseline, whereas percentage lysis 30 minutes after attainment of the MA as well as antithrombin activity significantly decreased within each group. In the dogs that received prednisone plus a placebo, percentage lysis 60 minutes after attainment of the MA was significantly lower than at baseline. For all parameters for research dogs, there was no difference between groups for change from baseline. Intraindividual variation in findings for client-owned dogs was similar to the variation for research dogs. Conclusions and Clinical Relevance—Prednisone administration resulted in hypercoagulability in healthy dogs as indicated by an increase in MA and plasma fibrinogen concentration and a decrease in antithrombin activity. Concurrent ultralow-dose acetylsalicylic acid use had no effect on measured thromboelastography values. The high intraindividual variation in some thromboelastography parameters may preclude routine use of this technique in clinical practice. Effects of oral prednisone administration with or without ultralow-dose acetylsalicylic acid on coagulation parameters in healthy dogs Allison L. O'Kell, David C. Grant, David L. Panciera, Gregory C. Troy, Nicole M. Weinstein Objective—To determine the effects of oral prednisone administration with or without ultralow-dose acetylsalicylic acid on coagulation parameters in healthy dogs and to assess intraindividual variation in thromboelastography results. Animals—14 healthy research dogs and 10 healthy client-owned dogs. Procedures—In a randomized controlled trial, research dogs underwent thromboelastography twice (3 days apart), and intraindividual variation in test results was calculated. Dogs were given prednisone (2 mg/kg/d, PO) plus acetylsalicylic acid (0.5 mg/kg/d, PO) or prednisone (2 mg/kg/d, PO) plus a placebo for 14 days, after which thromboelastography and other tests were repeated. Differences from predadministration (baseline) test results between and within groups were compared. In a separate trial, client-owned dogs also underwent thromboelastography twice 2 days apart to assess intraindividual variation in untreated dogs. Results—Intraindividual variation in thromboelastography results for research dogs was ≤10% for maximum amplitude (MA) and α angle. In the research dogs, MA and fibrinogen values significantly increased from baseline, whereas percentage lysis 30 minutes after attainment of the MA as well as antithrombin activity significantly decreased within each group. In the dogs that received prednisone plus a placebo, percentage lysis 60 minutes after attainment of the MA was significantly lower than at baseline. For all parameters for research dogs, there was no difference between groups for change from baseline. Intraindividual variation in findings for client-owned dogs was similar to the variation for research dogs. Conclusions and Clinical Relevance—Prednisone administration resulted in hypercoagulability in healthy dogs as indicated by an increase in MA and plasma fibrinogen concentration and a decrease in antithrombin activity. Concurrent ultralow-dose acetylsalicylic acid use had no effect on measured thromboelastography values. The high intraindividual variation in some thromboelastography parameters may preclude routine use of this technique in clinical practice. Viscoelastic pharmacodynamics after dalteparin administration to healthy dogs Benjamin M. Brainard, Amie Koenig, Danielle M. Babski, April E. Blong, Jordan R. Scherk Objective—To evaluate the pharmacodynamic effects of dalteparin in dogs by means of viscoelastic coagulation monitoring with a thromboelastograph and a dynamic viscoelastic coagulometer. Animals—6 healthy adult mixed-breed dogs. Procedures—Dalteparin (175 U/kg, SC, q 12 h) was administered for 4 days (days 1 through 4). Viscoelastic coagulation monitoring was performed hourly on the first and last days of treatment and included intermittent measurement of anti-activated coagulation factor X activity (AXA). Results—Dalteparin administration resulted in progressive hypocoagulability. On both day 1 and 4, activated clotting time and clot rate for the dynamic viscoelastic coagulometer differed significantly from baseline values, whereas the platelet function parameter did not change on day 1 but did on day 4. The R (reaction time), time from reaction time until the amplitude of the thromboelastography tracing is 20 mm, α-angle, and maximum amplitude differed from baseline values on days 1 and 4, although many thromboelastographic variables were 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. Tumor thrombus formation in two dogs with insulinomas Lydia E. Hambrook, Simon T. Kudnig Case Description—A 9-year-old sexually intact male Staffordshire Bull Terrier and a 9-year-old neutered male Boxer were evaluated for intermittent neurologic signs including muscle tremors, ataxia, episodic collapse, disorientation, and seizures. Clinical Findings—Both dogs had low blood glucose and high serum insulin concentrations. Results of abdominal ultrasonography were unremarkable for both dogs. Exploratory laparotomy revealed a mass that extended from the body of the pancreas into the pancreaticoduodenal vein in each dog. Treatment and Outcome—Marginal resection of pancreatic masses was performed, and tumor thrombi were removed via venotomy in both dogs. Histologic evaluation indicated the masses were pancreatic islet cell tumors with tumor thrombi. Clinical signs resolved following surgical resection of tumors and tumor thrombi, and the dogs were euglycemic during the follow-up period (17 and 45 months after surgery). Clinical Relevance—Although gross tumor thrombus formation has been identified in humans with insulinomas, tumor thrombi have not been previously reported for dogs with insulinomas. Surgical removal of tumor thrombi via venotomy seemed to be well tolerated by the dogs. Tumor thrombus formation did not seem to adversely affect prognosis for the 2 dogs of this report. American Journal of Veterinary Research Effects of oral prednisone administration with or without ultralow-dose acetylsalicylic acid on coagulation parameters in healthy dogs Allison L. O'Kell, David C. Grant, David L. Panciera, Gregory C. Troy, Nicole M. Weinstein Objective—To determine the effects of oral prednisone administration with or without ultralow-dose acetylsalicylic acid on coagulation parameters in healthy dogs and to assess intraindividual variation in thromboelastography results. Animals—14 healthy research dogs and 10 healthy client-owned dogs. Procedures—In a randomized controlled trial, research dogs underwent thromboelastography twice (3 days apart), and intraindividual variation in test results was calculated. Dogs were given prednisone (2 mg/kg/d, PO) plus acetylsalicylic acid (0.5 mg/kg/d, PO) or prednisone (2 mg/kg/d, PO) plus a placebo for 14 days, after which thromboelastography and other tests were repeated. Differences from predadministration (baseline) test results between and within groups were compared. In a separate trial, client-owned dogs also underwent thromboelastography twice 2 days apart to assess intraindividual variation in untreated dogs. Results—Intraindividual variation in thromboelastography results for research dogs was ≤10% for maximum amplitude (MA) and α angle. In the research dogs, MA and fibrinogen values significantly increased from baseline, whereas percentage lysis 30 minutes after attainment of the MA as well as antithrombin activity significantly decreased within each group. 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not determined. The AXA was increased from baseline values at 3 and 6 hours after administration of the dalteparin injection on days 1 and 4, and all dogs had AXA values between 0.5 and 1.0 U/mL at 2 and 4 hours after administration. The AXA correlated well with activated clotting time ($r = 0.761$) and with $R$ ($r = 0.810$), when values were available. Thromboelastography could not be used to distinguish AXA $> 0.7$ U/mL.

**Conclusions and Clinical Relevance**—Viscoelastic coagulation monitoring with strong coagulation activators may be used to monitor treatment with dalteparin in healthy dogs.

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

**Aleksija Diana, Carlo Giuglielmini, Swan Specchi, Morena Di Tommaso, Marco Pietra, Marco Baron Toaldo, Mario Cipone**

**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] × height [mm] × width [mm] × 0.52). Measurements were recorded after food was withheld for 12 hours (0 minutes) 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.

### Assessment of blood pool, soft tissue, and skeletal uptake of sodium fluoride F 18 with positron emission tomography–computed tomography in four clinically normal dogs

**Alejandro Valdés-Martínez, Susan L. Kraft, Cord M. Brundage, Billie K. Arceneaux, Jeffrey A. Stewart, Debra S. Gibbons**

**Objective**—To determine the ideal interval to image acquisition after IV injection of sodium fluoride F 18 ($^{18}$F-NaF) and evaluate biodistribution of the radiopharmaceutical in clinically normal skeletally immature dogs. **Animals**—4 female dogs. **Procedures**—Each dog was anesthetized for evaluation with a commercial hybrid positron emission tomography (PET)–CT instrument. A low–radiation dose, whole-body CT scan was acquired first. An IV injection of $^{18}$F-NaF (0.14 mCi/kg) was administered, and a dynamic PET scan centered over the heart and liver was acquired during a period of 120 minutes. Uptake of $^{18}$F-NaF in the blood pool, soft tissues, and skeletal structures was evaluated via region of interest analysis to derive standardized uptake values and time-activity curves, which were used to determine the optimal postinjection time for skeletal image acquisition. Biodistribution was also assessed from a final whole-body PET-CT scan acquired after the dynamic scan.

**Results**—Time-activity curves revealed a rapid decrease in the amount of radiopharmaceutical in the blood pool and soft tissues and a rapid increase in the amount of radiopharmaceutical in bones soon after injection. At 50 minutes after injection, the greatest difference in uptake between soft tissues and bones was detected, with continued subtle increase in uptake in the bones. Uptake of $^{18}$F-NaF was slightly increased at growth plates and open ossification centers, compared with that at other parts of the bone. **Conclusions and Clinical Relevance**—At 50 minutes after IV injection of $^{18}$F-NaF at the dose evaluated, PET-CT yielded excellent bone-to-background ratio images for evaluation of the skeletal system in dogs.

### Expression of microRNAs in urinary bladder samples obtained from dogs with grossly normal bladders, inflammatory bladder disease, or transitional cell carcinoma

**Ruth L. Vinall, Michael S. Kent, Ralph W. deVere White**

**Objective**—To determine expression of microRNA (miRNA) in urinary bladder samples obtained from dogs with grossly normal urinary bladders, inflammatory bladder disease, or transitional cell carcinoma (TCC) and in cells of established canine TCC cell lines. **Sample**—Samples of grossly normal bladders (n = 4) and bladders from dogs with inflammatory bladder disease (13) or TCC (18), and cells of 5 established canine TCC cell lines. **Procedures**—Expression of 5 miRNAs (miR-34a, let-7c, miR-16, miR-103b, and miR-106b) that target p53, Rb, or Bcl-2 protein pathways was determined for bladder samples and cells via quantitative real-time PCR assay. Effects of cisplatin (5μM) on proliferation and miRNA expression of cells were determined. **Results**—Expression of miR-34a and miR-106b was significantly higher in TCC samples than it was in samples of grossly normal bladders. Expression of miR-34a, miR-16, miR-103b, and miR-106b was higher in TCC samples
than it was in bladder samples from dogs with inflammatory bladder disease. Cells of established canine TCC cell lines that had the lowest growth after cisplatin treatment had increased miR-34a expression after such treatment. **Conclusions and Clinical Relevance**—Findings of this study indicated results of miRNA expression assays can be used to distinguish between samples of grossly normal bladders and bladders of dogs with inflammatory bladder disease or TCC. This finding may have clinical relevance because currently available diagnostic tests cannot be used to differentiate these tissues, and inflammatory bladder disease and TCC are both prevalent in dogs. Validation of miRNA expression assays as diagnostic tests may be warranted.

**Pharmacokinetics and pharmacodynamics of zolpidem after oral administration of a single dose in dogs**

Mario Giorgi, Diego Angel Portela, Gloria Breghi, Angela Briganti

**Objective**—To evaluate the pharmacokinetics and pharmacodynamics of zolpidem after oral administration of a single dose (0.15 or 0.50 mg/kg) and assess any associated antianxiety and sedative effects in dogs. **Animals**—8 clinically normal sexually intact male dogs of various breeds. **Procedures**—Dogs were assigned to 2 groups (4 dogs/group) and administered zolpidem orally once at a dose of 0.15 or 0.50 mg/kg in a crossover study; each dog received the other treatment once after an interval of 1 week. Blood samples were collected before and at intervals during the 24-hour period following dose administration. For each time point, plasma zolpidem concentration was evaluated via a validated method of high-performance liquid chromatography coupled with fluorescence detection, and pharmacodynamics were assessed via subjective assessments of sedation and level of agitation and selected clinical variables. **Results**—The pharmacokinetic profile of zolpidem in dogs was dose dependent, and the plasma drug concentrations attained were lower than those for humans administered equivalent doses. The lower dose did not result in any clinical or adverse effects, but the higher dose generated paradoxical CNS stimulation of approximately 1 hour's duration and a subsequent short phase of mild sedation. This sedation phase was not considered to be of clinical relevance. The desired clinical effects were not evident at plasma zolpidem concentrations ≤ 30 ng/mL, and the minimal plasma concentration that induced adverse effects was 60 ng/mL. **Conclusions and Clinical Relevance**—Results indicated that zolpidem is not a suitable drug for inducing sedation in dogs.

**Urodynamic and morphometric characteristics of the lower urogenital tracts of female Beagle littermates during the sexually immature period and first and second estrous cycles**

Stéphanie M. Noël, Frédéric Farnir, Annick J. Haamde

**Objective**—To compare values of lower urogenital tract urodynamic and morphometric variables determined during the prepubertal (sexually immature) period and first and second estrous cycles in healthy female Beagle littermates to determine functional and anatomic changes of the lower urogenital tract during those periods. **Animals**—5 female Beagle littermates. **Procedures**—Urethral pressure profilometry, diuresis cystometry, and vaginourethography were performed when dogs were 3.5, 4.5, 5, 6, 7, 8, 8.5, and 9 months old and during proestrus; estrus; early, middle, and late diestrus; and early and late anestrus of the first and second estrous cycles. **Results**—At the end of the prepubertal period, values of urodynamic and morphometric variables increased significantly, compared with values at earlier times. Maximum bladder capacity developed when dogs were 9 months old. In all dogs, the bladder was intermittently located in an intrapelvic position during the prepubertal period; the bladder was intra-abdominal from the time dogs were 9 months old until the end of the study. Urethral pressure decreased significantly during estrus and early diestrus of the first and second estrous cycles. Bladder capacity increased significantly during diestrus of both estrous cycles. Urethral and vaginal lengths were significantly longer during proestrus and estrus than they were during anestrus. **Conclusions and Clinical Relevance**—Values of lower urogenital tract urodynamic and morphometric variables were influenced by age and phases of the estrous cycle of immature and young adult Beagles in this study. Age of dog and phase of estrous cycle should be considered when interpreting urodynamic and vaginourethrography data.

**Veterinary Journal**

**Prognostic histopathological and molecular markers in feline mammary neoplasia**

K. Hughes, J.M. Dobson

Abstract: 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.

**Vitamin D and the immune system: Beyond rickets**
Mauria A. O’Brien, Mark W. Jackson

**Abstract:** In addition to its essential role in calcium homeostasis and bone metabolism, vitamin D has a diverse range of biological actions, including induction of cell differentiation, inhibition of cell growth, immunomodulation and control of hormonal systems. Vitamin D plays an immunoregulatory role in both the innate and adaptive immune systems. The active metabolite of the vitamin D endocrine system, 1,25-dihydroxyvitamin D (calcitriol), exerts pleiotropic effects through its interaction with the vitamin D receptor. Low vitamin D status in humans has been implicated in the etiology of neoplasia, autoimmune disease, cardiovascular disorders and infectious diseases. This review focuses on vitamin D and its effects on immune function, particularly in humans, with the aim to encourage further exploration in the veterinary field.

**Possible mechanisms for brain natriuretic peptide resistance in heart failure with a focus on interspecies differences and canine BNP biology**
Lesley Baerts, Nelson Gomez, Marc Vanderheyden, Ingrid De Meester, Kathleen McEntee

**Abstract:** B-type natriuretic peptide or brain natriuretic peptide (BNP) is a cardiac peptide hormone. The principal stimulus for BNP synthesis is myocyte stretch. BNP binds to the natriuretic peptide receptor-A causing increased intracellular cyclic guanosine monophosphate (cGMP) production and shows cardiorenoprotective effects. However, high endogenous BNP levels are associated with a lack of effect in severe heart failure. Moreover, in experimental heart failure, the response to treatments targeting the natriuretic peptide system is attenuated. This article reviews potential mechanisms that may explain the ‘BNP paradox’ in heart failure with a focus on interspecies differences, on known and presumed specificities of canine BNP biology, and on experimental studies in dogs. Resistance to BNP is far from fully understood but may be due to post-translational modifications and alteration in proBNP processing, receptor downregulation and desensitization, blunted intracellular signalling and increased clearance of BNP1–32. Alternatively, resistance to BNP may be due to BNP1–32 shortening into additional truncated forms that are less biologically effective. Future improvement in understanding of BNP biology may provide the rationale for innovative therapeutic strategies to maximize cardiovascular and renal cGMP bioavailability.

**A sensitive and kinetically defined radiochemical assay for canine and human serum thymidine kinase 1 (TK1) to monitor canine malignant lymphoma**
H. Sharif, H. von Euler, S. Westberg, E. He, L. Wang, S. Eriksson

**Abstract:** Thymidine kinase 1 (TK1) is a cell cycle regulated enzyme with maximum expression during the S phase. Serum TK1 (S-TK1) is a unique biomarker for cell proliferation. Here, an optimized [3H]-thymidine (dThd) phosphorylation assay is described, which is as sensitive as the commercially available TK-REA and TK-Liaison assays for measurement of S-TK1 activity in dogs and humans. Serum samples from dogs (35 healthy, 32 with lymphoma, 2 with leukemia, and 35 with solid tumors) and humans (18 healthy, 9 with chronic lymphocytic leukemia, 10 with myelodysplastic syndrome) were analyzed using the [3H]-dThd assay. Mean S-TK1 activities were 1.11 ± 0.46 pmol/min/mL in healthy dogs and 1.15 ± 0.32 pmol/min/mL in healthy humans. S-TK1 activities in dogs with hematological malignancies were 24.2 ± 47.9 pmol/min/mL, and the receiver operating characteristic curve showed an area under the curve of 0.88. With a cut-off value of 1.9 pmol/min/mL (mean value ± 2 SD), the sensitivity was 0.94 and the specificity was 0.68. Very similar results were obtained with human samples (healthy and lymphoma cases). S-TK1 activities measured during chemotherapy of six dogs with lymphoma were drastically reduced. In one case, S-TK1 activity increased prior to relapse. S-TK1 levels in dogs with solid tumors did not differ from the healthy group. S-TK1 activities correlated with those
determined with the TK-REA and TK-Liaison assays \((r = 0.92\text{ and } r = 0.96,\text{ respectively})\). In conclusion, this optimized \([\text{H}]\)-dThd assay is fast, sensitive and economical for measuring S-TK1 activity and should increase its clinical use as biomarker.

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

S. Nicoli, E. Morello, M. Martano, L. Pisoni, P. Buracco

**Abstract:** 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. Uroperitoneum 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/nephrotomy. However, smaller stents should be used to decrease the need for ureteral surgery.

**Mucosal imbalance of interleukin-1β and interleukin-1 receptor antagonist in canine inflammatory bowel disease**


**Abstract:** Interleukin (IL)-1β is a key mediator of the inflammatory response. IL-1 receptor antagonist (IL-1Ra) regulates inflammation by functioning as an endogenous inhibitor of IL-1β. A disruption of the balance between IL-1β and IL-1Ra has been identified in human inflammatory bowel disease (IBD). The objective of this study was to determine whether there is an intestinal imbalance of IL-1β and IL-1Ra in canine IBD by comparing expression of IL-1β and IL-1Ra mRNA by real-time RT-PCR and expression of IL-1β and IL-1Ra protein by ELISA in 21 dogs with IBD, 15 dogs with intestinal lymphoma (‘inflammatory’ controls) and 20 healthy Beagles (‘healthy’ controls). A significant decrease in the intestinal IL-1Ra:IL-1β ratio of mRNA and protein was observed in IBD cases when compared with healthy control dogs. In contrast, a decrease in IL-1Ra:IL-1β ratio was not observed in dogs with intestinal lymphoma. The IL-1Ra:IL-1β protein ratio was negatively correlated with clinical severity in dogs with IBD. An intestinal imbalance between IL-1β and IL-1Ra production may play a role in the pathogenesis of canine IBD.

**Effects of a stepwise lung recruitment manoeuvre and positive end-expiratory pressure on lung compliance and arterial blood oxygenation in healthy dogs**

S. Canfrán, I.A. Gómez de Segura, R. Cediel, J. García-Fernández

**Abstract:** This study was performed to evaluate the effects of a stepwise lung recruitment manoeuvre (RM) on dynamic lung compliance (Cdyn) and gas exchange in mechanically ventilated healthy dogs. Fourteen healthy adult dogs, scheduled for elective surgery in dorsal recumbency were employed. After anaesthetic induction, dogs were mechanically ventilated in a volume-controlled mode (tidal volume, VT = 10 mL/kg); positive end-expiratory pressure (PEEP) = 0 cm H2O; oxygen inspired fraction (FiO2) = 0.4 for 30 min (baseline). The dogs were then randomly allocated into two groups, control and RM. The ventilatory mode was maintained during the whole surgical procedure in the control group without any intervention, as in general practice. The RM was performed in a pressure-controlled mode, with progressive increases of PEEP and end-inspiratory pressure of 5 cm H2O until 15 cm H2O and 30 cm H2O, respectively. After RM, PEEP was decreased to 4 cm H2O, and the ventilatory mode was returned to volume-control. Arterial blood gases and Cdyn were determined at baseline, 20 and 60 min afterwards. Student’s \(t\) test and the one-way ANOVA test were employed to compare data. Cdyn increased in the RM group (183 ± 30% and 165 ± 24% at 20 and 60 min, respectively; \(P = 0.000\)). The baseline partial pressure of arterial oxygen to FiO2 ratio (PaO2/FiO2 ratio) did not change in the control group, but was
higher in the RM group (527 ± 41 mm Hg and 511 ± 46 mm Hg at 20 and 60 min, respectively; baseline 371 ± 34 mm Hg, \( P < 0.001 \)). In conclusion, a stepwise RM followed by the use of PEEP improves Cdyn and oxygenation in mechanically ventilated healthy dogs.

**Evaluation of the veterinary application of a point-of-care device measuring white blood cell counts**

Barbara Riond, Regina Hofmann-Lehmann, Hans Lutz

**Abstract:** A point-of-care device (POCD) for measuring total white blood cell count was evaluated for feline, canine, equine and bovine blood samples collected into EDTA. Mean biases were −9.2% (range, −12% to −6.3%) for feline samples, 20.2% (range, 15.3–25.1%) for canine samples, −7.1% (range, −8.3% to −5.9%) for equine samples, and 0.7% (range, −1.1% to 2.5%) for bovine samples. The results were influenced by the presence of nucleated red blood cells. The POCD provided precise, reliable data for feline, equine and bovine samples but the values obtained for the canine counts were overestimations.

**Canadian Veterinary Journal (titles only available)**

Indirect magnetic resonance lymphography of the head and neck of dogs using Gadofluorine M and a conventional gadolinium contrast agent: A pilot study

Monique N. Mayer, Susan L. Kraft, Daniel S. Bucy, Cheryl L. Waldner, Kirsten M. Elliot, Sheldon Wiebe (page 1085)

Seroprevalence of canine influenza virus (H3N8) in Iditarod racing sled dogs

Heidi L. Pecoraro, Justin S. Lee, Jenna Achenbach, Stuart Nelson, Jr., Gabriele A. Landolt (page 1091)

**CASE REPORTS**

Paraneoplastic hypercalcemia in a dog with thyroid carcinoma

Amy E. Lane, Kenneth M. Wyatt (page 1101)

Female pseudo-hermaphroditism with cloacal malformation and related anomalies in a dog

Margot K. Sacks, Romain Béraud (page 1105)

Atypical pneumonia associated with a Mycoplasma isolate in a kitten

Yannick Bongrand, Marie-Claude Blais, Kate Alexander (page 1109)

Total venous inflow occlusion and pericardial auto-graft reconstruction for right atrial hemangiosarcoma resection in a dog

Fei Verbeke, Dominique Binst, Ludo Stegen, Tim Waelbers, Hilde de Rooster, Bart Van Goethem (page 1114)

**Australian Veterinary Practitioner**

No journal this month

**Compendium**

**Canine Prostatic Carcinoma**

Sandra M. Axiak, DVM, DACVIM (Oncology), Astrid Bigio, DVM

Canine prostatic carcinoma is locally aggressive with a high rate of metastasis. Common metastatic sites include lymph nodes, lungs, liver, spleen, and bone. Staging relies on chest radiography, abdominal radiography, and abdominal ultrasonography, in addition to radiography of any painful regions. An enlarged, mineralized prostate is a frequent finding; in a castrated male dog, it is predictive of prostatic carcinoma. NSAIDs are an important component of treatment, although additional local and systemic therapies should be considered to improve the quality of life of these patients.
Journal of Feline Medicine and Surgery

Evaluation of canned therapeutic diets for the management of cats with naturally occurring chronic diarrhea
Dorothy P Laflamme, Hui Xu, Carolyn J Cupp, Wendell W Kerr, Ziad Ramadan, and Grace M Long

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.

Effects of sedation on echocardiographic variables of left atrial and left ventricular function in healthy cats
Jessica L Ward, Karsten E Schober, Virginia Luis Fuentes, and John D Bonagura

Although sedation is frequently used to facilitate patient compliance in feline echocardiography, the effects of sedative drugs on echocardiographic variables have been poorly documented. This study investigated the effects of two sedation protocols on echocardiographic indices in healthy cats, with special emphasis on the assessment of left atrial size and function, as well as left ventricular diastolic performance. Seven cats underwent echocardiography (transthoracic two-dimensional, spectral Doppler, color flow Doppler and tissue Doppler imaging) before and after sedation with both acepromazine (0.1 mg/kg IM) and butorphanol (0.25 mg/kg IM), or acepromazine (0.1 mg/kg IM), butorphanol (0.25 mg/kg IM) and ketamine (1.5 mg/kg IV). Heart rate increased significantly following acepromazine/butorphanol/ketamine (mean ± SD of increase, 40 ± 26 beats/min) and non-invasive systolic blood pressure decreased significantly following acepromazine/butorphanol (mean ± SD of decrease, 12 ± 19 mmHg). The majority of echocardiographic variables were not significantly different after sedation compared with baseline values. Both sedation protocols resulted in mildly decreased left ventricular end-diastolic dimension and mildly increased left ventricular end-diastolic wall thickness. This study therefore failed to demonstrate clinically meaningful effects of these sedation protocols on echocardiographic measurements, suggesting that sedation with acepromazine, butorphanol and/or ketamine can be used to facilitate echocardiography in healthy cats.

Serum cobalamin concentrations in cats with gastrointestinal signs: correlation with histopathological findings and duration of clinical signs
Christina L Maunder, Michael J Day, Angie Hibbert, Jörg M Steiner, Jan S Suchodolski, and Edward J Hall

The aims of this study were to investigate the prevalence of hypocobalaminemia 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 hypocobalaminemia. 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 hypocobalaminemia, but there was no statistically significant correlation between serum cobalamin concentrations and histopathological score or duration of clinical signs.

Evaluation of lomustine as a rescue agent for cats with resistant lymphoma
Autumn L Dutelle, Julie C Bulman-Fleming, Craig A Lewis and Mona P Rosenberg

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.

Effects of a standardized anesthetic protocol on hematologic variables in healthy cats
Marc P Dhumeaux, Elisabeth CR Snead, Tasha Y Epp, Susan M Taylor, Anthony P Carr, Ryan M Dickinson, and Marina L Leis
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.

A survey of southeastern United States veterinarians’ preferences for managing cats with diabetes mellitus
Jo R Smith, Zak Vrono, Gregg S Rapoport, Michelle M Turek, and Kate E Creevy
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 least 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.

Non-accidental injuries found in necropsies of domestic cats: a review of 191 cases
Adriana de Siqueira, Fabiana Cecília Cassiano, Marina Frota de Albuquerque Landi, Elza Fernandes Marlet, and Paulo César Maiorka
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 necropsic finding was exogenous carbamate poisoning (75.39%) followed by blunt-force trauma (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.

Clinical features and risk factors for development of urinary tract infections in cats
Ivan Martinez-Ruzafa, John M Kruger, RoseAnn Miller, Cheryl L Swenson, Carole A Bolin, and John B Kaneene
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. 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, \(P = 0.0331\)], transurethral procedures (OR = 8.37, \(P < 0.0001\)), urogenital surgery (OR = 6.03, \(P = 0.0385\)), gastrointestinal disease (OR = 2.62, \(P = 0.0385\)), 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.

**Expression of the Bcl-2 apoptotic marker in cats diagnosed with inflammatory bowel disease and gastrointestinal lymphoma**

Christine M Swanson, Rebecca C Smedley, Paulo Vilar Saavedra, Matti Kiupel, and Barbara E Kitchell

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.

**A case of feline injection-site sarcoma at the site of cisplatin injections**

Marina Martano, Emanuela Morello, Selina Iussich, and Paolo Buracco

A spayed 14-year-old female domestic shorthair cat presented with a squamous cell carcinoma of the nasal planum and was treated with intralesional chemotherapy. During nasal infiltrations with cisplatin mixed with the cat’s own serum, a new carcinomatous lesion developed at the medial canthus of the right eye, which was also treated using intralesional chemotherapy. Two months after the treatment course, the cat developed a new mass at the site of the eyelid chemotherapy, which was diagnosed as a soft tissue sarcoma. At the owner’s request, the tumour was marginally excised, but it recurred after 10 months. No lung or lymph node metastases were evident at the time of euthanasia. The histotype of the tumour, the coincidence with injections and the histological description make the hypothesis of an injection-site sarcoma likely. To the authors’ knowledge, this is the first case of an injection-site sarcoma at the site of a cisplatin injection.

**Severe hypoglycaemia in a cat with primary hypoadrenocorticism**

Dimitris Kasabalis, Efi Bodina, and Manolis N Saridomichelakis

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.

**Bilateral choanal atresia in a cat**

Kristin E Schafgans, P Jane Armstrong, Betty Kramek, and Christopher P Ober

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 dilatations 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.

**Probable lumbar acute non-compressive nucleus pulposus extrusion in a cat with acute onset paraparesis**
Keshuan Chow, Julia A Beatty, Katja Voss, and Vanessa R Barrs
A spinal cord lesion localised caudal to the L6 spinal segment was diagnosed in a 2-year-old female spayed domestic longhair cat with acute onset paraparesis. Magnetic resonance imaging findings were consistent with an acute, non-compressive nucleus pulposus extrusion of the L5–L6 intervertebral disc. The cat was successfully managed with supportive care, including cage confinement.

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**Clinical evaluation of alfaxalone as an anaesthetic induction agent in cats less than 12 weeks of age**
BJ O’Hagan,a* K Pasloske,a C McKinnon,b NR Perkinsc and T Whittema
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®) 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.

**Hypotension and pruritus induced by neuraxial anaesthesia in a cat**
SH Bauquier
Although preventive epidural morphine administration with bupivacaine is effective in producing long-lasting analgesia, neuraxial anaesthesia can cause cardiovascular depression and pruritus. This report presents the development and treatment of hypotension and pruritus after intrathecal morphine and bupivacaine administration in a 3-year-old female spayed Domestic Short-hair cat presented for surgical repair of a torn right cranial cruciate ligament. Opioid-induced pruritus is not usually considered a frequently occurring complication, but may be easily misinterpreted as being dysphoria in recovery. It can be treated by administration of ondansetron, with human patients usually responding within 30 min after treatment.

**Journal of the American Animal Hospital Association – no papers**

**New Zealand Veterinary Journal – no papers**

**Veterinary Clinics of North American – no papers**