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Due to the generosity of Dave Collins, Anna Dengate, Karina Graham, Chris Greenwell, Amy Lam and the ISFM, the CVE is able to offer this resource.

October, 2013

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Evaluation of mRNA expression levels and electrophysiological function of neuron-like cells derived from canine bone marrow stromal cells


Objective—To investigate the in vitro differentiation of canine bone marrow stromal cells (BMSCs) into functional, mature neurons. Sample—Bone marrow from 6 adult dogs. Procedures—BMSCs were isolated from bone marrow and chemically induced to develop into neurons. The morphology of the BMSCs during neuronal induction was monitored, and immunocytochemical analyses for neuron markers were performed after the induction. Real-time PCR methods were used to evaluate the mRNA expression levels of markers for neural stem or progenitor cells, neurons, and ion channels, and western blotting was used to assess the expression of neuronal proteins before and after neuronal induction. The electrophysiological properties of the neuron-like cells induced from canine BMSCs were evaluated.
with fluorescent dye to monitor Ca$^{2+}$ influx. Results—Canine BMSCs developed a neuron-like morphology after neuronal induction. Immunocytochemical analysis revealed that these neuron-like cells were positive for neuron markers. After induction, the cells’ mRNA expression levels of almost all neuron and ion channel markers increased, and the protein expression levels of nestin and neurofilament-L increased significantly. However, the neuron-like cells derived from canine BMSCs did not have the Ca$^{2+}$ influx characteristic of spiking neurons. Conclusions and Clinical Relevance—Although canine BMSCs had neuron-like morphological and biochemical properties after induction, they did not develop the electrophysiological characteristics of neurons. Thus, these results have suggested that canine BMSCs could have the capacity to differentiate into a neuronal lineage, but the differentiation protocol used may have been insufficient to induce development into functional neurons.

Degree and duration of corneal anesthesia after topical application of 0.4% oxybuprocaine hydrochloride ophthalmic solution in ophthalmically normal dogs
Jean-Yves Douet, Julien Michel, Alain Regnier.

Objective—to assess the anesthetic efficacy and local tolerance of topicaly applied 0.4% oxybuprocaine ophthalmic solution to in dogs and compare its effects with those of 1% tetracaine solution. Animals—34 ophthalmically normal Beagles. Procedures—Dogs were assigned to 2 groups, and baseline corneal touch threshold (CTT) was measured bilaterally with a Cochet-Bonnet aesthesiometer. Dogs of group 1 (n = 22) received a single drop of 0.4% oxybuprocaine ophthalmic solution in one eye and saline (0.9% NaCl) solution (control treatment) in the contralateral eye. Dogs of group 2 (n = 12) received a single drop of 0.4% oxybuprocaine ophthalmic solution in one eye and 1% tetracaine ophthalmic solution in the contralateral eye. The CTT of each eye was measured 1 and 5 minutes after topical application and then at 5-minute intervals until 75 minutes after topical application. Results—CTT changes over time differed significantly between oxybuprocaine-treated and control eyes. After instillation of oxybuprocaine, maximal corneal anesthesia (CTT = 0) was achieved within 1 minute, and CTT was significantly decreased from 1 to 45 minutes, compared with the baseline value. No significant difference in onset, depth, and duration of corneal anesthesia was found between oxybuprocaine-treated and tetracaine-treated eyes. Conjunctival hyperemia and chemosis were detected more frequently in tetracaine-treated eyes than in oxybuprocaine-treated eyes. Conclusions and Clinical Relevance—Topical application of oxybuprocaine and tetracaine similarly reduced corneal sensitivity in dogs, but oxybuprocaine was less irritating to the conjuctiva than was tetracaine.

Effects of pneumoperitoneum induced at various pressures on cardiorespiratory function and working space during laparoscopy in cats.
Philipp D. Mayhew, Peter J. Pascoe, Philip H. Kass, Yael Shilo-Benjamini.

Objective—to evaluate the effect of pneumoperitoneum on cardiorespiratory variables and working space during experimental induction of 3 intra-abdominal pressures (IAPs) in cats. Animals—6 healthy young adult neutered male domestic shorthair cats. Procedures—All cats were anesthetized through use of a standardized protocol. A catheter was placed in the right femoral artery for blood pressure and blood gas monitoring. A thermolisation catheter was placed in the right jugular vein via fluoroscopic guidance. Cardiopulmonary variables were measured before (baseline) and 2 and 30 minutes after initiation of pneumoperitoneum at IAPs of 4, 8, and 15 mm Hg; these were created through the use of a mechanical insufflator. At each IAP, abdominal dimensions (height, width, and circumference) were measured at a standardized location. Results—At 4 mm Hg and 8 mm Hg IAP, no clinically important changes were identified in cardiorespiratory values. Heart rate, cardiac index, and stroke volume index remained unchanged throughout the study at all IAPs. Mean arterial blood pressure began to increase at 8 mm Hg and was significantly higher, compared with baseline, at both time points at 15 mm Hg. At 15 mm Hg, Paco$_2$ was significantly higher and cats were more acidic than at baseline. Working space was subjectively greater at 8 mm Hg than at 4 mm Hg IAP; however, at 15 mm Hg, no clinically important enlargement of the working space was identified, compared with at 8 mm Hg. Conclusions and Clinical Relevance—Values of cardiopulmonary variables were largely unchanged by induction of pneumoperitoneum in healthy cats up to an IAP of 8 mm Hg, and no clinically important increases in working space were evident at an IAP of 15 versus 8 mm Hg. These findings provide little justification for use of IAPs > 8 mm Hg in healthy cats undergoing laparoscopic procedures; however, whether the situation is similar in diseased or elderly cats remains to be determined.

Influence of acidifying or alkalinizing diets on bone mineral density and urine relative supersaturation with calcium oxalate and struvite in healthy cats.
Objective—To evaluate the influence of acidifying or alkalinizing diets on bone mineral density and urine relative supersaturation (URSS) with calcium oxalate and struvite in healthy cats. Animals—6 castrated male and 6 spayed female cats. Procedures—3 groups of 4 cats each were fed diets for 12 months that differed only in acidifying or alkalinizing properties (alkalinizing, neutral, and acidifying). Body composition was estimated by use of dual energy x-ray absorptiometry, and 48-hour urine samples were collected for URSS determination. Results—Urinary pH differed significantly among diet groups, with the lowest urine pH values in the acidifying diet group and the highest values in the alkalinizing diet group. Differences were not observed in other variables except urinary ammonia excretion, which was significantly higher in the neutral diet group. Calcium oxalate URSS was highest in the acidifying diet group and lowest in the alkalinizing diet group; struvite URSS was not different among groups. Diet was not significantly associated with bone mineral content or density. Conclusions and Clinical Relevance—Urinary undersaturation with calcium oxalate was achieved by inducing alkaluria. Feeding an alkalinizing diet was not associated with URSS with struvite. Bone mineral density and calcium content were not adversely affected by diet; therefore, release of calcium from bone caused by feeding an acidifying diet may not occur in healthy cats.

Journal of Small Animal Practice

Topiramate as an add-on antiepileptic drug in treating refractory canine idiopathic epilepsy.
A.-M. Kiviranta, O. Laitinen-Vapaavuori, A. Hielm-Björkman and T. Jokinen

Objectives; To evaluate the efficacy and safety of topiramate as an add-on therapy in dogs with refractory idiopathic epilepsy. Method; Prospective, open label, non-comparative clinical trial of topiramate in dogs with idiopathic epilepsy and poor seizure control despite therapeutic serum concentrations of phenobarbital and potassium bromide. The efficacy of topiramate was evaluated by comparing seizure and seizure day frequencies during a retrospective 2-month period with a prospective short-term follow-up of 6 months. An additional long-term follow-up period ranging from 3 to 9 months was conducted on dogs that responded to topiramate therapy during the short-term follow-up. Results; Ten dogs were included. Five (50%) responded to topiramate therapy during the short-term follow-up showing a significant (P<0.04) decrease of 66% in seizure frequency. Three of the five dogs remained responders during the long-term follow-up. Weight loss, sedation and ataxia were the most common adverse effects of topiramate therapy, but in dogs with moderate sedation or ataxia, signs subsided in a few weeks to few months to mild sedation or ataxia. Clinical Significance; Topiramate may be effective as an add-on medication in treating canine idiopathic epilepsy. Apart from sedation and ataxia reported in some of the dogs, topiramate was well-tolerated.

Inhaled budesonide therapy in cats with naturally occurring chronic bronchial disease (feline asthma and chronic bronchitis).
Galler, S. Shibly, A. Bilek and R. A. Hirt

Objectives; To describe the long term use of inhaled budesonide in cats with naturally occurring asthma and chronic bronchitis and to measure its effects. Methods; Owners of 43 cats diagnosed with asthma or chronic bronchitis, which had been prescribed 400 µg of inhaled budesonide twice daily, were contacted and information was retrieved by a questionnaire. Nineteen cats still receiving inhaled budesonide after more than 2 months were re-evaluated clinically and underwent barometric whole body plethysmography and adrenocorticotropic hormone-stimulation testing. Results: In 20 of the cats, therapy had been withdrawn by the owners. Cats (n=23) still receiving inhaled budesonide improved clinically and 19 cats that were reevaluated had significantly lower basal PENH (P=0.048) and higher PCPenh300 (P=0.049) values than before treatment. Corticosteroid-induced side effects were not observed in any cats but hypothalamic-pituitary-adrenal axis suppression was detected in 3 of 15 cases. Clinical Significance; Treatment with inhaled budesonide was well tolerated, resulting in improvement of clinical signs and barometric whole body plethysmography parameters. Although inhaled budesonide therapy was found to cause suppression of the hypothalamic-pituitary-adrenal axis in some cats, no cats showed clinical signs attributable to corticosteroid side effects.

Use of negative contrast computed tomography for diagnosis of a colonic duplication in a dog.
A. de Battisti, N. Harran, G. Chanoit and C. Warren-Smith

A 24-week-old dog was presented with recurrent rectal prolapse because of colonic duplication. Colonic duplication is an extremely uncommon congenital abnormality, with only six cases reported in veterinary medicine, one diagnosed at necropsy and five after barium enema, colonoscopy, abdominal ultrasound, exploratory laparotomy either alone or in combination. In this case, these techniques failed to identify the abnormality and diagnosis was ultimately achieved via negative contrast computed
tomography. The evaluation generated by the computed tomography images allowed a refined surgical approach. To the authors’ knowledge, negative contrast computed tomography has not yet been reported in the veterinary literature to diagnose gastrointestinal pathologies. Colonic duplication in this case was treated by removal of the intercolonic septum via colotomy.

**A sacro-caudal spinal cord choroid plexus papilloma in a shar-pei dog.**
Pasquale Gianuzzi, F. Gernone, M. Ricciardi, A. De Simone and M. Teresa Mandara
A seven-year-old shar-pei dog was referred because of severe lumbosacral pain and faecal incontinence of 20 days’ duration. Neurological examination was characterised by plegic tail, absence of perineal reflex, dilated anus, perineum and tail analgesia, and severe lumbosacral pain. The neurological clinical signs were suggestive of a selective lesion involving sacral and caudal spinal cord segments and/or related nerve roots. A magnetic resonance imaging of lumbosacral spine was performed and was suggestive of an intradural lesion. Primary or secondary neoplasia was considered as the most probable differential diagnosis. The dog was euthanased upon the owner’s request. Histopathological examination confirmed the presence of an intradural-extradural neoplastic tissue enveloping intradural tract of spinal nerve roots. On the basis of histological and immunohistochemical findings, a diagnosis of well-differentiated choroid plexus papilloma was made. To the authors' knowledge, this is the first case of primary or metastatic spinal choroid plexus papilloma in dogs.

**Pulmonary lipoma in a dog.**
An eight-year-old, neutered, male German short-haired pointer was presented for a chronic cough and an intrathoracic mass. Computed tomography revealed a mass with low attenuation in the right caudal lung lobe that invaded the principal bronchi. The mass was removed by right caudal and accessory lung lobectomy. The histopathological diagnosis was pulmonary lipoma. The clinical signs resolved following surgery. There was no evidence of recurrence or de novo lesions on computed tomography performed 12 months post-surgery. To the authors’ knowledge, this is the first report of a pulmonary lipoma in a dog.

**Journal of Feline Medicine and Surgery**

**Occurrence of bacteriuria in 18 catheterised cats with obstructive lower urinary tract disease: a pilot study**
Marine Hugonnard, Karine Chalvet-Monfray, Jérémy Dernis et al.
The incidence of catheter-associated urinary tract infections in cats catheterised for an obstructive lower urinary tract disease (LUTD) has not previously been evaluated. The objective of this study was to evaluate the frequency of significant bacteriuria in cats with obstructive LUTD managed for 48 h with a closed urine collection system. Eighteen male cats admitted for a non-infectious obstructive LUTD were evaluated. This was a prospective study. A standard protocol was used for aseptic catheter placement and maintenance. Three urine samples were collected from each animal through the catheter immediately after placement, 24 h after placement and just before removal. All samples underwent complete urinalysis, including bacterial culture. Catheter tips were tested by bacterial culture. Six cats (33.3%) developed significant bacteriuria during catheterisation. The causative bacteria were common feline uropathogens (Escherichia coli, Staphylococcus species) in five cases, and Streptococcus bovis in one. One cat developed a fungal infection. The presence of bacteria in urinary sediment was correlated strongly with positive urine culture results. The catheter tips from 10/18 cats (55.5%) were positive for culture. The positive predictive value of a positive culture from the urinary catheter tip was 87.5%. The specificity was 53.8%. The same infectious agents were cultured from both urine and catheter tip in six cases. In summary, one-third of cats developed significant bacteriuria during catheterisation. Silent bacteriuria could not be clearly differentiated from true urinary tract infection. The presence of bacteria in the urinary sediment was strongly indicative of bacteriuria. The specificity of urinary catheter tip culture was low.

**Prospective evaluation of healthy Ragdoll cats for chronic kidney disease by routine laboratory parameters and ultrasonography**
Dominique Paepe, Valérie Bavegems, Anaës Combes et al.
Ragdoll breeder organisations often forewarn Ragdoll cat owners that renal problems may develop as a result of polycystic kidney disease (PKD), chronic interstitial nephritis, familial renal dysplasia or nephrocalcinosis. Healthy Ragdoll and non-Ragdoll cats were prospectively evaluated by measuring serum creatinine and urea concentrations, routine urinalysis and abdominal ultrasonography. All
Ragdoll cats also underwent genetic PKD testing. One hundred and thirty-three Ragdoll and 62 control cats were included. Ragdoll cats had significantly lower serum urea concentrations and higher urinary specific gravity. However, median creatinine concentration, median urinary protein-to-creatinine ratio, and the proportion of cats with serum creatinine or urea concentration exceeding the reference interval did not differ. One or more renal ultrasonographical changes were detected in 66/133 (49.6%) Ragdoll and in 25/62 (40%) control cats. Ragdoll cats showed significantly more frequent segmental cortical lesions (7.5% versus 0%), abnormal renal capsule (19.5% versus 8%) and echogenic urine (51.9% versus 25.8%). Chronic kidney disease (CKD) was ultrasonographically suspected in 7/133 (5.3%) Ragdoll and in none of the control cats, which approached significance. Laboratory parameters confirmed kidney dysfunction only in 1/7 of these Ragdoll cats. All Ragdoll cats were PKD negative. In conclusion, first, breed-specific serum creatinine reference intervals are not likely required for Ragdoll cats. Second, renal ultrasonographical abnormalities are common, both in Ragdoll and non-Ragdoll cats. Third, healthy young Ragdoll cats are uncommonly affected by PKD and CKD, but an increased susceptibility of Ragdoll cats to develop CKD cannot be excluded. Finally, Ragdoll cats are predisposed to segmental cortical lesions, which may indicate renal infarction or cortical scarring.

Cardiovascular and respiratory effects, and quality of anesthesia produced by alfaxalone administered intramuscularly to cats sedated with dexmedetomidine and hydromorphone
Tamara L Grubb, Stephen A Greene, and Tania E Perez
The cardiovascular and respiratory effects, and the quality of anesthesia of alfaxalone administered intramuscularly (IM) to cats sedated with dexmedetomidine and hydromorphone were evaluated. Twelve healthy adult cats were anesthetized, with six cats receiving dexmedetomidine (0.01 mg/kg IM) followed by alfaxalone (5 mg/kg IM; group DA) and six receiving dexmedetomidine (0.01 mg/kg IM) plus hydromorphone (0.1 mg/kg IM) followed by alfaxalone (5 mg/kg IM; group DHA). Cardiorespiratory (pulse rate, blood pressure, respiratory rate, saturation of oxygen with hemoglobin, end tidal carbon dioxide partial pressure) and bispectral index (BIS) data were collected every 10 mins for 90 mins starting immediately after intubation. The quality of anesthesia was scored by a blinded researcher at induction and at 5 and 60 mins after extubation. Recovery scores ranged from 1 (prolonged struggling) to 4 (no struggling). There were no clinically significant (P >0.05) differences in any data between groups or over time. Physiologic parameters were within normal limits for cats at all times. BIS values were consistent with light anesthesia in both groups. However, recovery was prolonged and marked with excitement, ataxia and hyper-reactivity in all cats. Thus, although cardiovascular and respiratory parameters are stable following IM injection of alfaxalone to cats sedated with dexmedetomidine and hydromorphone, recovery is extremely poor and this route of administration is not recommended for anesthesia in cats.

Mineral metabolism in growing cats: changes in the values of blood parameters with age
Carmen Pineda, Escolastico Aguilera-Tejero, Fatima Guerrero et. al.
The purpose of this study was to describe changes in calcium, phosphorus, magnesium, parathyroid hormone, calcitriol and calcidiol in cats from 3 to 15 months of age. Fourteen European shorthair healthy cats of both sexes (seven males, seven females) belonging to a research colony were studied from 3 to 15 months of age. Plasma concentrations of total calcium, ionised calcium, albumin, phosphorus, magnesium, intact parathyroid hormone (I-PTH), whole parathyroid hormone (W-PTH), calcidiol and calcitriol were measured at 3, 6, 9, 12 and 15 months of age. From 3 months of age to adulthood cats showed a decrease in calcium (both total and ionised), phosphorus and magnesium. No major changes in PTH were evident, although the ratio of W-PTH:I-PTH decreased significantly with age. A reciprocal change in vitamin D metabolites (decrease in calcitriol and increase in calcidiol) was identified during the growing process. Our results, showing changes in most parameters of mineral metabolism during growth, reinforce the need to use adequate age-related reference values for diagnostic purposes.

Induction of scratching behaviour in cats: efficacy of synthetic feline interdigital semiochemical
Alessandro Cozzi, Céline Lafont Lecuelle, Philippe Monneret et. al.
The aim of the study was to evaluate the effects of synthetic feline interdigital semiochemical (FIS) on the induction of scratching behaviour in cats during a standardised behavioural test. The trial was a randomised blinded study on a single group of subjects, following a crossover design. The scratching behaviour of 19 cats was evaluated during a standardised test in which cats were introduced to an area with one scratching post. Each cat acted as its own control (receiving, at random, FIS then placebo or vice versa). The test lasted for 5 mins, after which the cat was left alone in the test area. Duration, frequency of scratching and latency of first scratching behaviour were noted. Two independent
were assessed by eight independent observers with various levels of expertise, and compared using clinical standard method for validation of auscultatory findings. Additionally, digital recordings (DRs) with an ES (3M Littmann Stethoscope Model 3200) for of with a CS (WA Tycos Harvey Elite) by two observers, and heart sounds were recorded digitally using fifty consecutive cats undergoing echocardiography were enrolled prospectively. Cats were ausculted as well as a conventional stethoscope (CS) in the detection of abnormal heart sounds. One hundred and one hund evaluate an electronic stethoscope (ES) in cats. We hypothesized that the ES would perform at least as findings may be subject to clinically re

Detection of murmurs and gallops may help to identify cats with heart disease. However, auscultatory knowledge of this behaviour and may help veterinarians to understand the characteristics of this complex behaviour by examining the variables displayed by a sample of the Italian feline population using multiple correspondence analysis. One hundred and twenty sample of the Italian feline population using multiple correspondence analysis. Echocardiography was used as the central region of Portugal by th use of real-time PCR, as well as to evaluate any associations between infection, clinical presentation and risk factors. The overall prevalence of infection by feline haemoplasmas was 43.43% (139/320), where 41.56% (133/320) corresponded to Candidatus Mycoplasma haemominutum (CMhm), 12.81% (41/320) to Mycoplasma haemofelis (Mhf), 4.38% (14/320) to Candidatus Mycoplasma haemotarvorum and 1.25% (4/320) to Candidatus Mycoplasma turicensis. Almost 13% (47/320) of the samples were co-infected, with the most common co-infection being CMhm and Mhf (23.74%). Infection was found statistically significant with feline immunodeficiency/feline leukaemia virus status (P = 0.034), but no significant association was found for breed, sex, fertility status (neutered/spayed/entire), age, clinical status, living conditions (in/outdoor), anaemia status, or the presence/absence of ticks or fleas. Cats from north-central Portugal are infected with all the known feline haemoplasma species, with CMhm being the most common one. Prevalence of all feline haemoplasmas was higher than that reported previously in cats from other European countries, but similar to that described in Portugal for dogs. These data provide a better perspective regarding Mycoplasma species infection in Europe, and new information that helps us better understand feline haemoplasmosis.

**Prevalence and co-infection of haemotropic mycoplasmas in Portuguese cats by real-time polymerase chain reaction**
Verónica L Martínez-Díaz, Ana Cristina Silvestre-Ferreira, Hugo Vilhena et. al.
The diagnosis of feline haemoplasmosis has improved over the years, with several techniques enabling a clear and specific diagnosis, and where polymerase chain reaction (PCR) is considered as the ‘gold standard’. The aim of this study was to survey the prevalence of feline haemoplasmas in 320 cats from the north-central region of Portugal by the use of real-time PCR, as well as to evaluate any associations between infection, clinical presentation and risk factors. The overall prevalence of infection by feline haemoplasmas was 43.43% (139/320), where 41.56% (133/320) corresponded to Candidatus Mycoplasma haemominutum (CMhm), 12.81% (41/320) to Mycoplasma haemofelis (Mhf), 4.38% (14/320) to Candidatus Mycoplasma haemotarvorum and 1.25% (4/320) to Candidatus Mycoplasma turicensis. Almost 13% (47/320) of the samples were co-infected, with the most common co-infection being CMhm and Mhf (23.74%). Infection was found statistically significant with feline immunodeficiency/feline leukaemia virus status (P = 0.034), but no significant association was found for breed, sex, fertility status (neutered/spayed/entire), age, clinical status, living conditions (in/outdoor), anaemia status, or the presence/absence of ticks or fleas. Cats from north-central Portugal are infected with all the known feline haemoplasma species, with CMhm being the most common one. Prevalence of all feline haemoplasmas was higher than that reported previously in cats from other European countries, but similar to that described in Portugal for dogs. These data provide a better perspective regarding Mycoplasma species infection in Europe, and new information that helps us better understand feline haemoplasmosis.

**Scratching behaviour and its features: a questionnaire-based study in an Italian sample of domestic cats**
Manuel Mengoli, Chiara Mariti, Alessandro Cozzi et. al.
Scratching behaviour in cats is described as a normal expression of the feline ethogram, having different possible purposes related to visual and chemical communication. During behavioural consultations owners often mention scratching as an additional problem. This preliminary study aimed to understand the characteristics of this complex behaviour by examining the variables displayed by a sample of the Italian feline population using multiple correspondence analysis. One hundred and twenty-eight cats were screened by means of a questionnaire to identify features of their scratching behaviour. Our data showed the importance of both the presence/absence of a scratching post in the cat’s living area, and its relationship to marking. When a scratching post is present in a cat’s living area, the cat appears to use it. Some aspects related to sex, neutering, age and environmental characteristics may modify the expression of scratching as a marking behaviour. Research has led to increased knowledge of this behaviour and may help veterinarians in describing to owners why it is important for cats to express scratching behaviour in their environment. Such information could help veterinarians and owners to recognise normal and problematic scratching behaviours.

**Clinical evaluation of the 3M Littmann Electronic Stethoscope Model 3200 in 150 cats**
Keith A Blass, Karsten E Schober, John D Bonagura et. al.
Detection of murmurs and gallops may help to identify cats with heart disease. However, auscultatory findings may be subject to clinically relevant observer variation. The objective of this study was to evaluate an electronic stethoscope (ES) in cats. We hypothesized that the ES would perform at least as well as a conventional stethoscope (CS) in the detection of abnormal heart sounds. One hundred and fifty consecutive cats undergoing echocardiography were enrolled prospectively. Cats were ausculted with a CS (WA Tycos Harvey Elite) by two observers, and heart sounds were recorded digitally using an ES (3M Littmann Stethoscope Model 3200) for off-line analysis. Echocardiography was used as the clinical standard method for validation of auscultatory findings. Additionally, digital recordings (DRs) were assessed by eight independent observers with various levels of expertise, and compared using
interclass correlation and Cohen’s weighted kappa analyses. Using the CS, a heart murmur (n = 88 cats) or gallop sound (n = 17) was identified in 105 cats, whereas 45 cats lacked abnormal heart sounds. There was good total agreement (83–90%) between the two observers using the CS. In contrast, there was only moderate agreement (P <0.001) between results from the CS and the DRs for murmurs, and poor agreement for gallops. The CS was more sensitive compared with the DRs with regard to murmurs and gallops. Agreement among the eight observers was good-to-excellent for murmur detection (81%). In conclusion, DRs made with the ES are less sensitive but comparably specific to a CS at detecting abnormal heart sounds in cats.

Development of an ultrasound-guided technique for pudendal nerve block in cat cadavers
Chiara Adami, Giovanni Angeli, Kati Haenssgen et. al.
The objective of this prospective experimental cadaveric study was to develop an ultrasound-guided technique to perform an anaesthetic pudendal nerve block in male cats. Fifteen fresh cadavers were used for this trial. A detailed anatomical dissection was performed on one cat in order to scrutinise the pudendal nerve and its ramifications. In a second step, the cadavers of six cats were used to test three different ultrasonographic approaches to the pudendal nerve: the deep dorso-lateral, the superficial dorso-lateral and the median transperineal. Although none of the approaches allowed direct ultrasonographical identification of the pudendal nerve branches, the deep dorso-lateral was found to be the most advantageous one in terms of practicability and ability to identify useful and reliable landmarks. Based on these findings, the deep dorso-lateral approach was selected as technique of choice for tracer injections (0.1 ml 1% methylene blue injected bilaterally) in six cat cadavers distinct from those used for the ultrasonographical study. Anatomical dissection revealed a homogeneous spread of the tracer around the pudendal nerve sensory branches in all six cadavers. Finally, computed tomography was performed in two additional cadavers after injection of 0.3 ml/kg (0.15 ml/kg per each injection site, left and right) contrast medium through the deep dorso-lateral approach in order to obtain a model of volume distribution applicable to local anaesthetics. Our findings in cat cadavers indicate that ultrasound-guided pudendal nerve block is feasible and could be proposed to provide peri-operative analgesia in clinical patients undergoing perineal urethrostomy.

Prevalence of intestinal parasites in pet shop kittens in Japan
Naoyuki Itoh, Yoichi Ito, Akihisa Kato et. al.
The present study examined the prevalence of intestinal parasites in kittens from five pet shops in East Japan. Fresh faecal samples were collected from 555 kittens (aged 1–3 months) on a single occasion. The samples were tested for the presence of Giardia species coproantigen using a commercially available enzyme-linked immunosorbent assay kit. Other intestinal parasites were identified microscopically using the formalin-ethyl acetate sedimentation technique. The overall prevalence of intestinal parasites was 27.2%; two genera of protozoa (Giardia species and Cystoisospora species) and one nematode (Toxocara cati) were detected. Faecal condition was not related to intestinal parasite infections. Significant differences among the pet shops were observed in the overall prevalence of intestinal parasites and the presence of Cystoisospora species infections.

Xanthine urolithiasis causing bilateral ureteral obstruction in a 10-month-old cat
Lisa A Mestrinho, Tiago Gonçalves, Pedro B Parreira et. al.
Xanthine urolithiasis was diagnosed in a 10-month-old intact female domestic shorthair cat presented with acute renal failure due to bilateral ureteral obstruction. Ultrasonography revealed the presence of multiple uroliths in both kidneys and ureters that were not detectable on previous survey radiographs. Medical management failed and ureteral obstruction persisted with no evidence of stone migration into the bladder. Bilateral ureterotomy with urolith removal was performed in order to relieve the obstruction. The cat recovered from surgery, and blood urea nitrogen and creatinine values decreased within normal limits 6 days postoperatively. Urolith analysis by infrared spectrometry determined xanthine composition, and a higher blood and urine concentration of hypoxanthine and xanthine was also found. At 1-year follow-up, the cat was free of clinical signs. However, ultrasonography of the abdomen revealed small-size calculi in both kidneys, despite the low protein diet intake. The very young age of the animal suggests a possible congenital xanthinuria.

Subcutaneous fluid port-associated soft tissue sarcoma in a cat
Shannon M McLeod, Darren J Imhoff, Michelle Thomas et. al.
A 20-year-old male castrated domestic longhair cat was evaluated for assessment of its chronic kidney disease (CKD) and a non-healing ulcerated mass at the site of a previously placed and subsequently removed GIF tube. The cat had been diagnosed with CKD 10 years prior and two GIF tubes had been
placed over a 5-year period, the second of which was associated with secondary infection. Biopsy of the non-healing ulcerated mass was consistent with grade 2 soft tissue sarcoma. At necropsy there was a discrete, serpentine, subcutaneous mass measuring approximately 8 mm in diameter that extended approximately 20 cm along the dorsum to the caudal thorax, following the path of the GIF tube, from the main intrascapular, ulcerated mass where the fluid port injection site was located. This is the first report of a fibrosarcoma arising at the site of a subcutaneous fluid port in a cat. Although the cat’s owners were pleased with the 4 years of quality of life provided by this device, this complication should be considered when a decision to place ports for long-term management of disease is made.

Long-term follow-up of surgical treatment of spinal anaplastic astrocytoma in a cat
Shinji Tamura, Yuko Hori, Yumiko Tamura, and Kazuyuki Uchida
A 10-year-old spayed female chinchilla feline presented with gradually progressive tetraparesis and cervical pain that had begun 1 month before the onset of a 4-day tetraplegic episode. Magnetic resonance imaging revealed a large elliptical intramedullary mass at the fourth cervical vertebrae. The mass was removed surgically and diagnosed as an anaplastic astrocytoma. No neurological abnormalities were observed 3 weeks postsurgery. Magnetic resonance at 3.5 year follow-up revealed neither mass regrowth nor recurrence of signs.

Changes in electromyography and F wave responses in two cats with presumed local tetanus: implications for diagnosis and prognosis
Ezio Bianchi, Roberta Biserini, Antonella Gallucci et. al.
Two cases of local tetanus in the cat are described. Clinical findings included severe muscular spasms of the pelvic limbs in one cat, and involvement of the thoracic limbs and muscles of the neck and face in the other. Electromyography in both cats showed spontaneous activity characterised by the presence of motor unit potentials. F waves, never previously reported in focal tetanus in animals, showed significantly increased F/M amplitude ratio in both cats and increased F wave duration in one cat. The electrodiagnostic findings provided relevant diagnostic and, possibly, prognostic information.

Reversible myocardial failure in a cat with primary hypoparathyroidism
Andrew R Lie, Kristin A MacDonald
A 4-year-old domestic shorthair cat presented with tetany. Laboratory testing confirmed severe hypocalcemia and primary hypoparathyroidism. The cat subsequently developed congestive heart failure secondary to myocardial failure and was treated with pimobendan, enalapril, furosemide, calcitriol and calcium salts. All clinical signs resolved and cardiac function returned to normal within 1 month, and remained normal after cessation of all medications except calcitriol. Hypocalcemia-associated cardiomyopathy is a rare, reversible condition that has not previously been reported in a veterinary patient, and it should be considered as a differential diagnosis in patients with myocardial failure.

Addisonian crisis and severe acidosis in a cat: a case of feline hypoadrenocorticism
Julia Sicken and Reto Neiger
A 4-year-old female neutered British Shorthair cat was presented as an emergency owing to progressive apathy, anorexia, adipsia, weight loss and weakness. Clinical findings showed severe weakness, collapse, weak pulse, bradycardia, hypovolaemia and hypothermia. Blood examinations revealed marked metabolic acidosis, hypernatraemia, hyperkalaemia, hyperphosphataemia, hypercalcemia, hypochloremia and azotaemia. The diagnosis of feline hypoadrenocorticism was based on low cortisol and aldosterone plasma levels before and after synthetic adrenocorticotropic hormone administration. Initial treatment consisted of intravenous fluid therapy. After stabilisation a combination of fludrocortisone and prednisolone was given orally. One year after diagnosis the cat is free of clinical signs and in good condition.

Concurrent somatotroph and plurihormonal pituitary adenomas in a cat
Mellora Sharman, Louise FitzGerald, and Matti Kiupel
An 8-year-old, male neutered, domestic longhair cat was referred for investigation of insulin-resistant diabetes mellitus. Routine haematology, serum biochemistry, urinalysis (including culture), total T4 and urine creatinine:cortisol ratio were unremarkable, but markedly increased insulin-like growth factor-1 concentration was identified and a pituitary mass was subsequently documented. The cat was treated conservatively with the dopamine agonist L-deprenyl and was re-presented 16 months later for worsening polyuria, polydipsia, polyphagia, marked lumbar muscle atrophy, development of a pendulous abdomen and marked thinning of the abdominal skin. Hyperadrenocorticism was diagnosed
based on abdominal ultrasonography, dexamethasone suppression testing and endogenous adrenocorticotropic hormone (ACTH). The cat was treated with trilostane (30 mg q24h PO) and showed some clinical improvement, but developed an opportunistic fungal infection and skin fragility syndrome 4.5 months after commencing treatment, and was euthanased. A double-pituitary adenoma comprising a discrete somatotroph adenoma and a separate plurihormonal adenoma (positive immunoreactivity for ACTH, melanocyte-stimulating hormone and follicle-stimulating hormone) was identified on post-mortem examination. These two pituitary adenomas were suspected to have arisen as independent neoplastic entities with the plurihormonal tumour either being clinically silent at the initial presentation or having developed over the subsequent 16 months.

Skin fragility syndrome in a cat with multicentric follicular lymphoma
Odile Crosaz, Federico Vilaplana-Grosso, Charline Alleaume et. al.
An 11-year-old, spayed female domestic shorthair cat was presented for a right flank wound. On clinical examination, a single non-painful skin tear lesion with irregular edges was detected. During the examination, star-shaped cigarette paper-like skin lesions appeared spontaneously. An abdominal mass was also palpated. Feline skin fragility syndrome (FSFS) was suspected and a multicentric lymphoma was diagnosed by fine needle aspiration. The cat’s condition declined and it died spontaneously. Post-mortem examination confirmed the diagnosis of lymphoma. Neoplastic lymphocytes were not observed in the skin. Histological analysis of the skin was consistent with the morphological aspects of FSFS. A possible direct link between the two conditions remains a matter of speculation, but this case report provides the first description of FSFS associated with multicentric follicular lymphoma. Thus, multicentric follicular lymphoma should be considered as a differential diagnosis in cats presenting with FSFS.

Canadian Veterinary Journal

Spinal meningiomas in dogs: Description of 8 cases including a novel radiological and histopathological presentation
Roberto José-López, Cristian de la Fuente, Marti Pumarola, Sonia Añor
Clinical, imaging, and histological features of 8 canine spinal meningiomas, including a cervical cystic meningioma with imaging and intraoperative features of an arachnoid cyst, are described. All meningiomas were histologically classified and graded following the international World Health Organization human classification for tumors. Six meningiomas were located in the cervical spinal cord. Myelography showed intradural/extramedullary lesions in 3/4 cases. Magnetic resonance imaging revealed hyperintense intradural/extramedullary masses on pre-contrast T1-weighted and T2-weighted images with homogeneous contrast enhancement in 7/8 cases. One dog had a cerebrospinal fluid-filled subarachnoid cavity dorsal to the cervical spinal cord. A spinal arachnoid cyst was diagnosed on imaging, but the histopathological study of the resected tissue revealed a grade I meningothelial cystic meningioma. There were no differences in outcome associated with tumor grade and surgical treatment (6/8). Cystic meningioma should be considered in the differential diagnosis of intraspinal cystic lesions, and biopsy is necessary for definitive diagnosis.

Cervical lung lobe herniation in dogs identified by fluoroscopy
Laura A. Nafe, Ian D. Robertson, Eleanor C. Hawkins
This study aimed to determine the frequency of cervical lung lobe herniation (CLLH) in dogs evaluated fluoroscopically and to identify associated characteristics. Reports of diagnostic procedures and patient summaries from 2008 to 2010 were reviewed retrospectively. Signalment, body weight, duration of cough, presence of heart murmur and airway collapse, and radiographic findings were compared between dogs with and without CLLH. Of the 121 dogs that were examined, CLLH occurred in 85 (70%). The extra-thoracic trachea kinked during herniation in 33 (39%) dogs with CLLH. Collapse of the intra-thoracic trachea (assessed fluoroscopically or bronchoscopically) and collapse of major bronchi (assessed fluoroscopically) were strongly associated with CLLH. Although redundant dorsal tracheal membrane on radiographs was associated with CLLH, extra-thoracic tracheal collapse, assessed fluoroscopically or bronchoscopically, was not. No other associations were found. Cervical lung lobe herniation was present in most dogs evaluated during cough and was associated with intra-thoracic large airway collapse, but not duration of cough.

Cutaneous lymphoid hyperplasia mimicking cutaneous lymphoma in a hyperthyroid cat
Elisabeth Sneath, Moira Kerr, Valerie MacDonald
A 12-year-old neutered male domestic shorthair cat presented for chronic, localized, swelling and crusting of the left upper lip, weight loss, sporadic vomiting, and focal alopecia between the scapulae was diagnosed with hyperthyroidism and regional eosinophilic lymphadenitis. Treatment with methimazole exacerbated an underlying hypersensitivity disorder leading to marked generalized lymphadenopathy that histologically mimicked lymphoma.

**Thyrotoxicosis in a dog induced by the consumption of feces from a levothyroxine-supplemented housemate**

Steven R. Shadwick, Marcella D. Ridgway, Amy Kubier

A 9-year-old golden retriever dog was evaluated for polyuria, polydipsia, weight loss, and elevated serum thyroxine. Targeted questioning revealed that the dog was coprophagia and routinely ingested the feces of a dog that was treated with twice-daily levothyroxine. Clinical signs resolved and serum thyroxine decreased to normal levels in the affected dog with prevention of coprophagy.

**Australian Veterinary Journal**

**Intra-abdominal blockage of a ventriculoperitoneal shunt by a suspected mesenteric pseudocyst in a dog**

CJ Driver, MJ Pinilla, S Loderstedt, PJ Kenny

**Background:** There are few reports of abdominal complications following ventriculoperitoneal (VP) shunt placement for the treatment of hydrocephalus in dogs. Case report: A 3-year-old dog underwent successful VP shunting for the treatment of hydrocephalus, but re-presented 10 months later with progressive central vestibular syndrome. Magnetic resonance imaging of the brain suggested VP catheter obstruction. The dog was euthanased and on postmortem examination the abdominal tip of the VP catheter was ensheathed and blocked by fibrous mesentery, possibly a pseudocyst. Conclusions: Abdominal complications are common in humans, with pseudocysts reported in up to 4.5% of cases. This diagnosis should be considered for dogs re-presenting following VP shunt surgery.

**Journal of the American Veterinary Medical Association – October 15**

**Glargine insulin for treatment of naturally occurring diabetes mellitus in dogs.**

Hess RS, Drobotz KJ.

Objective-To evaluate the effects of twice-daily glargine insulin administration in dogs with diabetes mellitus. Design-Open-label, prospective clinical trial. Animals-10 dogs with naturally occurring diabetes mellitus. Procedures-Dogs with poorly regulated or newly diagnosed diabetes mellitus were enrolled if their owners agreed to return them to the hospital at 1- to 3-week intervals for 4 follow-up visits. During each follow-up visit, blood glucose concentrations were measured every 2 hours for at least 10 hours after feeding a diet high in insoluble fiber and after administration of glargine insulin (time 0). The initial glargine insulin dosage was 0.5 U/kg (0.23 U/lb) SC twice daily. Results-All dogs had well-regulated diabetes mellitus at a mean ± SD of 38 ± 14 days (median, 43 days; range, 7 to 55 days) following study enrollment. At the time diabetes mellitus was well regulated, mean glargine insulin dosage was 0.5 ± 0.15 U/kg (0.23 ± 0.068 U/lb; median, 0.5 U/kg; range, 0.32 to 0.67 U/kg [0.15 to 0.30 U/lb]) twice daily, and 3 dogs were receiving a dosage < 0.4 U/kg (0.18 U/lb). In dogs with well-regulated diabetes mellitus, the mean minimum blood glucose concentration (163 ± 89 mg/dL; 95% confidence interval, 100 to 227 mg/dL) was detected 2 hours after administration of glargine insulin and the mean maximum blood glucose concentration (230 ± 95 mg/dL; 95% confidence interval, 64 to 323 mg/dL) was detected 12 hours after administration of glargine insulin. There was no significant difference between mean minimum and mean maximum blood glucose concentrations nor were they significant differences between blood glucose concentrations measured at other time points. Blood glucose concentration < 80 mg/dL was measured at least once in 7 of 10 dogs. Conclusions and Clinical Relevance-Results of the present study suggested that, in diabetic dogs fed a diet high in insoluble fiber, glargine insulin is a peakless insulin that does not induce a distinct blood glucose concentration nadir. For glargine insulin, 0.3 U/kg (0.136 U/lb) SC twice daily is recommended as an initial dosage.

**Evaluation of risk factors associated with recurrent obstruction in cats treated medically for urethral obstruction.**

Eisenberg BW, Waldrop JE, Allen SE, Brisson JO, Aloisio KM, Horton NJ.

Objective-To determine risk factors for short-term recurrent urethral obstruction in cats after treatment by means of urinary catheterization and hospitalization. Design-Prospective case series. Animals-83
client-owned cats. Procedures-Physical examination findings, laboratory abnormalities, treatment decisions, and environmental changes were evaluated as risk factors for recurrent urethral obstruction in the 30 days following hospital discharge. Results-Of the 68 cats with completed follow-up surveys, 10 had an episode of recurrent urethral obstruction. Older cats were significantly more likely to have recurrent urethral obstruction. No specific laboratory abnormalities were associated with the risk of recurrent urethral obstruction. Longer duration of catheterization was significantly associated with a decreased risk of recurrent urethral obstruction. Duration of hospitalization and volume of IV fluids delivered were not significantly associated with recurrent urethral obstruction. Increasing water availability after discharge was associated with a decreased risk of recurrent urethral obstruction. There was no association between diet and recurrent urethral obstruction. Conclusions and Clinical Relevance-Results of this study suggested that longer duration of catheterization may be associated with a lower probability of short-term recurrent urethral obstruction in male cats. Older cats were at higher risk for recurrent obstruction. Owners should be encouraged to increase water availability after discharge in cats treated for urethral obstruction to decrease the likelihood of recurrence.

Journal of the American Veterinary Medical Association – October 1

Incidence of sterile hemorrhagic cystitis in dogs receiving cyclophosphamide orally for three days without concurrent furosemide as part of a chemotherapeutic treatment for lymphoma: 57 cases (2007-2012).
Best MP, Fry DR.
Objective-To evaluate the incidence of sterile hemorrhagic cystitis (SHC) and other adverse effects in dogs following oral administration of the single-day, maximum-tolerated dose (MTD) of cyclophosphamide divided over 3 days as part of a multiagent chemotherapy protocol for treatment of lymphoma without concurrent administration of furosemide. Design-Retrospective case series. Animals-57 dogs. Procedures-Medical records were reviewed to identify dogs with lymphoma that underwent the described cyclophosphamide treatment. Information was obtained regarding signalment, lymphoma stage, concurrent diseases, cyclophosphamide doses administered, adverse effects (including SHC), remission rates, and outcomes. The incidence of SHC was compared with that of literature-derived historical control groups that received the MTD of cyclophosphamide as a single, 1-day dose with or without furosemide treatment. Results-None of the 57 dogs developed SHC during the study period. Forty-seven of 57 (82%) dogs had complete remission of lymphoma. Other adverse effects were uncommon and self-limiting; no dogs had myelosuppression, and only 5 had mild gastrointestinal effects. Incidence of SHC was significantly lower than that reported for historical control dogs that received cyclophosphamide as a single dose without furosemide (24/219) and was not significantly different from that for historical control dogs that received cyclophosphamide as a single dose with furosemide (2/139). Conclusions and Clinical Relevance-No dogs in this study had SHC following oral administration of the single-day MTD of cyclophosphamide divided over a 3-day period without furosemide administration. Further research is needed to confirm whether this method of cyclophosphamide administration is equivalent or superior to the current single-dose administration method.

Phenotype, inheritance characteristics, and risk factors for idiopathic epilepsy in Finnish Spitz dogs.
Vitmaa R, Cizinauskas S, Orro T, Niilo-Rämä M, Gordin E, Lohi H, Seppälä EH, Bragge H, Snellman M.
Objective-To determine the phenotype, inheritance characteristics, and risk factors for idiopathic epilepsy (IE) in Finnish Spitz dogs (FSDs). Design-Prospective epidemiological study. Animals-2,141 FSDs. Procedures-From 2003 to 2004, questionnaires (n = 5,960) were sent to all owners of 1-to-10-year-old FSDs in Finland. Phone interviews were performed 1 to 2 years later. Results-Estimated prevalence of IE was 5.36% (111/2,069 of FSDs that were still alive). Males were predisposed to IE. The median age of onset was 3 years (range, 0.6 to 10 years). The median seizure frequency was 2 seizures/y (range, 0.5 to 48 seizures/y), and the median duration of the seizure episode was 11.75 minutes (range, 1.5 to 90 minutes). The majority (85%) of the seizures had a focal onset, and 54% were characterized as generalized secondary. A generalized seizure phase was determined to be a risk factor for development of progressive disease. Factors associated with the occurrence of a generalized phase were the age of onset, duration of the seizure, number of feeding times per day, and whether the dog was used for hunting. The seizures were not progressing in 678% of the dogs and were easily controlled by antiepileptic treatment in 78.9% of the dogs. The heritability estimate of IE in FSDs was 0.22; IE was best explained as a polygenic trait. Conclusions and Clinical Relevance-In the present
study conducted in Finland, complex focal seizures were the most common seizure type for FSDs with IE, and a generalized seizure phase was a risk factor for progression of the disease. Results suggested a benign course of epilepsy in FSDs.

**Acquisition and persistence of antimicrobial-resistant bacteria isolated from dogs and cats admitted to a veterinary teaching hospital.**

Hamilton E, Kruger JM, Schall W, Beal M, Manning SD, Kaneene JB.

Abstract: Objective-To assess antimicrobial resistance among bacteria isolated from dogs and cats admitted to a veterinary teaching hospital (VTH), determine the incidence of acquisition of and frequency of persistent colonization by antimicrobial-resistant organisms among these animals, and identify risk factors associated with these variables. Design-Prospective longitudinal study. Animals-622 dogs and 92 cats admitted to a VTH and expected to stay ≥ 48 hours. Procedures-Samples were collected with rectal and nasal or oropharyngeal swabs at admission and discharge. Isolates of enterococci, staphylococci, and Escherichia coli were tested for antimicrobial resistance via microbroth dilution methods. A subset of isolates was analyzed with pulsed-field gel electrophoresis and multilocus sequence typing. Significant trends in proportions of organisms with antimicrobial resistance over the 3-year study period were assessed. Results-The proportion of staphylococci with antimicrobial resistance increased, whereas the proportion of E coli with resistance decreased, over time; resistance among enterococci was more variable. For 506 dogs with paired admission and discharge samples, multidrug-resistant (MDR) E coli was acquired by 40 (8%) and methicillin-resistant Staphylococcus aureus (MRSA) was acquired by 7 (1.4%); hospitalization for > 3 days was significantly associated with both variables. Most (5/7 isolates) acquired MRSA was of sequence type (ST) 5. Conclusions and Clinical Relevance-Extended hospitalization was associated with increased risk of acquiring MDR E coli or MRSA, although few animals acquired MRSA. It is unclear whether associations were confounded by illness severity or use of infection control measures. Additionally, MRSA of ST5, which has been associated with small animal medicine, was the most commonly acquired MRSA in this study.