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Companion Animals: Posters

**Canine auricular cartilage in patellar ligament desmoplasty.**

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Rupture of the patellar ligament represents a condition with few options of surgical repair in dogs and, if not treated immediately, develop complications such as muscle retraction, compromising the surgical outcomes (1). In parallel, application of autogenous, allogogenous or xenogenous auricular cartilage is a common procedure in reparative surgeries due to its properties of elasticity, resistance and low cellular metabolism and antigenicity, easy acquisition, preparation, conservation and low cost (2). We tested the applicability of rehydrated canine auricular cartilage stored in glycerin 98% as an alternative to primary end-to-end suture. Fifteen rabbits were submitted to general anesthesia, desmotomy and desmoplasty of the distal portion of the patellar ligament. Desmoplasty was performed with the xenograft sutured in its longest portion using simple interrupted polypropylene 3-0 sutures and fixed distally to the tibial crest with a stainless steel screw (Fig. 1). According with the good clinical evolution, macroscopic and microscopic findings (Figs. 2 and 3), the technique was considered simple and with satisfactory results in patellar ligament repair in rabbits evaluated until 90 days after surgery.


**Doppler imaging of the orbital vasculature of the normal Persian cats.**

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Blood velocity parameters of the orbital and ocular vasculature can be no invasively assessed and measured by Doppler imaging. The purpose of this study was to blood velocity measurement in orbital vasculature. A total of 5 (Female) previously healthy Persian cats were selected.

General Electrics Voluson 730-Pro ultrasound equipment with linear trapezoid 5-12 MHz transducer was applied for all the examinations. Vessels identified a majority of the time, include: external ophthalmic artery (EOA), and internal ophthalmic artery (IOA) and the following Doppler parameters were measured, peak systolic velocity (PSV), end diastolic velocity (EDV), Mean PSV, EDV, at the EOA were 12.3, 5.1, and the mean PSV, EDV, at the IOA were 11.8, 4.5, and 0.407. Doppler imaging has the potential for determining no invasively and consecutively the blood velocity parameters found in orbital and ocular diseases, including orbital inflammations and neoplasia;vascular diseases including systemic vascular disease (hypertension);vasculopathies,and anemia; the glaucoma; and document able follow-up after medical and surgical treatment of these diseases.

1 Kathleen J.Gelatt-Nicholson and et al. Doppler imaging of the ophthalmic vasculature of the normal dog, blood velocity measurement and reproducibility, Veterinary Ophthalmology (1995); 87-96.
2 Schmidt V, Murisier N. Color Doppler imaging of the orbit in the dog. Veterinary and Comparative Ophthalmology 1996; 6:35-44.

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Radiological techniques are used to reveal the Canine Hip dysplasia (CHD)-phenotype, which is characterised by lack of congruency and excessive laxity of the hip articulation, and ultimately by signs of DJD. Hip radiographs of satisfactory technical quality were selected belonging to 2 groups: a first group (n=22) without any sign of DJD (FCI score A or B or C1), and a second group (n=18) with undisputable but low level DJD (score C2) and digitalised. Several measurements of the hips were assessed using the conventional calliper method, and by means of an image analysing program (Digimizer®). Also, repeat measurements were performed at different moments in time. Statistical analyses used the Medcalc® software, Mariakerke, Belgium. Using the Digimizer® system, it was found that measurement of the Norberg angle has a better reproducibility compared to the conventional callipers. In spite of its more precise and reproducible measurement using the Digimizer, the NA had only moderate power to discriminate between hips with or without degenerative joint disease. It was found that other laxity sensitive measurements, but not conformational measurements, standardised for the size of the dog, have better power to discriminate between hips with or without degenerative disease. Further studies are needed on a larger number of dogs of different breeds to confirm our preliminary conclusions.

The critical period for socialisation and habituation of puppies is between three and 14 weeks. It is therefore crucial to not only vaccinate puppies as early as possible, but also for the chosen vaccine to induce a protective immune response as quickly as possible, thus enabling safe exposure to different environmental stimuli.

Fifteen puppies aged 8-9 weeks were vaccinated once with an injectable, multivalent, modified live viral (MLV) vaccine containing canine parvovirus (CPV), canine distemper virus (CDV), canine parainfluenza virus (CPI) and canine adenovirus (CAV2) fractions (Nobivac DHPPi, Intervet). Five puppies were challenged with virulent CAV1, seven days after vaccination together with three unvaccinated controls. The infection resulted in severe clinical and post mortem signs consistent with infectious hepatitis in all three controls, whereas all the vaccinated puppies remained clinically healthy with no abnormal post mortem lesions.

Ten puppies were challenged with virulent CAV2, seven days after vaccination together with 10 unvaccinated controls. Mild clinical signs were observed in some dogs from both groups. However, the control dogs excreted significantly more virus for a longer period post challenge and exhibited more post mortem lung lesions compared to the vaccinates.

It was concluded that this MLV vaccine stimulates immunity to both CAV1 and CAV2 within seven days.
Efficacy of the FHV Component of a Multivalent Modified Live Vaccine in Maternal Antibody Positive Kittens

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The efficacy of a combination vaccine containing a MLV F9 strain of FCV (Nobivac® Forcat - Intervet) was assessed in nine kittens with maternally derived antibodies (MDA) against FCV.

The kittens were vaccinated with a minimal titre dose of vaccine, initially at between seven and nine weeks of age followed by a second inoculation three weeks later. One month after the second inoculation, they were oronasally challenged, together with 10 unvaccinated controls, with 10^5.81 TCID50 of virulent FCV.

The clinical signs post challenge were significantly reduced (p = 0.0149) in the vaccinates as compared to the unvaccinated controls. Thus it can be concluded that the MLV F9 strain in this vaccine is efficacious in the face of MDA.

Prolapse of the Gland of the Third Eyelid in a Cat

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Introduction
To report a unilateral prolapse of the gland of the third eyelid in a cat.

Case Report
A four-year-old Domestic shorthair, female, was presented to the author for an ophthalmic evaluation. The owner observed an inflamed mass in the nasal canthus of the cat’s right eye. He reported that a small mass was noticed 9 months before the visit. He came because he noticed a recrudescence of the mass itself. On ophthalmic examination the results of the STT were 23 mm/min on the right eye and 14 mm/min on the left one; the fluorescein test was positive on the right eye. The slit-lamp examination on the right eye showed in the cornea a small superficial ulcer with neovascularization. No other remarkable signs were found. The diagnosis was: unilateral prolapse of the gland of the third eyelid with traumatic ulcer.

Discussion and Conclusion
The unilateral prolapse of the gland of the third eyelid is a very common disease in some dogs’ breed, but it is very seldom found in cats. In literature we have a report in Burmese breed and this could suggest an inherited predisposition. Treatment requires the surgical repositioning of the gland following different kind of surgery procedures. Gland excision should be avoided because it may cause problems to the precorneal tear film.
A 7.5 year old male castrated German shepherd dog was presented with a history of listlessness, loss of appetite, dyspnoea and facial swelling. Clinical examination revealed pressure-sensitive swelling of the right facial half and unilateral purulent nasal discharge. Apart from moderate leukocytosis with granulocytosis, blood parameters were within normal limits. X-rays of the skull (1,2) showed increased opacification and a possible space occupying mass of the right nasal cavity with thinning of the nasal bone. Rhinoscopy confirmed the presence of an intranasal lump, and multiple biopsies were obtained. Cytology and histology indicated acute-on-chronic purulent inflammation, no neoplastic features were found. Antibiotic therapy with amoxicillin/clavulanic acid and enrofloxacin was initiated as a result of positive bacteriological culture of the nasal discharge (Staphylococcus intermedius, Pseudomonas putida). The patient’s condition improved slightly until eight days later when he suffered an epileptiform seizure. Despite intensive therapy the dog showed increasing weakness and repeated focal seizures leading to euthanasia. Dissection revealed a tangerine-sized, whitish, friable pilomatricoma (3) in the mean section of the right nasal cavity. In addition, a cherry-sized, mucilaginous, pinkish olfactoriusneuroblastoma (4) in the caudal part of the right nasal cavity infiltrating the cerebral lobus olfactorius was found. Although pilomatricomas are quite frequently found in dogs, the intranasal localisation of the tumor in this patient is very unusual, and possible explanations (i.e. old perforating injury, malformation) remain highly speculative. The finding of a simultaneously occurring olfactoriusneuroblastoma which presumably held responsible for the neurologic symptoms makes this case extraordinary in the authors’ opinion.

Many rabbits died of Rabbit Haemorrhagic Disease. However in some areas rabbits have developed immunity. This is especially seen in high density populations (1,2,3,4,5). This research is about the relationship between the prevalence of antibodies against RHD and population density in wild rabbits in Noord-Holland. Serum samples of rabbits from low and high density populations were tested. The prevalence of antibodies in low density populations is 0.08 and in high density populations 0.5. This shows a significant difference. Further research in The Netherlands is necessary.

The report described diffuse malignant epithelioid pleural mesothelioma in a 9-month-old dog. Macroscopically, 200 ml of serosanguinous fluid containing easily scattered yellowish-red masses with 1-2 cm diameter were observed in the thoracic cavity. Diffuse, nodular masses unevenly distributed over pericardium and parietal pleura covering the internal surface of the ribs as well as easily turn off cauliflower shaped pandleural masses, which hold on to the surface with thin peduncles were observed. The color varied from white to brown, partially red and mostly of dense consistency. Microscopically, great number of round, partially polygonal, anaplastic mesothelial cells with small cytoplasm and hyperchromatic or mitotic nuclei attracted attention. Stroma between the cells that have located papillomatosly or sometimes as solid masses consisted of small amount of connective tissue and capillaries. The tumor cells were seen in pericardium and parietal pleura. Furthermore, tumor cells showed positive reactions with Periodic Acid Schiff (PAS) and Alcian Blue stains; anti-vimentin and cytokeratine, on contrary to anti-CEA, secretory component, milk fat globule-related antigen (MFGRA) and calretinin were negative.
Canine Hip Dysplasia (CHD), Canine Elbow Dysplasia (CED) and Osteochondrosis Dissecans (OCD) are occurring in canine breeds (1, 2, 3). All radiographs of hips, elbows and shoulders of potential breeding dogs that were made in our department were sent for official evaluation. Hips and elbows were evaluated in agreement with the standard criteria (4, 5). Shoulder joints that had signs of OCD all received grade 1. Prevalence of CHD, CED and OCD of the shoulder were calculated separately and in combination for all breeds and for 8 different breeds. For all breeds (n = 351), the prevalence for CHD is the highest (40.1 %). For all breeds and all three the disorders (n = 102), prevalence increases up to 57.8%. There are breed differences. The results indicate that the prevalence is indeed underestimated as reported in literature (6).

Zylexis® (Pfizer Animal Health) is a modulator of the innate immune system, based on the inactivated parapoxvirus ovis strain D1701. The objective of this study was to assess the efficacy of Zylexis® in preventing/reducing the development of clinical signs associated with virulent feline calicivirus (FCV) challenge in naïve young cats. Five 16-17 week old cats in each group were treated with either Zylexis® or placebo on days 2, 4 and 6 after oronasal challenge with the virulent FCV strain 255 on day 0. Animals were observed for 14 days for the development of clinical signs. These observations were combined daily to produce a total clinical score for each animal and each treatment group. Nasal swabs were collected daily for 14 days and serum on days 0 and 14. Although no effect on FCV shedding and antibody response was observed, there was a reduction in the total clinical scores for the Zylexis® treatment group. Particularly, a statistically significant reduction in the percentage of days with ulcers was observed (p=0.0041). These findings are in agreement with recently published observations that the prophylactic treatment with Zylexis® of 16-17 week old cats exposed to calicivirus reduces the total clinical score. In conclusion, Zylexis® is a treatment which is effective therapeutically and prophylactically against FCV (2). Furthermore, Zylexis® can be used concurrently with an antibiotic in upper respiratory tract infections of companion animals as demonstrated in a dog study (1).

It is difficult to predict long-term outcome before surgical attenuation of congenital portosystemic shunts (CPS). Besides localisation of the shunt, prognosis is related to the regenerative capacity of the liver. To screen for prognostic factors, 6 gene-products that are differentially expressed in CPS versus primary portal vein hypoplasia (PPVH) and 10 additive gene-products involved in hepatic proliferation or apoptosis were included in this approach.

The SYBR Green-based quantitative-PCR method was used on cDNA, derived from intraoperative liver biopsies from 12 recovered and 12 non-recovered dogs with CPS. Two independent reference gene-products were included. Western blotting was performed in 9 biopsies to screen for differentially expressed activated proteins involved in hepatic repair (5 recovered vs 4 non-recovered CPS dogs). Differentially expressed gene-products (CPS vs PPVH) were not informative, indicating that an unsuccessful outcome was not caused by a hidden PPVH in a CPS dog.

The gene-product PIM-2 was much higher in recovered vs non-recovered patients. Increased levels of this anti-apoptotic gene-product can easily explain a better outcome. Similarly, the increased expression of the self-renewal marker BMI-1 suggested the presence of increased activation of hepatic stem cells in livers with a good outcome compared to non-recovered dogs. Finally, increased activation of proliferative p38MAPK was observed in recovered patients. These factors will be further studied in detail.
In most research programs, use of laboratory animals is necessary. For this reason we have to prepare comfortable and health situation near their natural life for animals in laboratory. By this manner we try to maintain humanity and omit confounding factors from our research results. We need to gather educational, instrumental and legislation necessity to reach fulfillment of these aims. They could categorize in four fundamental phases.

a. Obtain and transport of animals
b. Taking care protocols
c. Knowledge of researchers and workers
d. Performance of procedure

In each part should be several rules to prepared whole poverty for animals and best situation for research program. A certain code is distinguished for each rule. Researchers have to get permission for each code.

They have to get several permission code depend animal species and type of research. Some of these codes such as animal supply have value only for research period but others such as teaching courses may have value for a certain period. Finally use of these codes makes a strait procedure to obtain good results.

1. MRC Ethics guide, Medical research council, London, 2004, p 6-15
2. Responsibility in the use of animals in medical research, Medical Research Council, London, 1993, p 3-10 (5 Ref)
3. Responsibilities of investigators and teachers: Australian code of practice for the care and use of animals for scientific purpose, (Section 3) Australia, 2001, p 21-25

Estrogens and synthetic estrogenic drugs are widely used (and misused) in small animal practice for treatment of mismating, hypo-gonadal obesity and hormonal urinary incontinence in bitches.

An 8 year old female mixed terrier was admitted to VTH of Ferdowsi University with clinical history of lethargy, anorexia and vomiting. Clinical findings included pale mucous membranes, tachycardia, 3/6 systolic murmur, dehydration, vomiting (coffee ground colored) and melena. Complete blood count determined remarkable declines of PCV, Hb and RBC (normocytic normocromic anemia), thrombocytopenia and leukopenia. History revealed that owner injected 20 mg of estradiol valerate (2 days) as treatment of mismating. A presumptive diagnosis of estrogen-induced myelotoxicosis with gastrointestinal due to thrombocytopenia was made. Supportive therapy, including crystalloid fluids, antacids, antibiotic therapy, blood transfusion and vitamin B complex, was performed.

Estrogen toxicity in a dog

Estrogen toxicity in a dog

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At daily clinical examination, there was not any sign suggestive of improvement in the clinical condition and animal died after 2 weeks.
Companion Animals: Posters

MRI FINDINGS OF INTRACRANIAL TUMORS IN DOGS: 27 CASES
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The purpose of the study was to report MRI findings of intracranial tumors in 27 dogs. Medical records of dogs admitted for central nervous system disorders were reviewed, and cases having intracranial tumors which were diagnosed by MRI between 1997 – 2006 were included in the study. The images taken were T1 weighted, T2 weighted and contrast enhanced T1 weighted (following Gd-DTPA administration) in transverse, coronal (dorsal) and sagittal sections were interpreted to evaluate tumors. The following features were evaluated to characterize the diagnosis in MRI: axial origin, anatomic site, T1 w and T2 w features, edema, shape, multiple or solid, paramagnetic contrast enhancement, shift, size.

MRI diagnosis were as follows: Intracranially invading sinus tumor (n=5), meningiomas (n=7), choroid plexus tumors or ependymoma (n=3), ependymoma (n=1), glioma (n=7), metastatic tumors (n=3) and hypophyseal adenoma (n=1). Histopathological confirmation was carried out in 10 cases: Intracranially invading sinus tumor (n=3), meningiomas (n=4), ependymoma (n=1), glioma (n=1) and hypophyseal adenoma (n=1). Histological and MRI diagnosis were in accordance except for one dog in which meningioma was diagnosed by MRI and glioma diagnosed by histological examination.

In conclusion, intracranial space occupying lesions can be accurately diagnosed, and tumor type can be predicted by MRI. However, histological diagnosis is to be needed for definitive diagnosis of intracranial tumors.


THE TUBULAR PRESERVING EFFECTS OF L-ARGININE IN GENTAMICIN EARLY-INDUCED NEPHROTOXICITY IN RATS
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Hemodynamic-disurbance glomerular failure is though to precede progressive tubular lesions regardless the cause of nephrotoxicity through primary interaction of gentamicin in biosynthesis of the prostaglandin subtypes, PGE2 and PGF2. In this study, forty healthy rats were randomly allocated 1-4 trials to receive either normal saline (NS), gentamicin (GN), gentamicin plus L-arginine (LC) or L-arginine (LA) for 9 days. Gentamicin alone caused GFR-associated reduction, in the clearance coefficient of creatinine as well as of tubular function evident by decrease in ATPase activity, increasing activity of NAG and subsequently GGT enzymes with rise in release of the urine phospholipid contents. H & E histopathology revealed acute tubular necrosis with tubular cast formation triggered by gentamicin administration over 9 days of experiment with interstitial nephritis and tubular epithelial loss. Further biochemical studies showed tubular preserving effect of L-arginine co-administrated including slow down in the growing enzyme activity and modest to moderate phospholipiduria with recovery in creatinine clearance and holding ATPase activity up to 50% on compare to control and L-arginine-only treated rats. Significant tubular resistance against gentamicin proximal tubular lesions on lysosomal latency-induced by L-arginine and normal size during microscopic inspections lead us to conclude that the role of L-arginine is probably attributed to the tubular prevention, whereas the glomerular stand prepared by the amino acid is just a consequent.
**Malva sylvetris exaggerates wound healing in rats.**

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**Introduction**

In this study the healing potential of aqueous Malva sylvetris whole plant extract (MSE) on dermal wounds was evaluated.

**Materials and Methods**

The study was carried out on 45 male Spragne-Dawly rats. Two uniform 7mm-diameter skin defect were created on the back of each animal by 7mm skin punch (total of 90 wounds). MSE was applied once daily on half of the wounds for 7 days, after which the animals were sacrificed for histopathological, biochemical (hydroxyproline content), and biomechanical studies. The ultimate surface area of the wounds was also measured.

MSE caused a significant increase in the number of fibroblasts and capillary buds, collagen content and the tensile strength of the treatment group. The wound surface area in treatment group was also significantly less than the control group.

Early dermal and epidermal regeneration and massive angiogenesis in treated rats confirmed that the extract had a positive effect towards cellular proliferation, granulation tissue formation and re-epithelialization.

Biochemical analysis showed increased hydroxyproline content, which is a reflection of increased fibroblastic proliferation and there by increased collagen synthesis. It can be concluded that MSE is an effective herbal remedy in wound healing.

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**Ontogeny of fetal movements in the guinea pig**

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Spontaneous foetal movements reflect the development of the foetal nervous system. Studies on foetal motility have been performed in a few species particularly in the human foetus.1 This ultrasonicographic study describes the onset and frequency of foetal movements in the guinea pig, a precocious species.

After a pilot study was performed to establish procedures for repeated scanning of guinea pigs, privately kept animals were scanned (7.5 or 5.0 MHz convex transducer) at 2-4 day intervals between day 24 and 63 after mating. Within every scanning session two selected foetuses were each scanned for 15 min. Video recordings of the scans were analyzed off line for incidence and quality of different foetal movement patterns. Recordings were finally re-analyzed for the quantification of four specific movement patterns.

Altogether 22 different movement patterns could be characterized, of which 6 occurred only temporarily. The very first foetal movement was observed on day 24 gestational age and subsequently, between days 24-33, all other movements, except one, developed. Quantitative analysis of 3 specific movement patterns, the General movements, Sideway bendings, foetal breathing and periods of foetal rest revealed specific patterns of incidence during the course of pregnancy. Incidence of Sideway bendings increased rapidly between day 24 and day 30 and declined hereafter. Incidence of General movements and foetal breathing increased during mid pregnancy and declined towards parturition. Incidence of foetal rest was almost 100% around day 24, decreased to 60 % at mid gestation, and increased again to a mean value of 90 % towards parturition.

These data can now serve as reference values for future studies on spontaneous, or pharmacologically evoked, abnormal foetal development.

Application of Bulbar Conjunctival Pedicle Graft in Cats

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Feline corneal sequestrum is a peculiar condition of cats with corneal stromal necrosis. In most cases stromal plaque extrudes and sloughs than corneal ulcer with a pigmented crater can occur. The Persian, Siamese Domestic Shorthair and Himalayan breeds are reported. The cause of the corneal necrosis is unknown. In such cases, deep dissection of sequestrum may be required with a conjunctival graft to support the cornea. However, in some cases after pedicle and bridge graft techniques, pedicle graft may remain vascularized even after resection of the pedicle.

Five Persian and one Burmese breed cats with blepharospasm and lacrimation were ophthalmoscopically examined. Unilateral pigmented corneal necrotic areas were diagnosed in these six cats. After lamellar keratectomy, bulbar conjunctival pedicle graft was applied. Under operation microscope grafts were prepared from the superior temporal bulbar conjunctiva. Topical tobramycin and cycloplegics were postoperatively used to prevent infection, pain and uveitis. One month later, after graft excision granulation tissue was observed with no vascularisation. Regression of the granulation tissue was achieved with topical corticosteroid therapy for 15 days.

In all cases corneal opacification were gradually regressed in 6 months with elimination of discomfort after application of bulbar conjunctival pedicle graft. Recurrence corneal necrosis was not observed after two years following surgical removal.

Electrolocation for Canine Brachial Plexus Block

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Localisation and identification of brachial plexus nerve branches in dogs is complicated by the inability of self reporting paraesthesia or pain, requirement of sedation or general anaesthesia (GA), and relative inexperience in performing peripheral nerve blocks (PNB).

Usually, anatomical landmarks are used for needle positioning during brachial Plexus block (BPP).

Using a nerve stimulator and appropriate needles (electrolocation) localisation and identification of nerves can be greatly facilitated and is recommended in humans when PNB are performed under GA 1.

Here, induction of a BPP using electrolocation in a 36-kg dog prior to carpal panarthrodesis is reported. Relevant nerve branches were localised by observing muscle responses (MR) while stimulating the needle with decreasing currents using a dual mode nerve stimulator. Neural puncture may be prevented if the needle is repositioned when MR are observed with minimal stimulating current. A cut-off limit was therefore applied and following appropriate positioning, the injection of 12 mL saline containing 50 mg lidocaine and 30 mg bupivacaine induced a successful block as judged by the abolishment of MR during injection, and low anaesthetic and analgesic requirements during and after surgery, respectively. The dog walked on the casted leg 35 minutes into recovery (6 hours following PNB induction) and appeared comfortable. No complications from the PNB were reported during weekly follow ups over a 2-month period.

Reference
Chondrodysplasia in Labrador Retrievers is a rare disorder that can be found with clinical signs of short limbs, small skull, and discrete short vertebrae. Radiography reveals larger metaphyses and shorter diaphyses of long bones and shorter and irregular shape of vertebrae physes than normal dogs and similar to multiple epiphyseal dysplasia and spondyloepiphyseal dysplasia in man.

Chondrodysplasia in Labradors is an inherited disorder with probably an autosomal recessive mode of transmission. A number of genes, including cartilage oligomeric matrix protein (COMP), matrilin 3 (MATN3), sulphate transporter glycoprotein (SLC26A2), collagen type IX alpha 1, 2 and 3, and collagen type XI alpha 1 and 2 were excluded as candidate genes. In this study, a genome-wide analysis of Labrador Retrievers with chondrodysplasia was performed with 4500 single nucleotide polymorphisms (SNPs). Linkage analysis indicated that the chondrodysplasia locus is located on either chromosome 13, 19 or 23.

Nasal aspergillosis is the most common mycotic infection in dogs. It typically occurs in an apparently healthy, immunocompetent, young to middle aged male dogs. This report describes the case of nasal aspergillosis in a 7-year old Alaskan Malamute, with the history of chronic mucopurulent discharge from its left nostril and no response to previous antibiotic treatments. Diagnosis was based on rhinoscopy and nasal swab cytology, confirmed by isolation of Aspergillus fumigatus from the biopsy specimen. The treatment was performed by sinusotomy combined with repeated topical nasal infusions of 1% clotrimazole. A paraimmunity inducer was introduced as a supportive therapy. Marked improvement was observed, mucopurulent discharge and pain lessened and the dog completely recovered 3 weeks after the final treatment.
A comparison of parvoviral antibody titres in puppies vaccinated under field conditions at either 9-11 or 12-14 weeks of age.

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Over the last few years there has been an apparent increase in the number of clinical cases of canine parvovirosis in outbreaks throughout the UK. This has stimulated calls for published field data proving that puppies vaccinated using the current vaccines and recommended vaccination regimes are adequately protected. This field-based study analyses the anti-CPV HI titres in 188 puppies, of various breeds, first presented for vaccination either between 9 and 11 weeks of age (139 puppies) or between 12 and 14 weeks of age (49 puppies). All puppies were vaccinated using a product authorised in the UK for final vaccination from 10 weeks of age (Nobivac DHPPi/Lepto2).

Overall the distribution of pre-vaccinal titres in the two groups was similar (p < 0.05) and showed a bi-phasic pattern, suggesting that a proportion of individuals were likely to have developed active immunity from field challenge with canine parvovirus by the time that they were presented for vaccination.

Overall, 94% of puppies vaccinated at 9-11 weeks of age and 96% of puppies vaccinated at 12-14 weeks of age were considered to have protective titres following vaccination. This difference was not significant (p = 0.65).

This study demonstrated evidence of exposure to field infection prior to primary course vaccination. This shows the importance of early vaccination against CPV and supports the current recommendation for a first vaccination at the age of 6-8 weeks, followed by a second vaccination from 10 weeks of age.

Exceptions from stereotyped canine microglial cytokine expression

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Microglial cells are the inherent central nervous system (CNS) immune sentinels. The question whether microglial response is predetermined in a stereotyped manner or is adapted to the underlying pathology is still open to debate. Since microglial cells are a source and target of cytokines, their expression of interleukin-1β (IL-1β), IL-6, IL-8, IL-10, and tumor necrosis factor-α (TNF-α) RNA was studied in the context of different intracranial diseases to evaluate whether their expression is specific for a certain disease category. Twentyfour dogs were categorized according to histopathological examination in intracranial tumors, intracranial inflammation, idiopathic epilepsy, other intracranial diseases, and extracranial diseases (control group). Microglial cells were isolated ex vivo via density gradient centrifugation and examined via quantitative reverse transcriptase polymerase chain reaction (qRT-PCR) with SYBR-green using the Mx3005P Quantitative PCR System™ (Stratagene, Amsterdam, The Netherlands). Statistical analysis included the Kruskal Wallis test and Wilcoxon rank sum test. Single dogs showed elevated expression of cytokines such as IL-1β, IL-8, IL-10, and TNF-α RNA in granulomatous meningoencephalitis (GME), and IL-6 in meningeomas with high cerebrospinal fluid IgA levels whereas no significant differences could be found between the different disease categories. Microglial expression of cytokines seems to follow a rather stereotyped pattern irrespective to the underlying pathological event, however, cytokine expression might be influenced by the course of the disease.
**Insulinoma in a Siberian Husky**

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A 12-year-old male Siberian Husky was presented because of episodes with neurologic signs. The seizures became more frequent and more worse during a period of several months. During a seizure the dog was soporous and showed cerebral ataxia and tremors. Neurologic examination revealed pain in the thoracolumbal region and pathologic reflexes of the hindlimbs, but this could not explain the seizures.

Bloodwork was done for metabolic causes of neurologic signs. Hypoglycemia (2.5 mmol/l) was found. The most common cause for hypoglycemia in dogs is insulinoma (1), there are other possibilities but they were less likely in this case. In this dog prednisone was given as a symptomatic treatment. The signs worsened and the dog was euthanized two months after the investigation of hypoglycemia.

At necropsy two nodules were found in the pancreas. Histopathologic examination showed a solid, epithelial tumor with aspects belonging to a neuro-endocrine carcinoma. Metastases were found in the regional lymph nodes and in the liver. These are the most common sites of metastases with insulinoma (1). Other investigations were a follicular thyroid carcinoma and multiple Leydigcell tumors in the testikels, which are not clinically relevant. Due to the treatment with prednisone, steroid induced hepatopathy and atrophy of the zona fasciculata and reticularis of the adrenal glands were also found.

Proliferation of beta pancreatic cells results in excess secretion of insulin and therefore hypoglycemia. Clinical signs can arise from the effect of hypoglycemia on the central nervous system (1). In this dog this led to seizures with ataxia and tremors.


**Masticatory Muscle Myositis in a Dog**

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A 5 year old male Belgian Shepherd Malinois was referred for investigation of the increasing pain while opening its mouth since 2 months. The dog refused to masticate solid food and revealed abnormal behaviour during yawning. Also during the police-dog training the owner noticed some difference in his biting behaviour in spite of his passion. The initial laboratory studies showed neutrophilia, lymphocytosis, monocytosis and an increased plasma-CK level.

Clinical examination revealed non-painful, symmetrical atrophy of both masseter muscles. Additional examination included electromyelogram (EMG) and computed tomography (CT) scanning. The EMG did not show abnormal spikes, whereas the CT did neither reveal bony abnormalities nor a retrobulbar abscess. Since the animals’ clinical presentation was compatible with an immune-mediated inflammatory myopathy and other causes of inability to open the mouth were excluded, a treatment with prednisone (2 mg/kg bw. day-1 with slowly decreasing dosage) was started.

Masticatory muscle myositis, the commonest inflammatory myopathy in dogs, coincides with myosin auto-antibodies production, initiating muscle-fiber destruction. The presence of a particular type 2M fiber in masticatory muscles explains that other skeletal muscles are spared. Definitive proof of the diagnosis is made on the basis of serology and muscle biopsy. EMG is especially informative in the acute state. Since several inflammatory episodes results in irreversible muscle fibrosis, immunosuppressive therapy should be started early and continued for months.

Follow-up of 4 months learned that the dog slowly recuperated, and can now live with a minimal prednisone dosage of 0.5 mg/kg. day-1.
A five-month-old female dog of the boerboel breed was presented at the veterinary clinic in Utrecht with the complaint of periodic abnormal behaviour. The dog would suddenly start to howl and would hide somewhere, then it would show muscle twitching, foaming at the mouth, grinding of the teeth, and a diminished state of consciousness. Afterwards the dog would be very disoriented and scared. The complaints started at the age of 3 months and were seen 2 or 3 times a week. The nature of the complaints suggested that they were seizures of the secondary type (1). The dog had 16 littermates, 5 of which showed the same clinical signs. This suggests a hereditary base for the disease.

History, general impression, general physical examination, neurologic examination, ophthalmologic examination, blood screening and MRI scan showed no abnormalities that could explain the clinical signs. The diagnostic plan consisted of observation on the nursing ward and, after a seizure was observed, euthanasia and subsequently post-mortem examination.

A male Labrador retriever of 11 weeks old was referred to the University clinic because of lethargy and decreased appetite since three days. Earlier the owner had noted that the dog bled out of his mouth although no traumatic incident had been noted. The vet stitched a small deep wound of the tongue under anesthesia. The sedative was injected in the left back limb and the injection site continued to bleed also.

Physical examination at our clinic revealed a depressed puppy that was coughing and had tachypnea and tachycardia. Abdominal palpation was painful and he had edema in his left back limb.

The most likely differential diagnosis for a hemorrhagic diathesis a young dog is a congenital bleeding disorder. The absence of petechiae suggests a problem in the secondary phase of hemostasis. Coagulation times were within reference range except for a prolonged activated partial thromboplastin time. The factor VIII concentration of 2% confirmed the diagnosis of hemophilia A.

The radiograph of the thorax showed a cloudy alveolar pattern and minimal pleural effusion that can be explained by bleeding into mediastinum and pleural space. Ultrasound of abdomen showed peritonitis, an irregular hypoechoic left part of the pancreas and a small amount of fluid. Hemophilia A in this pup was associated with severe clinical signs at a very young age. Because of the bad prognosis of Hemophilia A the owners decided to euthanasia. Pathological examination showed several hematoma’s and hemothorax and confirmed the severe bleeding tendency.

1: Nelson, R.W., Couto, C.G. Small animal internal medicine. Mosby, 2003; 991-1004
**URETHRAL OBSTRUCTION INDUCED BY VITAMIN D TREATMENT**

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A 6 years old, castrated male ferret (*Mustela putorius furo*) was referred to the clinic with stranguria and since two days anuria. Physical examination showed a painful abdomen with a distended urinary bladder. This ferret had a congenital vitamin D disorder resulting in the manifestation of rickets diagnosed at the age of three months. Since then he had been successfully treated with calcitriol.

Radiography revealed a penile urethral obstruction by a calculus (3 mm large). General blood examination revealed no abnormalities except uremia, hypercalcemia, and mild hyperphosphatemia.

Fluids were administered. The calculi could not be dislodged by urethral catheterization and therefore emergency urethrostomy was performed proximal to the obstruction site. However, renal failure persisted despite fluid therapy and the ferret was euthanized. Post-mortem examination confirmed chronic interstitial nephritis. As expected in this formal rickets patient it revealed deformed well mineralized femurs.

Dysuria in a ferret with a full bladder can be caused either by prostate cysts, often associated with adrenocortical tumors in castrated ferrets, or by urinary obstruction caused by calculi lodged in the urethra. Calcitriol augments intestinal calcium (Ca) and phosphate (P) absorption, renal Ca and P reabsorption, and skeletal bone formation. In the long term, the administration of calcitriol results in hypercalcemia and hyperphosphatemia and consequently increased urinary excretion of Ca and P. The latter may predispose to the formation of uroliths that ultimately can lead to urinary obstruction.

**POLYNEUROPATHY IN A LEONBERGER DOG**

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In related Leonberger dogs a spontaneous distal, symmetrical polyneuropathy is described with onset between 1 to 9 years of age. This polyneuropathy is characterized by exercise intolerance, weakness associated with high-steppage pelvic-limb gait, a loss or change in the pitch of the bark and dyspnea.

Neurological examination reveals a distinct atrophy of the distal limb muscles, depressed spinal and cranial nerve reflexes, and weak or absent movement of the laryngeal and pharyngeal muscles. Electrophysiological examination is consistent with denervation potentials. Diagnosis of inherited polyneuropathy in Leonberger dogs can only be ascertained by muscle and nerve biopsies.

A 4 year old, castrated, female Leonberger dog was referred to the Department of Clinical Sciences of Companion Animals of Utrecht University with a two-month history of exercise intolerance and weakness associated with a high-steppage pelvic-limb gait. At 3 years old the dog suffered from severe dyspnea. A larynx paralysis was ascertained and a thyroid-arythenoid lateralization was performed.

Locomotion examination revealed a wobbly gait, hypermetria, atrophy of the quadriceps group and the m. tibialis cranialis in both hind limbs. Neurological examination revealed a decreased withdrawal reflex in both hind limbs and a decreased m. extensor carpi radialis reflex in both fore limbs. Electrophysiological examination showed denervation potentials in the mm. tibiales craniales and the mm. gastrocnemii.

Although no biopsies were obtained in this Leonberger dog, the history of larynx paralysis, orthopedical, neurological and electrophysiological findings strongly suggest a case of inherited polyneuropathy.