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COMPARATIVE STUDY OF TWO TREATMENT REGIMES IN OSTEOPROTIC KITTENS

To compare two treatment methods for nutritional secondary hyperparathyroidism diseases; drug therapy with calcium (Ca) + Vit D and change of food regime, an experimental study was designed. In total, 50 osteoporotic and 50 normal kittens were selected by radiography. Serum Ca, parathyroid hormone (PTH), phosphorus (P) and serum alkaline phosphatase (AP) levels were measured and then compared with these of 50 clinically and radiographically normal kittens.1

The results were compared with a student T test and paired T test. Mean Ca levels in normal and osteoporotic kitten were 1.3532 (+/- 0.2175) and 1.3876 (+/- 0.2166) mmol/L, mean P levels were 7.9140 (+/- 2.068) and 4.8046 (+/- 0.698) mmol/L, mean PTH levels were 0.2402 (+/- 0.0614) and 3.7480 (+/- 0.5418) pmol/L and mean serum AP levels were 226.46 (+/- 171.82) and 230.46 (+/- 172.32) U/L, respectively. Comparison between the two groups showed a significant decrease in serum P and increase in PTH in the osteoporotic kittens (P<0.05). No significant changes were found in serum Ca and AP levels. Four percent of the osteoporotic kittens showed no changes in serum P and PTH. This finding may be explained by other causes of osteoporosis such as hypervitaminosis A.2,3,4

The study demonstrated no significant differences in the efficacy of treatment in decreasing PTH levels between nutritional and Ca + Vit D therapy.

References

A SURVEY ON PREVALENCE OF PARVOVIRUS AND DISTEMPER INFECTIONS

Parvovirus (CVP) is a common agent of viral gastroenteritis. The morbidity and mortality rates is less than 20% and 5%, respectively. The most severe clinical type of disease is seen in young and growing animals (between 6 weeks and 6 months of age). The most important signs include: diarrhea, vomiting, anorexia and melena.1

Canine distemper (CDV) is one of the most important diseases in the carnivorous animals, with worldwide distribution. It is frequently seen in young dogs (3-6 months of age) without maternal immunity. The morbidity rate is about 25-75% and the mortality rate is about 50-90% depending on virus strain. The most important signs include: immune suppression, diarrhea, vomiting, coughing and diphasic fever.1,2

In this survey 116 fecal and 152 conjunctiva samples were taken from dogs referred to the Small Animal Teaching Hospital, Faculty of Veterinary Medicine, University of Tehran from April 2007 to September 2008, with suspected clinical signs and unknown vaccination history. Antigen Rapid CPV & CDV antigen test kit of CPV and CDV were performed.3 In total, 88 out of 116 suspected cases were positive for CPV and 96 out of 152 suspected cases were positive for CDV, respectively. The observed increased prevalence rate was probably due to the loss of immunity and lack of vaccination.1

References
EVALUATION OF SOMATOSENSORY EVOKED POTENTIALS IN CATS WITH TRAUMATIC SPINAL CORD INJURY WITHOUT DEEP PAIN SENSATION
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Neurological examination and basic or enhanced imaging techniques are the essential procedures for assessing the severity of spinal cord lesions. Some spinal cord dysfunctions can originate from a purely functional problem which can not be localised by imaging. Some of these limitations may be overcome by the electrophysiological examination. The purpose of this study is to present tibial somatosensory evoked potential findings in 25 cats naturally acquired traumatic spinal cord injury between T9–L4 vertebrae. The potentials were recorded from the scalp and one spinal segment caudal and cranial to the injured area. The potentials, recorded from caudal and cranial spinal segments were evaluated as normal, incomplete injury potentials, complete injury potentials, major deformation and isoelectric line. In the caudal spinal segment normal potentials were found in 8 cases, incomplete injury potentials in 5, complete injury potentials in 5, major deformation in 5, and an isoelectric line in 2 cases, respectively. In the cranial area of trauma, incomplete injury was demonstrated in 3 cases and complete injury potentials in 2, major deformation in 2, and an isoelectric line in 18 cases, respectively. In conclusion, the cranial part of injured area had more extensive signs of damage than the caudal area although the caudal area of the injured site was also affected in many cases. The somatosensory evoked and spinal cord evoked potentials can be used as an ancillary diagnostic tool for determination of functional integrity of the ascending tracts of the spinal cord in cats.

References

ATOPIC DERMATITIS ON THE PINNAE OF ACAT
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A 7 month old female neutered cat was referred to the dermatology department of the University clinic because of extremely pruritic ears since three months. Physical examination revealed extremely automutilated pinnae, the lesions could be described as crustae, ulcers and hyperkeratosis. The pinnae are erythematous and hyperthermic. The cat reacted strongly to touching the pinnae by making scratching movements with her hindpaws and by pushing her head against the examiners hands. There were no other lesions on the cat’s body.

The differential diagnosis for this cat was otitis externa, ectoparasites, food-allergy, atopic dermatitis, allergic reaction to the topical medication, and neoplasia. The diagnostic plan for this cat consisted of skin scrapings, otoscopic examination and histological biopsies. The skin scrapings and otoscopic examination were negative. While waiting for the results of the biopsies, the cat was send home with a collar and temporary use of glucocorticoids because of the automutilation. The owner was instructed to treat all the animals against fleas every month.

The histological biopsies revealed a perivascular dermatitis with mostly eosinophilic cells and mastcells, consistent with an allergic dermatitis.

The two options still available were food-allergy and atopic dermatitis. To distinguish between these two, an elimination diet of six weeks was started. The diet consisted of cooked ostrich meat and potatoes or rice. The cat was given glucocorticoids for another two weeks in a decreasing amount.

After six weeks the cat came back to the faculty clinic for check-up. The elimination diet had not resulted in any effect on the pruritic pinnae. The diagnosis per exclusionem was atopic dermatitis. The owner was given the choice between glucocorticoids and a cyclosporine solution. The cat started treatment with the cyclosporine, and the lesions and pruritus disappeared within one month.
PROGNOSTIC MARKERS FOR CANINE INSULINOMA
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Introduction
Canine insulinoma is an insulin-producing, pancreatic β-cell tumour of adult dogs, which secretes insulin in an uncontrolled fashion, leading to clinical signs associated with hypoglycemia.1 Previously, we were able to group 10 canine insulinomas into two subsets based on their different gene expression profiles using canine cDNA microarrays. The first group of insulinomas appeared to consist of tumours that were more differentiated and had a less malignant behaviour compared to insulinomas from the other group. We hypothesized that there are prognostic biomarkers amongst the genes that were differentially regulated between the two insulinoma subsets.

Materials & Methods
For six genes, the expression of which was significantly different between the two insulinoma subsets as shown by Significance Analysis of Microarray (SAM) software, the expression levels were quantified in large insulinoma series (n = 26) by qPCR. The insulinoma samples were collected from 26 dogs with known disease free survival (DFS). To determine whether gene expression levels were correlated to clinical outcome, univariate and multivariate analyses were calculated by the Cox proportional hazard regression model using SPSS software.

Results and discussion
Pancreatic lipase (PL) was among the highest up-regulated genes in the well-differentiated group of insulinomas, and PL mRNA expression was correlated to DFS of dogs with insulinomas. Since PL mRNA expression was correlated to PL concentrations of insulinoma homogenates, we propose that serum lipase activity may be used as a prognostic biochemical marker in canine insulinomas. Also, larger tumour size was significantly associated with shorter DFS.

References

STEROID-RESPONSIVE IDIOPATHIC BILATERAL RETINAL DETACHMENT IN A DOG
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Introduction
Retinal detachment may occur in dogs but is less common in cats. It is usually secondary to other ocular or systemic disease. However in some cases it is idiopathic and systemic steroids can be used to treat the separation and stimulate reattachment.

Case Report
Jack a two-year-old Border Collie male, was presented to the author for an ophthalmic evaluation. The owner observed that the dog was acutely blind and showed fixed dilated pupils. On ophthalmic examination the papillary reflex and menace tests are negative. Ophthalmoscopically the ocular fundus was out of focus and vessels were slightly elevated. Ocular ultrasonography confirmed the diagnosis of retinal detachment. No other remarkable signs were found. Treatment was started with high concentration of systemic steroid for 2 weeks. After a few days the retina reattached. The diagnosis was: steroid - responsive idiopathic bilateral retinal detachment.

Discussion and Conclusion
The retinal detachment is a very common disease in some dogs breed In Border Collies the detachment is generally associated with the Collie Eye Anomaly (CEA), but this was not the case of this report. In this report healing was promoted by early diagnosis and systemic treatment with steroids. At present, Jack attends regularly agility training competitions.

NORMAL CONJUNCTIVAL FLORA OF THE GREEN IGUANA (IGUANA IGUANA)
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Introduction
Aim of the study was To identify the normal conjunctival flora in a Green Iguana (Iguana iguana).
Methods
In total, 15 Green Iguanas (age 4 – 10, 8 females - 7 males, 30 eyes) underwent routine ophthalmic examination as part of a general health check. This included biomicroscopy, ophthalmoscopy, Schirmer test, and conjunctival microbiological tests. The patients were restrained manually and the eyelids opened gently with blunt forceps to allow positioning of the Schirmer test strip in the ventral conjunctival fornix of each eye. The end of the strip located within the conjunctival sac was torn off and placed in sterile test-tube. All samples were used to perform routine culture and sensitivity tests on standard agar plates. All the patients were kept in a similar environment at an identical temperature and humidity levels.

Results
All conjunctival samples were positive for one or more species of bacteria. The most common isolated was Staphylococcus aureus (26.6% of samples). Other isolates included Escherichia coli (13.3%), Bacillus spp. (13.3%), Staphilococcus sciuri (10%), and Staphylococcus xylosus (10%). Only a few samples included Acinetobacter spp.. Enterococcus faecium, Enterobacter cloacae, Pasteurella haemolytica and Pseudomonas aeruginos, were isolated in only 1 or 2 cases from 9 different samples.

Conclusions
Cultures from the conjunctival sacs of normal Green Iguanas showed a high variety of bacterial species. This survey evidenced the predominance of Gram positive isolates in the normal bacterial flora of Green Iguana, in accordance with data reported for other animal species. A relationship may exist between resident normal flora and the etiology of ocular infections in these animals, but there have been no studies investigating the normal conjunctival flora.

Introduction
Many cats suffer from cardiac pathologies, but little is known about the molecular aspects of these disease processes. Until recently, no suitable technique was available to obtain serial tissue samples over time of the left ventricle from cats. Therefore, we developed and evaluated a transabdominal approach to obtain left ventricular myocardial samples.

Materials and Methods
Twenty four adult experimental cats were used, which were to be euthanized for another study. Under surgical anaesthesia, the cats were positioned in right lateral recumbency and a linear ultrasound probe was used to image the heart via the left thoracic wall. Following local infiltration anaesthesia, an 18 G automatic biopsy needle was inserted via a skin incision in the triangle between the last left rib and the sternum, through the diaphragm into the thorax. Under ultrasound guidance the tip of the needle was placed against the cardiac apex and the automatic the gun was released. Three biopsies were performed in one procedure, after which the cats were euthanized. In another five cats three serial biopsies were taken with four-week intervals.

Results and Conclusions
The biopsies caused transient single ventricular premature complexes and mild to moderate amount of pericardial effusion, which did not require therapeutic intervention. Pathological examination on three animals showed a minimal amount of fibrous tissue in the diaphragm and the heart. No signs of cardiac failure were observed. The obtained material was suitable for morphological studies (histology, electron microscopy, immunohistochemistry), and molecular studies (real-time PCR, Western blotting). In conclusion, this research shows that this technique allows safe collection of (serial) cardiac biopsies of the left ventricle in adult cats, of adequate quality to study the morphological and molecular aspects of feline cardiac pathologies in an experimental setting.
Scheduling parturition is of great interest for both owners and veterinarians. Earlier studies on induction of parturition were all carried out in beagle bitches.1,2 Our aim was to determine whether parturition induction remained effective in other breeds.

In total, 13 pluriparous pregnant bitches were grouped into three categories: small (n=4), large (n=5) and giant breeds (n=4). The ovulation day was determined using a quantitative progesterone assay. Within each group, some bitches were randomly assigned to have parturition medically induced, while the others remained untreated. Parturition was induced 59 days after the estimated ovulation day using aglepristone 15 mg/kg SC (Alizine®), followed 24 hours later by oxytocin every two hours 0.15 UI/kg SC (Ocytocine®).

Mean duration of parturition was 9.6±5.4 hours in the treated group vs 8.0 hours in the control group. The mean duration of induced parturition was shorter in small bitches (3.8 hours) than in large (11.2 hours) or giant (14.0 hours) bitches. In the induced group, the mean interval between two successive foetal expulsions was 115.6±82.8 minutes vs 68.8±24.5 minutes in the control group. One pup was stillborn in the induced group vs two in the control group. After 48 hours, 6.1±3.4 pups were alive in the induced group (vs 7±2.4 in the control group). The protocol combining aglepristone + oxytocin successfully induces parturition in various sized bitches.

References

Intervertebral disc degeneration is a common problem in both humans and dogs. Diagnosis of intervertebral disc disease is based on clinical signs and diagnostic imaging. Histology is valuable in determining the degeneration of intervertebral discs at cellular level. Medical reports, radiography, MRI and histology of herniated discs from 18 dogs were used to determine the severity of disc degeneration with each one of these methods and comparing them to each other.

The aim of this retrospective case series was to get a better understanding of the differences between type 1 and 2 disc herniation and the value of clinical signs, histology, radiography and MRI in diagnosing canine intervertebral disc disease. Although the number of patients in this study was limited, some valuable conclusions could be drawn. Neurological signs do not always correspond to the degenerative changes seen on radiography, MRI and histology. Dogs with type 1 disc herniation appear to have more severe clinical signs than dogs with type 2 disc herniation. Degenerative signs on both radiographic and MR imaging correlate to some degree with the changes seen on histology. Unfortunately, these correlations hold a low sensitivity and specificity, which leads us to advise using a combination of diagnostic methods to reach an accurate diagnosis.

BENEFITS OF BILATERAL DOG CATARACT SURGERY IN A SINGLE SURGICAL SETTING: TWENTY-NINE CASES
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Introduction
In dogs cataract surgery is a routine procedure.1 In the case of bilateral cataract, surgery can be performed in two independent sessions or in one single session.2 Aim of this study was to evaluate single session surgery in bilateral cataract.

Materiel and Methods
In total twenty-nine cases were included. The cataract was diabetic in thirteen cases, senile in six cases and assumed inherited in ten cases. Systematic ophthalmologic evaluation includes electroretinography and vitreoretinal echography. Lens-induced uveitis was diagnosed in thirty-three eyes and medically stabilised

CANINE INTERVERTEBRAL DISC DEGENERATION: A COMPARATIVE STUDY ON CLINICAL SIGNS, RADIOGRAPHY, MRI AND HISTOLOGY
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before surgery. The cataract was treated bilaterally in a single surgical setting, by phacoemulsification with implantation of prosthetic intraocular lens. The animals are examined one, four and eight weeks after surgery.

Results
Two months after surgery, visual function was restored in all dogs. Nine eyes developed post-operative complications (acute uveitis, acute glaucoma) which were stabilised by medical treatment. Neither retinal detachment nor infectious endophthalmitis was detected.

Discussion
Lens-induced uveitis is frequently observed in dog with cataract. When bilateral surgery is performed in two sessions, the lens-induced uveitis present in the non-operated eye may trigger an unwanted immune reaction in the recently operated one. Consequently, the results of bilateral cataract surgery are improved when both eyes are operated in a single session.

References

CANINE AND FELINE OCULAR THELAZIOSIS IN SOUTH-WEST OF FRANCE: SIX CASES
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Introduction
Ocular thelaziosis with Thelazia callipaeda is a parasitic infection transmitted by the drosophilid midge Phortica variegata and is expanding in Europe. Already diagnosed in Italy, Switzerland and Germany, autochthonous cases of ocular thelaziosis were recently reported in France.1, 2

Materiel and Methods
This study includes five dogs and a cat living in the south-west of France. Four dogs were referred for more or less severe mono- or bilateral ocular irritation, with blepharoospasm, conjunctivitis and mucopurulent discharge. The worms (from one to twelve per eye) were found during examination of the conjunctival sac and identified as Thelazia callipaeda.

Results
The treatment consisted of retrieving the worms with forceps under local anaesthetic. One dog was then administered two injections of ivermectin with one month interval, two others were treated with milbemycin oxime by oral route twice in one month3, two dogs and the cat received selamectin (spot on) twice in one month. No recurrence was observed.

Discussions
New cases of ocular thelaziosis are appearing in France in the Aquitaine region, in addition to those reported recently. The vector Phortica variegata is therefore likely to be present in this region.

References
large bowel diarrhoea associated with kitten mortality (15 kittens died in 3 months) since 3 months. A common treatment, including the administration of pyrantel and praziquantel (dronalt Cat®, as per manufacturer’s recommendations) and fenbendazole (panacur® 25 mg/kg BID during 3 days) was executed without amelioration. PCR/RT-PCR on faecal samples from adults and young cats with diarrhoea revealed a very low excretion of parovirus and a high excretion of coronavirus. These cats were found to be negative for nematodes, cestodes, giardiasis, and cryptosporidiosis using routine diagnostic methods, but positive for T foetus (assessed using direct smears and the In Pouch TF culture system). A treatment with ronidazole at 30 mg/kg per os, twice daily for 14 days was performed.

Discussion
This case report shows that T. foetus infection was a possible cause of refractory large bowel diarrhoea in cats. Infected cats here were young and adults cats. The mortality of kittens could be explained by the association between this parasite and the coronavirus. Mortality linked to T foetus was already reported in two kittens.

Conclusion
This report is one of the first to identify feline trichomonadal diarrhoea within a French cattery. Based on this information, veterinarians should consider trichomoniasis as a potential cause of diarrhoea in cats.

THE LEVELS OF SERUM GASTRIN IN DOGS WITH ACUTE OR CHRONIC GASTRITIS THAT POSITIVE OR NEGATIVE FOR HELICOBACTER SP.
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The relationship between gastrin levels and presence of Helicobacter-like organisms (HLO) in dogs with acute or chronic gastritis was investigated. For this purpose, a total of 52 crossbred Kangal Dogs aging 2-5 years were used, including 12 dogs with acute gastritis, 25 dogs with chronic gastritis, and 15 healthy dogs. Blood samples were collected from the cephalic vein. Serum gastrin levels were measured using a commercial competitive binding radioimmunoassay. HLO were found in 64%, 58.3%, and 60% of animals with chronic gastritis, acute gastritis, and controls, respectively. The gastrin levels in dogs with chronic gastritis were higher than in those with acute gastritis and controls. There were no significant differences between gastrin levels in all groups, with regard to HLO positive versus HLO negative dogs. In conclusion, HLO incidence was generally found high in all the dogs. However, HLO did not primarily affect the stomach mucosal integrity. In the mean time, there was no relation between the levels of serum gastrin in dogs with gastritis, either HLO positive or negative. The results of the study showed that higher gastrin levels in dogs with gastritis were related to severe gastric lesions and mucosal damage.

RECTOVAGINAL FISTULA WITH ATRESIA ANI IN A KITTEN
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Feline congenital abnormalities of the lower gastrointestinal tract are rare. Atresia ani, a congenital condition that affects the anal opening and rectum, may occur in both puppies and kittens. The true incidence of these defects is difficult to determine because many newborn animals with deformities are died. The several anatomic variation of atresia ani have been classified as type I through IV, but all generally result in an abnormal anal outlet and/or rerouting of feces from the rectum to another outlet. Type IV, which occurs only in females and may occur with or without imperforate anus, is characterized by a persistent communication between the rectum and vagina (rectovaginal fistula) or urethra (rectourethral fistula).1, 2

A 1-month-old, 800 g, female, domestic short hair kitten was admitted to the VTH, University of Tehran, with clinical history of lethargy, anorexia, abdominal distention and defeating small amounts watery feces and urine through single opening. On physical examination the kitten appeared depressed, dehydrated with distended colon and an anal opening was absent but a dimple was present where the anus is normally located, partial tail agenesis was also detected. Complete blood count and biochemistry profile was normal. Plain radiography revealed megacolon due to abnormal distention of descending colon with feces. Because of unstable condition of the animal, primarily, she was treated with conservative treatment before surgery. Unfortunately she dead and necropsy was done. Necropsy findings included of connection between rectum and vagina (Type IV of atresia ani) and marked abnormal distention.
of descending colon that confirmed the clinical and radiographic findings.

References

HYDRONEPHROSIS IN A PUPPY DUE TO AN UNUSUAL TYPE OF LEIOMYOSARCOMA
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An 8-month-old male Terrier dog was referred with history of anorexia, vomiting and diarrhea. During physical examination an occupying mass was palpated in the right side of the abdomen. Hematological analyses revealed a leukocytosis and neutrophilia with shift to left and high toxic change neutrophils and decreased platelet count. Biochemical analysis was normal. Abdominal radiographs showed occupying mass with soft tissue density in right side of the abdomen that displaces the pyloric part of the stomach cranially and the loss of the normal kidney. Abdominal ultrasonography revealed the bi-lobed mass with anechoic echotexture and echogenic material. The right kidney was not detected. The mass volume overload on the abdominal organs was decreased by fluid aspiration. Aspirated fluid analysis showed an acute inflammatory process. These results indicated the mass was arising from the right kidney.

After stabilizing the patient’s condition, he was referred to the surgical department. The right kidney could not be found in the abdominal cavity, therefore it was considered to be included entirely in the mass. The mass was excised and fixed with 10% buffered formalin.

On gross examination a oval mass was seen. The total mass was about 10×17 cm in diameter. In cross-section, it showed hemorrhagic contents, extensive necrosis, and thrombus formation. There was no distinct tissue of the kidney. It is confirmed that the right kidney was hydronephrotic.

Histological Characteristics in Haematoxylin and Eosin (H&E) and Masson Trichrome staining confirmed a diagnosis of leiomyosarcoma. The adjacent kidney showed severe atrophy and fibrosis caused by pressure of the tumor.

SERTOLI CELL TUMOR IN A SPITZ DOG; A CASE REPORT
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Sertoli cells are supportive elongated cells of seminiferous tubules that nourish spermatids. The most common testicular neoplasms are sertoli cell tumors, interstitial or Leydig cell tumors, and seminomas. These tumors occur with equal frequency. Many old dogs have multiple tumors in one or both testicles. Tumors involving scrotal tests are usually benign, while those in cryptorchid testes may be malignant. Metastases are slow growing, but are occasionally detected in the lumbar, deep inguinal, and external iliac lymph nodes. Normal and neoplastic Sertoli cells produce estrogenic hormones. Sertoli cells tumors are usually solitary but may be multiple and bilateral.

In April 2007, a 10 year old male spitz was referred with a history of lameness and cryptorchidism. Clinical and radiographic examination revealed a large mass in the right inguinal region. The mass was resected surgically. Macroscopic evaluation showed a rigid dense non-cystic mass with creamy colour and homogenic surface with a dimension of 7 × 8 × 9.5 cm. On histopathology, oval neoplastic cells with polymorphic nuclei consistent with the appearance of Sertoli cell tumor with diffuse pattern were found.

Testicles tumors can cause a significant enlargement of testes with subsequent loss of normal testicular tissue.

References
EFFICACY OF A NOVEL BROAD SPECTRUM ANTHELMINTIC CHEWABLE FORMULATION IN DOGS
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Introduction
Roundworms, whipworms, hookworms and tapeworms are still important canine parasites in terms of prevalence, pathogenicity and zoonotic impact. Measures are required to protect pets from parasitic infections, enhance the safety of the public and preserve the bond between pets and people.1 The efficacy of a fixed combination of pyrantel (PYR), oxantel (OXT) and praziquantel (PZQ) was investigated in dogs.

Materials & methods
The efficacy, based on worm counts, of a single recommended therapeutic dose (RTD) of 5 mg PYR + 20 mg OXT + 5 mg PZQ/ kg body weight (Plerion chewable tablets for dogs, Intervet / Schering Plough Animal Health, Boxmeer, The Netherlands) was assessed in experimental (EI) and natural (NI) infestations with Toxocara canis and Trichuris vulpis and EI with Echinococcus granulosus. These studies were complemented by a field study in dogs naturally infected with Ancylostoma caninum (n = 11), T. canis (n = 11) and Dipylidium caninum (n = 8).

Results
T. vulpis: 99.9% (EI, n = 6 treated + 6 untreated control dogs) and 100% (NI, 9 + 9); E. granulosus: >99.9% (EI, 11 + 11); T. canis: 94.4% (EI, 10 + 11), 100% (NI, n = 12 + 13) and 95% in the critical test (NI n = 10). A. caninum and T. canis faecal egg counts were reduced by >99% and the number of dogs positive for D. caninum proglotides in the faeces was reduced by 100%. The product was very well tolerated.

Conclusion
This novel broad spectrum anthelmintic formulation, highly effective against nematodes and cestodes in dogs, is a useful addition to the armory of treatment options for canine helminths.

References

PALATABILITY OF A NOVEL BROAD SPECTRUM ANTHELMINTIC CHEWABLE FORMULATION IN DOGS
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Introduction
Roundworms, whipworms, hookworms and tapeworms are still important canine parasites in terms of prevalence, pathogenicity and zoonotic impact. Palatable solid oral dosage forms, which are voluntarily accepted, are more convenient and improve pet owner compliance.1 The palatability of a novel chewable anthelmintic was investigated in dogs.

Materials & methods
The palatability of a single recommended therapeutic dose of 5 mg PYR + 20 mg OXT + 5 mg PZQ/ kg body weight (test product: Plerion chewable tablets for dogs, Intervet / Schering Plough Animal Health, Boxmeer, The Netherlands), was assessed in a randomized, controlled (reference product: commercially available flavoured anthelmintic tablets) field study. The study was performed in client-owned dogs using a cross-over design with a washout period of 1 week between treatments. Uptake and consumption were assessed using an appropriate numerical rating scale (1 immediate uptake and consumption to 4 no uptake). Palatability (%) was calculated as the number of dogs with a score of 1 or 2 as a percentage of all dogs tested.

Results
Sixty-seven dogs of both sexes weighing between 4.5 and 55 kg and aged 2 months to 13 years were included in the study. A wide range of breeds, including German Shepherd, Golden retrievers, Dachshunds and Yorkshire Terriers, and cross breeds were represented. The mean score for the test product was 1.39 (c.f. 1.68 for the reference product). Palatability (%) was calculated as the number of dogs with a score of 1 or 2 as a percentage of all dogs tested.

Conclusion
This novel chewable broad spectrum anthelmintic was consumed spontaneously by most dogs and is a useful addition to the armory of treatment options for canine helminths.
SEREO DIAGNOSIS OF TOXOPLASMA GONDII INFECTION IN DOGS IN IRAN
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Toxoplasma gondii infects a wide range of animals including dogs as an intermediate host. The disease may be a latent infection in clinically normal or with severe clinical signs especially in immunosuppressed dogs. The aim of the present study was to determine seroprevalence of T. gondii infection in dogs referred to small animal clinics of three west Iranian provinces in comparison with stray dogs. For this, 245 serum samples were taken and tested using IFAT in dilutions started from 1:16 and more. There were no differences between male and female groups but seroprevalence was higher in stray dogs than households (p=0.005). All the data were reassessed using an indirect ELISA system.

Key words: Toxoplasma gondii, dog, Iran

THE FIRST CASE REPORT OF PHYSALOPTERA SPP. INFECTION IN A DOG IN IRAN
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Physaloptera spp. are about 2 to 6 cm long worms that are sporadically detected in the stomachs of dogs and cats.1 The cuticle usually forms a collar-like projection around the anterior extremity. The lips are simple and bear small teeth on their medial surfaces. Parasites attach to the gastric mucosa, causing inflammation and gastritis. Physaloptera spp. infection can be diagnosed by examining the feces for parasitic ova or gastrointestinal endoscopy.

Pyloric stenosis is one of the gastrointestinal abnormalities. Antral polyps, neoplasia, and pyloric stenosis can cause obstructions in this area. Pyloric stenosis, either acquired or congenital, usually results from hypertrophy of the pyloric sphincter muscle or hypertrophied mucosal folds following chronic gastritis. Pyloromyotomy (Fredet-Ramstedt) and pyloroplasty (Heineke-Mikulicz) are two surgical procedures used to increase the diameter of the pyloric lumen.

In June 2008, a female 45 days old terrier dog with clinical signs including lethargy, depression, anorexia, projectile vomiting, and no defecation was referred to surgery department of veterinary faculty of university of Tehran. Contrast radiography revealed pyloric stenosis and no stomach emptying from contrast media. Pyloroplasty was performed as a longitudinal incision and the gastric lumen was explored for foreign bodies. Two Physaloptera worms were found in the stomach. The longitudinal incision was closed transversely in a simple interrupted crushing pattern. Pyrantel pamoate, Sucralfate, Ranitidine and cefazolin were administered post operatively. Physaloptera spp. infection has been reported in cats in Iran, whereas in Iran, there was not any report of Physalopter spp. infection in dogs.

References

CHONDROMA IN A DIAMOND DOVE
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Chondroma is a benign cartilaginous tumor. Tumor cells resemble chondrocytes and produce the cartilaginous matrix. Characteristic features of this tumor include the vascular axes within the tumor, which make the distinction with normal hyaline cartilage. Chondromas of poultry are rare.1-4

A female, 2.5 years old Diamond Dove (Geopelia cuneata) was referred to teaching hospital of Faculty of Veterinary Medicine of university of Tehran, with a mass (diameter 1.7cm) palpated subcutaneously in the pectoral region. By elliptical skin incision, the mass was dissected and removed, and sent to pathology laboratory. Histopathologic analysis revealed non-capsulated neoplastic tissue of mesenchymal origin formed by chondroblasts and chondrocytes with irregular limits and surrounded by a delicate net of lose connective tissue. Hemangiogenesis in this tumor was obvious. Cellu
Pedicle flaps consist of the epidermis and dermis partially detached from underlying tissue to cover a distant defect. Pouch flaps are distant flaps created to reconstruct skin defects in extremities.

In the summer of 2008, a five month old cat was referred to our surgery section of the small animal hospital at the University of Tehran with a circumferential deep open wound on the right forearm. After lavage with normal saline and removal of all necrotic tissues, the wound was under routine open wound treatment, including daily lavage with saline and usage of topical ointments, for 25 days. After this period granulation tissue had formed to the level of the skin. We decided to use a pouch flap in repairing the circumferential defect. Two parallel dorsoventral incisions were made in the right lateral thoracoabdominal area. The dermis and epidermis were detached from the underlying tissue and the limb positioned in the created pouch. The skin edges of the limb were sutured to the edges of the flap. Then the limb was bandaged to the lateral part of the body for 14 days. During the first 48 hours, a Penrose drain was applied. The surgical site was monitored for complications every 3-4 days. Antibiotic therapy was done. After 14 days, the limb was detached from the body with creating two parallel incisions at the dorsal and ventral part of the limb on the thoracoabdominal area. Two edges of the skin flap were sutured together. A H-plasty was carried out to close the thoracoabdominal defect.

This case showed that pedicle flaps provide rapid coverage and healing of the wound bed and prevention excessive scar tissue formation and contraction resulting from secondary healing.

SURGICAL REPAIR OF A SKIN DEFECT IN CAT’S FORELIMB USING A POUCH FLAP

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A COMPARISON BETWEEN ALFAXALONE AND PROPOFOL CONTINUOUS RATE INFUSIONS IN A TOTAL INTRavenous ANAESTHESIA PROTOCOL FOR CANINE SURGICAL PATIENTS

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Introduction

A clinical trial evaluating the efficacy and safety of two Total Intravenous Anaesthesia (TIVA) techniques was performed in healthy canine surgical patients referred to the Department of Clinical Sciences of Companion Animals, Utrecht University for various surgical interventions.

Materials and Methods

Following informed consent, 24 client-owned dogs were randomly assigned to either continuous rate infusion (CRI) with propofol (PROP-group) or CRI with alfaxalone (ALFA-group). Animals in both groups received a dexmedetomidine CRI of 1 μg kg-1 hour-1, preceded by a 5 μg kg-1 loading dose. A NSAID was administered pre-operatively and loco-regional techniques were used when applicable. Anaesthesia was induced and maintained with propofol (1.3 – 3.6 mg kg-1; CRI 4.2 – 20.1 mg kg-1 hour-1) or alfaxalone (0.9 – 2.0 mg kg-1; CRI 2.6 – 7.6 mg kg-1 hour-1). Animals were breathing spontaneously and mean arterial pressure (MAP), heart rate (HR), minute volume (VE), end-tidal carbon dioxide tension (PE’CO2) and oxygen saturation (SpO2) were recorded with 5-minute intervals. Arterial pH and blood gas analysis was performed pre-, intra- and postoperatively. Buprenorphine (10 μg kg-1) and atipamezole (12.5 μg kg-1) were administered intramuscularly prior to skin closure and in recovery, respectively. Quality of

References


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Proceedings of the European Veterinary Conference - Voorjaarsdagen, 2009 - Amsterdam, Netherlands
CHAPTER 5

Companion Animals: Posters

**Results and Conclusion**

MAP, HR and PE’CO₂ increased significantly only in the ALFA-group compared to pre-operative values. During surgery significant differences between groups were HR and PE’CO₂ (both higher in the ALFA-group) and V_e (lower in the ALFA-group). Other parameters were not significantly different or without clinical relevance. Quality scores and physiologic parameters indicate that both anaesthetic protocols were safe and satisfactory for anaesthesia of moderate invasive surgery.

**A STUDY OF GASTEROINTESTINAL TRACT FUNCTION OF A GOLD HAMSTER WITH BARIUM SULFATE CONTRAST MEDIUM**

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Gold Hamsters are increasingly popular in Iran as a pet. As hamsters have a variety of gastrointestinal tract problems, we decided to evaluate gastrointestinal functions using bariumsulfate as contrast medium mixed with the food and to record passage through the gastrointestinal tract.1,3

Six Golden Hamsters were included in this study. Ventrodorsal and laterolateral plain radiographs with mammography films and cassettes were performed in healthy hamsters. Food was withheld for 12 hours after which good mixed with 2cc of 30% bariumsulfate was offered. Radiographs were taken from 0 minutes till 24 hours after eating.

Stomach evacuation to the duodenum was started after 15th minute, and after 60 minute there was no contrast medium left in the pouches of stomach. Bariumsulphate remained in the main stomach for 5 hours. Entrance of contrast medium to the cecum was found after 60 minutes and was present throughout the remainder of the examination. The first feces were observed in the colon after 100 minutes. After 24 hour of the study contrast medium was observed in the first part of the stomach because of hamster’s feces eating.

**References**


**A SURVEY ON THE EFFECTS OF TOPICAL APPLICATION OF HETEROLOGOUS BLOOD SERUM AND PLATELET GELL MIXTURE ON CLINICAL VISION IMPROVEMENT IN EXPERIMENTAL CORNEAL STROMAL ULCERS IN RABBIT**

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Corneal ulcers due to trauma and burns are one of the most common ocular disorders in animals. If not treated properly, corneal ulcers can progress to ocular perforation and blindness due to additional secondary infections and other deteriorative factors. In this research we evaluated the efficacy of a new method to replace the traditional or current therapies. Goal was to shorten the healing period, and to reach a better quality of vision after corneal healing. We used platelet derived growth factors in combination with heterologous serum and measured the rate and quality of healing. We made 3 groups; a negative control (n=5), a positive control (n=10) and a treatment groups (n=10), including a total of 25 adult male rabbits weighing 2±200kg. With a probe we created uniform corneal ulcers in the central corneal area in each animal. In the treatment group, we placed pre-prepared activated PRP on the ulcer and administered daily heterologous serum (2 drops 3 times per day). In the positive control group we used Chloramphenicol, Ciprofloxacin and Naphazoline ophthalmic drops 3 times per day. In the negative control group we used sterile water drops 3 times per day. Vision was assessed in the 3 groups for 35 days. Statistic evaluations showed that in the treatment group the induced corneal ulcer healed faster and with the least scar production and that vision was better than in the other groups. In conclusion this study showed that we may use PRP to treat superficial to deep corneal ulcers. It seems that this new method for treating corneal ulcers is more effective than other traditional methods.
A 6-year-old intact male Bullmastiff was referred with a history of dysuria. The dog had been dribbling urine directly following micturition for 6 months. The last two days the dog was unable to urinate and was straining in the presence of a distended bladder.

Upon presentation, the bladder was distended and the prostate was considered enlarged. Neurological examination was normal. During catheterization a slight resistance was found at the level of the prostate. Urinary analysis revealed no abnormalities, culture for bacteria was negative. On abdominal ultrasound examination the prostate was interpreted enlarged and cystic, cytology was consistent with benign hyperplasia. Positive contrast urethrography revealed no urethral obstructions. It was concluded that the dog was suffering from detrusor-urethral dyssynergia. The dog was treated with the alpha-sympatholytic agent prazosin and was castrated chemically using delmadinonacetate. A partial response in the clinical signs during the next 4 weeks was noticed. Due to lack of complete response, surgical castration was performed, with immediate response and permanent dissolution of the clinical signs within 3 days.

Detrusor-urethral dyssynergia is a disorder of micturition in which the normal urination reflex is disturbed. In normal micturition parasym pathetic innervation results in contraction of the detrusor muscle while the sympathetic innervation of the internal sphincter is simultaneously inhibited, which then relaxes. In dyssynergia relaxation of the internal and/or external sphincter does not occur. Treatment is focused on resolution of a possible underlying cause. Treatment of idiopathic detrusor-urethral dyssynergia comprises relaxation of the sphincter, using either α-blockers (e.g. prazosin) and/or somatic muscle relaxants (diazepam), in combination with either surgical of chemical castration. The dog in this case report could only be managed satisfactorily by surgical castration.

References

HISTOMETRIC AND HISTOLOGICAL EVALUATION OF TISSUE REACTION TO POLIGLECAPRONE 25 SUTURE MATERIAL IN THE CANINE LINEA ALBA

Introduction
Poliglecaprone 25, a synthetic, monofilament, absorbable suture has not been marketed for abdominal fascial closure. To the authors’ knowledge, there are no detailed studies regarding the use of this suture material in canine linea alba therefore the purpose of this study was to evaluate the tissue reaction to this suture material as well as the maintenance of abdominal fascial approximation.

Materials and Methods
Ventral midline celiotomies were performed in the upper and lower umbilical region of 25 healthy female dogs. The linea alba was sutured with 2/0 poliglecaprone 25 using simple interrupted and continuous patterns above and below the umbilicus respectively. All dogs were euthanized on days 3, 7, 14, 21 and 28 postoperatively and the abdominal incisions were collected en bloc. Each linea alba was histologically evaluated and the inflammatory reaction characterized and its size around the suture thread determined.

Results
Dehiscence and postoperative infection did not occur in any of the animals. The maximum inflammatory response was observed on the 7th postoperative day, 1088.78 ± 45.44 micrometers (mean ± s.e.m.) which was significantly different from all other times and the minimum inflammatory response on the 28th postoperative day, 216.35 ± 41 micrometers. There were no significant differences in tissue reaction above and below the umbilicus at each time interval. Tissue reactions were pyogranulomatous on day 3, pyogranulomatous or fibromononuclear on day 7, fibromononuclear or pyogranulomatous on day 14, fibrogranulomatous on day 21 and fibrogranulomatous or fibrous on day 28.

Conclusions
Poliglecaprone 25 is an acceptable suture for approximation of the canine linea alba using the simple interrupted or continuous patterns and the inflammatory response is relatively short.
A COMPARISON BETWEEN FIXATION METHODS OF FEMORAL DIAPHYSEAL FRACTURES IN CATS - A RETROSPECTIVE STUDY OF 106 CASES (1997-2008)

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Introduction

The aim of this study was to compare fracture treatment with external fixation, bone plating and plate-rod fixation by evaluating radiographic and clinical outcome. Because the plate-rod construct is the most rigid of these three fixation methods and is most effective in resisting forces, we hypothesized that the use of a plate-rod construct would result in shorter healing times and lower complication rates compared with the use of a bone plate or an external fixator.

Material and Methods

A retrospective study over the period 1997-2008 of femoral diaphyseal fractures in cats was performed. Only patients with diaphyseal fractures were included in this study. Selected cases had to have a complete medical record, with clinical and radiographic follow-up examination for a minimal period of six weeks.

Results

Of 106 fractures, 30 were treated by external fixation, 20 by bone-plating, and 56 by plate-rod construction. External fixators, bone plates and plate-rod constructs all resulted in successful fracture healing. In the group treated with external fixation and the group treated with a plate-rod 93% of the fractures resulted in union. In the group treated with a bone plate 90% resulted in union.

The fractures treated with a plate-rod had the fewest complications (9%), followed by the fractures treated with a bone plate (15%). The fractures treated with an external fixator had the most complications (27%).

Conclusions – Although the differences between the groups in number of fractures that resulted in union and complication rates did not reach the level of significance, we do believe that these differences can clinically relevant, with a tendency for better results with a plate-rod construct.

MYXOID LIPOSARCOMA IN THE ABDOMINAL CAVITY OF A DOG

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A 7-year-old female mixed breed dog was examined because of anorexia, abdominal dilation, cachexia and severe weakness. Mucosal pale-ness, unclearness of heart sounds, respiratory distress and extraordinary enlargement of inguinal mammary glands was observed during the initial clinical examinations. Severe dilation of abdominal cavity and radiological signs of ascites was seen in the plain radiograph. Ultrasound observations revealed the presence of a heterogeneous mass with high echogenicity of a big massive structure containing particles with different sizes and calcifications in some fields. A heterogeneous mass was found in the abdominal cavity during necropsy examination with the dimensions of 23x21x18 cm, a weight of 6 Kg, white yellowish color and soft to gelatinous density. Liver was severely hyperemic. Multiple different size foci due to tumor implantation were observed on the Glisson's capsule, uterus, ovaries, diaphragm and mesenteric folds. Due to invasion of tumor spleen and inguinal mammary glands were completely destroyed while lungs were thoroughly intact. Hydrothorax and hydroperitoneum with bloody fluid were seen. In the microscopic examination most of the cells determined as lipoblasts with a few lipocytes. In some areas neoplastic cells were located in a basal tissue of a myxoid connective tissue. Large necrotic foci and hemosiderin deposition were also observed. Based on all findings the case was diagnosed as a liposarcoma tumor which in some parts had the appearance of a myxoid liposarcoma. It is likely that the origin of this tumor was the peritoneum.

THE EFFECTS OF ACUTE AND CHRONIC BLOCKADE OF NITRIC OXIDE SYNTHASE (NOS) AND ANGIOTENSIN CONVERTING ENZYME (ACE) ON ECG PARAMETERS IN RABBIT

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A 7-year-old female mixed breed dog was examined because of anorexia, abdominal dilation, cachexia and severe weakness. Mucosal pale-ness, unclearness of heart sounds, respiratory distress and extraordinary enlargement of inguinal mammary glands was observed during the initial clinical examinations. Severe dilation of abdominal cavity and radiological signs of ascites was seen in the plain radiograph. Ultrasound observations revealed the presence of a heterogeneous mass with high echogenicity of a big massive structure containing particles with different sizes and calcifications in some fields. A heterogeneous mass was found in the abdominal cavity during necropsy examination with the dimensions of 23x21x18 cm, a weight of 6 Kg, white yellowish color and soft to gelatinous density. Liver was severely hyperemic. Multiple different size foci due to tumor implantation were observed on the Glisson's capsule, uterus, ovaries, diaphragm and mesenteric folds. Due to invasion of tumor spleen and inguinal mammary glands were completely destroyed while lungs were thoroughly intact. Hydrothorax and hydroperitoneum with bloody fluid were seen. In the microscopic examination most of the cells determined as lipoblasts with a few lipocytes. In some areas neoplastic cells were located in a basal tissue of a myxoid connective tissue. Large necrotic foci and hemosiderin deposition were also observed. Based on all findings the case was diagnosed as a liposarcoma tumor which in some parts had the appearance of a myxoid liposarcoma. It is likely that the origin of this tumor was the peritoneum.

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### Introduction
Although, cardiac electrophysiology has been studied extensively, the role of nitric oxide pathway and angiotensin system in cardiac electro-activity is not clearly known. The aim of our study was to determine the role of nitric oxide pathway and Angiotensin II on the electrocardiogram (ECG) by acute and chronic blockade of NOS and ACE.

### Material and Methods
Sixteen New Zealand white rabbits were used in this study. The rabbits were divided into four groups receiving either, saline (control group), N-(G)-nitro-L-arginine methyl ester (L-NAME) a general NOS blocker, Enalapril maleate, an ACE blocker or a combination of L-NAME and Enalapril maleate (combination group) daily for 21 days. The ECGs were obtained and analyzed every day from one day before starting the treatments until the end of experiment.

### Results
In L-NAME group, heart rate (HR) was decreased on day 1 (P<0.005), which was gradually restored until the end of experiment. The same decrease of HR was observed in the combination group. There was an increase in the R-wave amplitude on day 21 in L-NAME group (P<0.05). In other ECG parameters there were no notable changes.

### Conclusion
The nitric oxide pathway and Angiotensin system can influence the parameters of the ECG. However, this influence seems to be indirect and due to possible structural changes in the heart, e.g. gradual enlargement of left ventricle as a consequence of chronic increased blood pressure in long-term NOS blockade.

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**A SERO-CLINICAL SURVEY OF NEOSPOROSIS BY INDIRECT FLUORESCENT ANTIBODY TEST (IFAT) IN DOGS OF TABRIZ, IRAN**

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**Introduction**
A clinical and serological study of canine neosporosis in dogs in Tabriz – Iran was performed to compare the status of this infection between household dogs and dogs living in animal husbandry.¹

**Material and Methods**
In total, 100 serum samples were collected, 30 samples from household dogs and 70 from dogs living in dairy cattle farms. All clinical presentations of dogs were recorded. Serum samples were evaluated with indirect fluorescent antibody test (IFAT), starting at the dilution of 1:50 and more.²,³

**Results and conclusion**
About 33 percent of serum samples were positive at 1:50 titer. Seropositive samples accounted for 16.7 % in household dogs and 40 % among dogs living in farms, showing that the rate of infection was high in farm residence dogs (p= 0.02). Thirteen cases had clinical signs similar to reported signs of neosporosis. The rate of Neospora associated dermatitis was high in comparison to other clinical signs (15.2%). The presence of a high contamination in animal husbandry dogs and nature of this parasite to induce abortion shows the economical concern in the Tabriz province.

**References**

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**STUDY ON THE ROLE OF CAT OWNERSHIP IN HUMAN INFECTION WITH BARTONELLA HENSELAE**

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The clinical spectrum of Bartonella henselae infection varies, ranging from classic cat scratch disease with only lymphadenopathy to severe systemic disease. In general, immunocompetent individuals tend to develop classic cat scratch disease, while immunocompromised individuals tend to have systemic disease.²

The objective of this study was to determine the role of cats as a risk factor in infecting persons who are in close contact with cats.

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CHAPTER 5

Companion Animals: Posters

Abstracts European Veterinary Conference
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Sampling was accomplished during a 6-month period, from 100 domestic cats (indoor-outdoor), their owners and 100 persons who have no cats as a control group. Indirect immunofluorescent antibody (IFA) was used for serological diagnosis and the cutoff titer was ≥1: 64. Data were analyzed with SPSS 12 software comparing positive seroprevalence between groups with Pearson Chi-square test and determining odds ratios with CI=95%.

In total, 23 cats (23%) had antibodies against B.henselae, which were tested with IFA method for detecting IgG antibody. Of the 100 cat owners, 18 (18%) were serologically positive for B. henselae, whereas of the 100 persons in the control group only 5 (5%) were serologically positive. In this study there were no significant differences statistically in seroprevalence between cats and their owners (P<0.381), while significant differences (P<0.004) existed between cat owners and the control group.

Our findings support previous reports from other countries. In Iran, seroprevalence in cats compared with their owners and a control group, showed that cats ownership or contact is a risk factor for infection with Bartonella henselae.

Key words: Bartonella henselae, cat scratch disease, indirect immunofluorescent antibody.

References:

A CASE OF MAMMARY NEOPLASM IN A MALE CAT

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The aim of this case report was to attract attention to mammary neoplasms in male cats which occur infrequently. The subject of this case report was a male 9 year old cat which was referred to The Clinic of Obstetrics and Gynaecology, Department, Faculty of Veterinary Medicine, Ankara University with mammary gland nodules. The anamnesis revealed that the cat had been castrated at two years of age and had received progesterone for 7 years because of hypersexuality after castration. Based on the clinical and ultrasonographic examinations, the case was diagnosed as mammary neoplasm. Histopathological examination demonstrated a cystic adenoma papilliferum. This case report presents the rare occurrence of mammary gland neoplasia in a male cat.

HARVESTING OF BONE MARROW MESENCHYMAL STEM CELL FROM RATS AND IN VITRO DIFFERENTIATION OF BONE MARROW MESENCHYMAL STEM CELLS INTO NEURON-LIKE CELLS

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In bone marrow, there are certain populations of stem cells with the capacity to differentiate into several different types of cells. Ideally, cell transplants would be readily obtainable, easy to expand and bank, and capable of surviving for longer periods of time. Bone marrow mesenchymal stem cells (MSC) have all of these capacities. One of the most important benefits in using MSCs, is the possibility of autologous therapy. Recently, numerous studies have evaluated strategies attempting to promote axon regeneration in Central Nervous System (CNS) injuries. Among these strategies cell transplantation is considered to be the most effective way. Differentiation of stem cells to different kinds of neural lineage (such as astrocytes and neural like cells) before transplantation was critical in achieving the best result in CNS injury studies. MSCs were isolated from bone marrow aspirates taken from the femur of live rats. Detection of MSCs was performed with RT-PCR analysis. Bone marrow MSCs were induced to differentiate into neuron-like cells in serum-withdrawal medium in 2 weeks using a multistep protocol. In addition to morphological evaluation of differentiated cells, PT-PCR analysis was performed evaluating neural specific genes including: NSE, MAP2, Nestin, and β-tubulin. Immunocytochemistry was executed using primary antibodies against NSE to test cell differentiation and to prove neural differentiation.
VALIDATION OF THE MACROSCOPIC SCORING SYSTEM ACCORDING TO THOMPSON FOR PATHOLOGICAL CHANGES IN INTERVERTEBRAL DISC DEGENERATION IN CANINE CADAVERIC SPINES AND CORRELATION WITH IMAGING FINDINGS USING LOW FIELD MAGNETIC RESONANCE IMAGING

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Intervertebral disc degeneration (IVDD) is a common cause of chronic back pain in humans and dogs. In human pathology, the five-category grading scheme according to Thompson, is most often used as the golden standard in IVDD research. The aim of this study was to validate the Thompson scheme in dogs and to correlate the findings on gross pathology with imaging findings using low field (0.2 Tesla) magnetic resonance imaging (MRI).

A total of 170 intervertebral segments, obtained from 19 randomly selected dogs euthanized for various unrelated reasons, were used for this study. Sagital T2-weighted MRI of the thoracic and lumbar spine was performed within 24 hours post mortem. Immediately after MRI the spines were cut in the mid-sagital plane and high resolution photographs were taken of each intervertebral segment (endplate-disc-endplate). The 170 segments were macroscopically scored according to Thompson. The MR images were scored according to the grading system by Pfirrmann. Cohen’s weighted kappa analysis was used for the inter- and intraobserver agreement of the Thompson score and for the correlation between the results of MRI and macroscopic scoring.

The results showed that the Thompson score can be used for grading canine IVDD with a high inter- and intraobserver agreement. Correlation between macroscopic grading of spine segments according to Thompson and grading of low field MR images according to Pfirrmann was substantial and therefore low field MRI can be used for clinical diagnosis of canine IVDD although there are some limitations.

References

THE COMPARATIVE EVALUATION OF SERUM BIOCHEMICAL, HAEMATOLOGICAL, BACTERIOLOGICAL AND CLINICAL FINDINGS OF DIED AND RECOVERED BITCHES WITH PYOMETRA IN POSTOPERATIVE PROCESS

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The aim of this study was to investigate the prognosis, the risk factors and the reason of death in bitches with pyometra after surgical treatment by comparing biochemical, hematological, bacteriological and clinical parameters.

30 bitches with pyometra were ovariohysterectomized. Eight bitches that died after the ovariohysterectomy were allocated to Group 1 and the rest, which recovered, to Group 2. In addition, 10 healthy bitches were used as reference for hematological and biochemical parameters.

WE found that the level of band neutrophils in Group 1 were higher than 10% and there was lymphopenia along with a marked monositosis resulting a high negative correlation (r= - 0,74). There were significant differences (p<0,01) between Group 1 and 2 for BUN, creatinine and BUN/creatinine ratio . Also, the increased serum BUN and creatinine levels were significantly correlated (rs = 0,605 and rs = 0,514, respectively). A significant tendency was apparent for increasing mortality in bitches with pyometra whose BUN levels over 30 mg/dl (odds ratio=23,80) and creatinine levels above 1,5 mg/dl (odds ratio=7,518). Clinical signs and bacteriological findings did not lead to marked differences between the groups.

In pyometra cases, the elderly azotemic dogs having higher BUN and creatinine concentrations, would more likely succumb within 3 days after surgery. It may be concluded that the increased BUN concentrations may serve as a reliable prognostic predictor.
THE TRANSITIONAL ZONE OF THE RENAL ARTERY IN CATS

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The microscopic transitional zone is a segment of the arterial tree where the elastic-type wall architecture is replaced by one of the muscular types. The aim of this study was to determine the length and structure of the transitional zone in cats. Renal arteries were obtained from adult male cats after vascular perfusion. Serial sections were taken and stained. The numbers of sections with transitional structure were counted. The length of transitional zone was 7 mm. The artery has a structure between muscular and elastic at its origin with the presence of several elastic fibers in the tunica media. These fibers decreased from the transitional zone towards the non-transitional zone and change gradually to a muscular type at the distal section. It has been established that the bundles of elastin appeared to be continuous from the aorta into its branches in rats, sheep and lambs. During diastole, elastic rebound of large arteries helps to maintain arterial pressure, and affluence of blood to the organ to be controlled by contracting or relaxing the smooth muscle cells of the tunica media so this structure in renal artery can be normal. This irregularity between elastic fibers and smooth muscle cells from proximal to the distal part of renal artery can be important in vascular disease.

References

UNUSUAL MANIFESTATION OF BORRELLIA BURGDORFERI INFECTION IN A DOG

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An 8-years-old, female dog was admitted to a small animal clinic due to conjunctivitis in the right eye. Progressive exophthalmus with lateral strabismus, protusion of the nictitant membrane and loss of mobility of the eyeball were noticed. Computed tomography scanning of the head showed a diffuse thickening of the extraocular muscles of the right orbit. The eye was enucleated due to the poor treatment response and the worsening of exophthalmus, which caused an intense pain, self-inflicted wounds and the exposition of the eyeball because of impossibility to close the eyelids. Histopathological findings of extraocular muscles revealed a perivascular and interstitial infiltrate characterized by an increased number of plasma cells, lymphocytes and macrophages. After surgery, suppurative inflammation on the right side of the face, suppurative keratoconjunctivitis on the left eye, recurrent fever and inappetence were noticed. Results of serum enzyme-like immunoabsorbent assay (ELISA) were positive for Lyme disease and negative for Leishmania spp, Ricketsia spp, Canine distemper virus and Ehrlichia canis. A treatment with doxycycline was established. Fever disappeared and the suppurative inflammation began to subside after one week of treatment. The positive serology, the exclusion of other differential diagnosis such as tumours, abscesses or other infectious diseases, the previous contact of this animal with ticks, the response to treatment with doxycycline and the histopathological findings were consistent with those described in Lyme orbital myositis in humans. Only a few cases of Lyme myositis affecting orbital muscles have been described in humans. In animals, this is the first description of exophthalmus and orbital myositis associated to Borrelia burgdorferi infection. This condition responded sucessfully to appropriate treatment for Lyme disease, and should be considered in the differential diagnosis of extraocular muscle swelling, exophthalmos and conjunctivitis of unexplained cause in order to avoid irreversible injuries.
HISTOMETRICAL AND HISTOPATHOLOGICAL EVALUATION OF SERTRALINE TREATMENT AFTER SURGICALLY-INDUCED SKIN TRAUMA IN A RAT MODEL
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Introduction
Wound healing is a complex chain of events involving interactions among a variety of different cells and tissues. The normal wound repair process consist of three phase: inflammation, proliferation and remodeling that occur in a predictable series of cellular and biochemical events. Serotonin(5-HT) is an important mediator of interactions between the nervous and immune systems. Activation of 5-HT receptors can lead to the up regulation of growth factors, enhanced production of type IV collagen by human mesangial cells and subsequent increase in fibroblast proliferation. Aim of the present study was to evaluate the effects of sertraline ointment on skin wound healing in a rat model.

Materials & Methods
Full thickness incisional wounds were created on the back of 80 Wistar rats. Animals were divided into 4 groups. Treatment consisted of the application of normal saline, no treatment, and low and high doses of sertraline ointment for 21 days in groups 1-4, respectively. Digital photographs were taken of the wounds for histomorphometric measurements and biopsies were collected for histopathological evaluation in 4 rats from each group at days 1, 3, 7, 14, and 21.

Results
Sertraline ointment increased the production of type IV collagen and reduced inflammation in the wound area. Sertraline treatment significantly reduced mean time of wound healing and wound size (p<0.05).

Conclusion
Sertraline can be effectively used to improve wound healing.

EFFECT OF ACEPROMAZINE-XYLAZINE COMBINATIONS ON INTRAOCULAR PRESSURE AND PUPIL SIZE AND IN CLINICALLY NORMAL DOGS
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The use of tranquilizers to restrain dogs before examination of the eye and as preanesthetic drugs before eye surgery is very common. Each of these drugs may have generally dose dependent side effects on ocular parameters. In a randomized, blinded study, we evaluated the effect of intramuscular administration of three different doses of acepromazine- xylazine and their combinations with atropine on intraocular pressure (IOP) and pupil size. The groups included: Group 1 (AX): acepromazine (0.05 mg/kg) + xylazine (0.5 mg/kg) (n=12), Group 2 (LA-HX): acepromazine (0.03 mg/kg) + xylazine (0.8 mg/kg) (n=12), Group 3 (HA-LX): acepromazine (0.08 mg/kg) + xylazine (0.3 mg/kg) (n=12), Group 4 (AXA): acepromazine (0.05 mg/kg) + xylazine (0.5 mg/kg) + atropine (0.04 mg/kg) (n=12).

Results showed that the intraocular pressure of the left eye was significantly lower than that in the right eye (1.3 mmHg) before drug injections. In group 1 (AX) intramuscular administration of acepromazine- xylazine did not cause any significant changes in IOP in both eyes whereas in group 2 (LA-HX) the IOP was significantly decreased in both eyes (P=0.006 in left and P=0.00009 in right eye). In group 3 (HA-LX) and 4 (AXA), the IOP was decreased in both eyes but only the differences in right eyes were statistically significant (P= 0.026 in group 3, and P= 0.01 in group 4).

Pupil diameter in the groups 1 (AX), 2 (LA-HX) and 3 (HA-LX) was significantly decreased after drug injections compared with baseline values in both eyes. In group 4 (AXA) pupil diameter remained unchanged compared to baseline values after drug injection. In conclusion, the results of this study showed a decreasing effect on IOP in both right and left eyes following sedation with acepromazine-xylazine combination with or without atropine, although these changes were in the normal range.
URETERAL SEGMENT REPLACEMENT USING AN OVINE FETAL URACHUS DUCT (NEW XENOCENIC GRAFT) IN DOGS
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The ureter is an important part of the urinary system that can be affected by several disorders such as congenital malformations, extensiveiatrogenic ureteral obstruction, ureteritis, retroperitoneal fibrosis, trauma, necrosis, calculi, tumors, etc. We wished to determine whether ovine fetal urachus duct will be accepted when used as a ureteral replacement material in other species. The ureters of five adult native dogs were approached through a ventral midline laparotomy incision. A segment of 3-cm midureter was resected unilaterally. The left ureteral segments were replaced with ovine fetal urachus duct using 5-0 PDS interrupted sutures. Internal ureteral catheter was left for 6 weeks. The patency of the ureters was assessed by intravenous pyelography at 2 and 8 weeks after the surgery, while inflammation and regeneration were assessed grossly and histologically. All five urachus transplantations were accepted successfully based on radiological, macroscopical, and histological evaluation. The ovine fetal urachus seems to be an embryonic tissue of extremely low antigenicity and therefore suitable for transplantation.

BONE-SPECIFIC ALKALINE PHOSPHATASE AS A GOOD INDICATOR OF BONE FORMATION IN SHEEPDOGS
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Eight clinically healthy male sheepdogs were selected and subjected to experimental radius osteotomy. Blood samples were taken before and weekly after surgery, and radiographs were taken immediately and weekly after surgery to trace new bone formation. Total protein, total alkaline phosphatase (ALP), and bone-specific ALP (BALP) were measured in serum samples. There was no significant difference in total proteins, but total ALP and bone-specific ALP (BALP) activity were significantly increased (P<0.05) after surgery (during bone formation). We found a weak correlation between total ALP activity and BALP activity during the study. The bridging callus was completed in the fourth week of the experiment, and the gap was fully filled with new bone. However, increased levels of total ALP and bone-specific ALP activity were maintained throughout the study and did not reduce at 4 weeks. We concluded that serum activity of bone-specific ALP is a good indicator of bone formation in sheepdogs, and when radiographs inform the completion of bone fracture healing, cellular activity in the healing region is likely to be continuing.

STROMAL CELL DIFFERENTIATION AND EXTRACELLULAR MATRIX REMODELING IN CANINE BENIGN PROSTATE HYPERPLASIA.
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The prostate gland of aged dogs has been shown to develop spontaneous benign prostate hyperplasia. Stromal cells appeared to play a central role in the normal development of the prostate gland and are also implicated in the progression of prostate cancer. Therefore, the aim of this study was to investigate the age-dependent differentiation of stromal cells and extracellular matrix remodeling and their association with benign prostate hyperplasia. The differentiation of stromal cells was determined by immunolocalization of alpha actin and vimentin and the extracellular matrix remodeling was determined by immunolocalization of collagen I, II and III. The expression levels of these genes were compared between normal areas and benign prostate hyperplasia areas of young adult (1-1.5 years) and aged dogs (5-8 years). The results showed that the aged dogs developed benign prostate hyperplasia which contained marked increases in the stromal separating lobes, lobules and acini. Although there was an increase in the expression level of alpha actin and vimentin by the stromal cells of the hyperplastic areas, the relative increase of the staining intensity of vimentin appeared to be more prominent as compared to that of alpha actin. These changes in the expression level of vimentin and alpha actin were associated with an increase in the expression level of collagen type I, II, and III in the hyperplastic areas as compared to normal areas. These results indicated that there is an age-dependent increase in stromal content whether as stromal cells or as connective tissue represented by fibrillar collagens within the hyperplastic gland.
BIOMECHANICAL TESTING OF A LUMBOSACRAL NUCLEUS PULPOSUS PROSTHESIS: A CANINE CADAVER STUDY
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The aim of the study was to biomechanically analyse the canine lumbosacral spine, before and after dorsal laminectomy and nucleectomy, and after nucleus pulposus prosthesis implantation.

The biomechanical parameters of flexion/extension, lateral bending, and axial rotation were determined in 7 cadaveric lumbosacral spinal specimens from 7 mature, intact, healthy mixed breed dogs. The cadaveric spinal segments were subjected to an increasing bending moment (-2Nm->2Nm) on L6 to S2. The load was applied in a hydraulic materials testing machine (Instron). Tests were performed in a 4-point bending device, the applied moment was therefore constant for each segment in the spine. Force and displacement were recorded during 3 loading series, each consisting of 3 loading cycles in all 3 directions. Simultaneous kinematical monitoring of each spinal unit was performed with an Optotrak motion capture system. Each spinal segment underwent 3 series of tests: 1) intact spine, 2) after dorsal laminectomy and nucleectomy, and 3) after implantation of a nucleus pulposus prosthesis. One loading cycle was a complete flexion-extension movement, left/right lateral bending-, or clockwise/anti-clockwise axial-rotation of the spine.

After dorsal laminectomy and nucleectomy, the neutral zone and range of motion were significantly different from those in the native spinal specimen. After correct prosthesis implantation, the neutral zone and range of motion of the spinal specimen significantly decreased compared to the specimen after dorsal laminectomy and nucleectomy and almost returned to the values, found in the native state. Failure of the prosthesis was accurately recorded with the materials testing machine. It was concluded that in normal canine cadaveric lumbosacral spinal specimens dorsal laminectomy and nucleectomy leads to significant spinal instability in flexion/extension-, bilateral bending- and bilateral axial rotation-motions, whereas correct nucleus pulposus prosthesis placement effectively stabilizes the lumbosacral spine.

EXPRESSION OF THE PROGENITOR CELL MARKER K19 IN CANINE HEPATOCELLULAR NEOPLASIA
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The expression of Keratin (K) 19, present in hepatic progenitor cells (HPCs) and in cholangiocytes but not in normal hepatocytes, has been reported in a subset of hepatocellular carcinomas (HCCs) in man. These K19 positive human HCCs were associated with an increased recurrence after resection compared to K19 negative HCCs indicating their increased malignancy. Currently the incidence of K19 expression in hepatocellular neoplasia in dogs is unknown. Therefore, our aim was to study the occurrence of K19 positive hepatocellular neoplasia in 46 dogs diagnosed with hepatocellular neoplasia. The morphology of all liver tumors was histologically examined to determine which kind of liver tumor it was. To support this classification several neuro-endocrine markers were used as differentiation markers.

The expression of the hepatocellular differentiation marker (HepPar-1), the biliary/progenitor cell markers (K7, K19) and the human HCC malignancy marker (Glypican-3) was semi-quantitatively assessed by immunohistochemistry. The hepatocellular neoplasias have been graded on histological features after a HE staining according to a grading system designed for this study based on the classification of Edmondson and Steiner (ES differentiation grade). Furthermore, the hepatocellular neoplasias have also been staged according to a staging system based on the spread and invasion of the tumour.

Of 46 hepatocellular neoplasias, four were > 30% K19 positive (12%). Of this group two K19 positive hepatocellular neoplasias co-expressed K7. K19 positive tumours expressing K19 in most of the cells did not express HepPar-1, although these tumours histologically had evidence of hepatocellular origin. Hepatocellular neoplasias expressing K19 were histologically defined as poorly differentiated (group 3 of the grading system) and often revealed invasion in portal tracts whereas K19 negative hepatocellular neoplasias did not.

In conclusion, K19 positive hepatocellular neoplasias occur in 12 percent of our test group and are associated with a poorly differentiated histology and a more aggressive tumour behaviour.
THE EFFECT OF ECHINACEA PURPUREA AERIAL ORGAN DRIED EXTRACT VERSUS ZINC OXIDE ON SKIN WOUND HEALING IN RAT: A MORPHOMETRIC AND HISTOPATHOLOGIC STUDY

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Because of possible side effects of chemical drugs, the efficacy of natural wound healing accelerators in treating skin defects is receiving increasing interest. The aim of our study was to assess full thickness excisional skin wound healing with topical application of dried extract of Echinacea purpurea, compared with zinc oxide treatment, morphometrically and histopathologically, in a rat model.

Sixty wistar rats received four full thickness excisional punch wounds on the back skin under general anesthesia. All rats were randomly divided into groups 1, 2 and 3, with Echinacea purpurea treatment, zinc oxide treatment and placebo treatment as a control, respectively. Rats of the experimental groups were treated topically once a day for 21 uninterrupted days. Healing of the wounds was daily measured by taking digital photographs and morphometric analysis. Histopathologic assessment was carried out on the 1st, 3rd, 7th, 14th and 21st day of the treatment period and wound healing was assessed using a wound healing score with 1 to 6 grades.

According to the morphometric findings, the wound contraction rate in group 1 was highest 21 days after skin punching with wound sizes of 0.18±0.03 mm² in group 1 and 2.81±0.21mm² in group 2. Group 1 had the best wound contraction rate which was 2.5 times higher on day 7 and 3 times higher on day 14 than group 2 (p<0.01). Histopathologic assessment revealed that, overall healing rate in group 1 was highest (p<0.01). Echinacea purpurea dried herbal extract could be a new capable remedy to accelerate skin wound healing because of its potential anti-phlogistic and wound healing stimulatory properties.

References

COMPARISON OF TWO LAPAROSCOPIC SUTURE PATTERNS FOR SIDE TO SIDE GASTROJEJUNAL ANASTOMOSIS IN THE CANINE MODEL

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Introduction
The objective of this experimental study was to determine the suitability and feasibility of a single layer continuous technique for hand sewn laparoscopic gastrointestinal anastomosis (gastrojejunostomy) in dogs.

Material and Methods
Sixteen healthy mix breed male and female dogs were randomly divided in two groups. In the control group two layer side to side hand sewn laparoscopic gastrojejunostomy were performed so that simple interrupted sutures were placed in the outer layer and simple continuous type was used for the inner layer. In the treatment group the one layer simple continuous anastomosis between stomach and jejunum were done precisely.

Results
All animals survived the surgery. Mean surgical time and blood loss in the treatment group (124 ± 24 ml) were significantly lower than the control group (83 ± 16 ml). Contrast radiographs revealed no anatomic displacement of organs, adhesions or leakage. There was no gross inflammation, hemorrhage, infection, ischemia or apparent granulation tissue, abscess or fistula formation, anastomotic leakage or stricture formation and all anastomotic sites were patent in necropsy four weeks after the surgery. The mean diameter of the anastomotic sites was higher in the treatment group (18 ± 3 mm) than the control group (17 ± 2 mm). Several adhesion formations were found in abdomen with higher incidence in the control group.

Conclusions
hand sewn laparoscopic gastrojejunostomy with one layer closure technique according to clinical evaluations and necropsy findings had several advantages including feasibility, ease, safety, less time consuming and less complication in comparison with the same procedure using two-layer anastomosis. Further work is needed before a one layer laparoscopic gastrojejunostomy can be recommended clinically.
USE OF THREE DIMENSION ULTRASOUNDS FOR MEASUREMENT OF OPTICAL LONG AXIS IN CATS
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The purpose of this study was to evaluate the possibility of taking three dimensional (3D) ultrasound images for better visualization of feline eye and also taking the normal values of the optical a long axis by using this technique.1-3

A total of 8 (4 males and 4 females) healthy 2-years-old cats were used. General Electrics Voluson Pro ultrasound equipment with “3D small parts” option of a 3D and 4D linear trapezoid 5-12 MHz transducer was applied for all the examinations. Ultimately the normal values of the optical long axis were measured from a line between the cornea and optic disc in males and females, lefts and right. All the obtained data were analyzed statistically with a paired sample T-Test.

The relationships and connections between vitreous membranous, retina, and ocular wall were finely displayed, stored as 3D ultrasound tissue information, and analyzed. The values of the optical long axis in obtained 3D images were measured. There was a significant difference between male and female dogs but left and right eyes (p<0.05).

The 3D data acquisition time was 5-10 seconds depending on the selected 3D box size of the region of interest and also the desired image quality. In veterinary medicine, ocular biometry can be used in establishing lens implant size, calculating lens power, and estimating prosthetic globe size after enucleation.

References

PAPILLARY CYSTADENOCARCINOMA OF THE MAMMARY GLAND IN A CAT
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There are usually four pairs of mammary glands in the cat. Some authors believed feline mammary growths mostly arise in the anterior glands, but others have reported mammary tumors to be equally distributed between the four pairs of mammae.1 Feline mammary tumors are usually single, unlike those in the dog. Malignant feline mammary neoplasms usually have a history of rapid growth for several weeks and present as firm, nodular and non-encapsulated. In contrast to the dog, feline mammary growths tend to arise at an older age.

A 10-year-old intact female Persian cat was referred to clinic because of a mass in her right cranial thoracic mammary gland. The owner had noticed the mass about four weeks ago and it had rapidly grown ever since. The mass was firm on palpation, was 2x1.5 cm in size and had a mixed density on ultrasonography. The mass and local lymph node were resected by complete mastectomy and were sent to histopathology.

A papillary cystadenocarcinoma was detected on histopathology and additional radiography of both lungs was performed, but no metastases were seen. After recovery, the cat was ovariohysterectomized. No detailed study of the role of hormones in relation to feline mammary tumorigenesis has yet been published.2,3 However, early ovarioectomy markedly reduces the incidence of feline mammary neoplasia in later life. It was been estimated that intact females have a sevenfold higher risk of developing mammary cancer compared with ovarioectomized cats. In order to reduce the occurrence of feline mammary carcinomas, early ovariohysterectomy is recommended.

References
ASSESSMENT OF SAFE CORRIDORS FOR PEDICLE SCREW INSERTION IN CANINE LUMBOSACRAL VERTEBRAS.
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Degenerative lumbosacral stenosis (DLS) is a common disease of the canine lower back area. The condition includes Hansen type II disc degeneration and lumbosacral instability, resulting in clinical signs of cauda equina compression. Pedicle screw-rod fixation is a surgical technique to stabilize the lumbosacral spine.

The aim of this study was to assess the safe corridors for pedicle-screw insertion in the canine lumbosacral spine by identifying the anatomical landmarks and designing a pedicle screw insertion protocol (PSIP).

The study was divided into 3 sections: 1 - The investigation of lumbosacral anatomy by using histological slices of an adult Labrador Retriever, 2 - Radiography and CT of 6 canine cadaver specimens to measure the dimensions and angles of the lumbosacral area. Values of 6 specimens were averaged to design a PSIP for dogs of 25-30 kg. All specimens underwent the surgical procedure described in the protocol. Postoperatively, pedicle-screw position was assessed and evaluated with radiography, CT and magnetic resonance imaging (MRI), 3 - three Greyhounds diagnosed with DLS were operated using pedicle screw-rod fixation. Screw positions in these dogs were evaluated with radiography, CT and MRI and compared with findings in the cadaver specimens operated according to the PSIP. Study of the Greyhounds also revealed insight into the clinical and neurological status of these dogs after surgery in relation to the diagnostic imaging findings.

When the surgical protocol was followed, screw position was acceptable on imaging findings. If screw position was not acceptable, this could be explained by a significant deviation from the PSIP. However minimal deviations easily occurred and, in particular, the medial pedicle wall (L7/S1) can be damaged with possible impairment of the cauda equina. From the Greyhounds we learned that minimal damage of the medial pedicle wall does not have to result in clinical signs or discomfort.

FRACTURE REPAIR WITH FIXIN® IMPLANTS FOR ANGULAR STABILITY.
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Introduction
Fixed-angle implants including locking plates and screws are being increasingly used in veterinary orthopaedic surgery, because of their biological and mechanical advantages.
During my 22 months experience with Fixin®, I used 183 implants in fracture repair and selective osteotomies. The aim of this presentation is to illustrate the indications, results, advantages and practical and economical considerations of locking implants in fracture repair.

Methods
Medical records of several types of fractures in cats and dogs, according to their classification and anatomical location, were reviewed. All procedures were performed by the same surgeon.

Results and Conclusion
Fixed-angle implants are a valuable asset in veterinary orthopaedics. The Fixin® system has a high success rates in comparison with traditional methods of fracture repair.
Locking plates can increase the possibilities of even experienced surgeons and reduce morbidity. In simple fractures their use can depend on economical considerations, but in comminuted and complicated fractures, they can offer more stability with less implant material, resulting in lower costs.
Surgeons are encouraged to take profit of the advantages of fixed-angle systems including less invasive surgery with shorter and thinner implants and less screws, preservation of the vascularity of the periosteum because plate contact and pressure are no longer necessary, shorter surgery time because implants do not necessitate to be precisely contoured to the bone, greater mechanical stability and as a consequence lower morbidity.
AIMING SCREWS FOR FIXED-ANGLE IMPLANTS; TIPS AND TRICKS, BASED ON 2 YEARS EXPERIENCE WITH FIXIN® FIXATORS
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Introduction
Fixed-angle implants are being increasingly used in veterinary orthopaedic surgery, because of their biological and mechanical advantages. Used in a locking fashion, all screws can only be inserted in a predetermined angle, thus unabling the surgeon to direct the screws. According to my experience, in more than 90% of cases, implants can be positioned in such way that this is no disadvantage. However, in certain circumstances (i.e. close to joints, spiral fractures, tarsus/carpus,…) aiming the screws in a desired direction can be necessary. This can only be done by bending the implant in such a way, that each screw ends up in the correct position. During my 2 year experience with Fixin®, I developed an easy and quick method to realize this.

Methods
The standard procedure is explained as shown based on the medical records of several types of fractures in 10 cats and dogs. All procedures were performed by the same surgeon.

Conclusion
The fixed angle” of “fixed-angle implants” is not a disadvantage as far as aiming screws is concerned. As with every new type of implant, surgeons have to adapt their methods to the specific needs and adaptations of the implant. Thus, surgeons can profit from the advantages of fixed-angle systems, including less invasive surgery with shorter and thinner implants and less screws, preservation of the vascularity of the periosteum because plate contact and pressure are no longer necessary and shorter surgery time because implants do not necessitate precise contouring to the bone.

A CASE OF FELINE OSTEOARTHRITIS
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A castrated male Domestic Shorthair cat of 15 years of age was referred to the department of Clinical Sciences of Companion Animals, Utrecht University, because the owner noticed changes in behaviour during the last year. Changes were characterized by decreased height of jumping, less playing and more sleeping. General clinical examination revealed no abnormalities except for muscle atrophy of the cat’s hind limbs. The differential diagnosis included metabolic disorders like diabetes mellitus and kidney failure, neoplasia, spondylisis deformans, osteoarthritis (OA), poliarthritis and neurological disorders. Orthopedic examination revealed enlarged elbow joints and pain on extension during passive movements of both elbows and knees. Neurological, gastrointestinal, cardiovascular and respiratory examination showed no abnormalities. Urine analysis, serum haematology and biochemistry were performed and revealed no abnormalities. Based on these findings radiographs were made, revealing severe OA in the right elbow and the left knee of the cat. In the left elbow and right knee mild OA was present. Therapy for this cat included Non Steroidal Anti-Inflammatory Drugs, household changes and diet adaptation. Two weeks later the owner reported that the cat was more active and could jump on his lap again. Recently, a retrospective study including 324 radiographic images of cat joints was performed at the department of Clinical Sciences of Companion Animals, Utrecht University. The results showed that older cats have increased odds for having OA in comparison to younger cats. Thirty-six percent of the cats had OA in at least one joint. OA might be an underestimated disease in the cat. It is believed that owners think that the behavioural changes associated with OA are normal for an ageing cat and do not see the changes as an indication for disease.

SECONDARY HYPOTHYROIDISM IN THREE MINIATURE SCHNAUZERS
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Three Miniature Schnauzers were presented because of disproportional dwarfism and mental dullness. Two of the dogs were full siblings from two different litters. Physical examination revealed a relatively short head, neck and limbs, a square trunk, kyphosis, patellar luxation, abnormal gait, mandibular prognathism and a dry, squamous skin. Not all dwarfs displayed the same clinical manifestations. None of the animals had a goiter.

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The main abnormalities found during laboratory examination were low total plasma thyroxine (T4) and thyroid stimulating hormone (TSH) concentrations. The dwarfs had normal plasma concentrations of growth hormone (GH) and insulin-like growth factor-1. Scintigraphic imaging of the thyroids, using radioactive pertechnetate, confirmed the diagnosis of hypothyroidism. To differentiate primary from secondary hypothyroidism, a thyrotropin-releasing hormone (TRH) stimulation test was performed. TRH administration did not result in a rise in plasma TSH concentration, suggesting secondary hypothyroidism. Repeated administration of TSH resulted in an increase of the plasma T4 concentration and increased uptake of pertechnetate in the thyroids, justifying the diagnosis of secondary hypothyroidism. Treatment with l-thyroxine resulted in clear improvement of physical and mental activity.

This rare congenital disorder has only been reported in a family of Giant Schnauzers and in a Boxer. Pedigree analysis of the Giant Schnauzers indicated that the disorder has a recessive mode of inheritance. The clinical manifestations described in the three Miniature Schnauzers largely, but not completely, resemble those described in the previous articles. This could be the result of phenotypic variance, which is also reported in pituitary dwarfism due to GH deficiency in German shepherd dogs.

References

DOPPLER IMAGING OF THE OCULAR ARTERIES OF DOMESTIC SHORT HAIR CAT
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Ultrasonography is relatively inexpensive, noninvasive, and allows definition of ocular and retrobulbar anatomy and, with the advent of Doppler imaging, permits measurement of the blood velocity parameters of the orbital and ocular vasculature.

A total of 6 female healthy domestic short hair (DSH) cats were selected. General Electric’s Voluson -Pro ultrasound equipment with linear trapezoid 8-10 MHz transducer was applied for all the examinations. The ocular blood vessels imaged included the long posterior ciliary arteries (LPCA), the short posterior ciliary arteries (SPCA), the anterior ciliary artery (ACA), and the primary retinal arteries (PRA). Two measurements were made for each vessel imaged and the results for peak systolic velocity (PSV) and end diastolic velocity (EDV) were averaged. Mean PSV and EDV at the LPCA were 14.3 cm/s and 6.1 cm/s, at the SPCA were 12.8 cm/s and 5.5 cm/s, at the ACA were 13 cm/s and 4.2 cm/s and for the PRA were 21 cm/s and 8.9 cm/s.

Doppler imaging has the potential for determining non-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; glaucoma; and to document the follow-up after medical and surgical treatment of these diseases.

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PULSE WAVE DOPPLER
ULTRASONOGRAPHY OF THE KIDNEY VASCUlATURE IN CATS
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In some diagnostic and treating indications such as kidney tumour, ischemic nephropathy, and renal artery stenosis it would be necessary to provide detailed characterization of the renal vasculature. The purpose of this study was to assess estimating the blood flow velocity parameters by using pulsed Doppler analysis. A total of 10 (5 males, 5 females) normal domestic short hair cats (DSH) underwent imaging of the kidney vasculature with a GE - ultrasonography machine with a 10-12 MHz linear transducer. Images were evaluated of the renal and segmented artery. For each mentioned blood vessels, peak systolic velocity (PSV), mean velocity (MvN), resistive index (RI) and end diastolic velocity (EDV) were obtained by pulsed-waved Doppler ultrasonography in the manner that Doppler-shifted signals were at less than a 60-degree angle to the artery. PSV (cm/s), MvN (cm/s), RI and EDV (cm/s), for renal artery were: 16.7±1.59, 10.12±1.39, 0.50±0.05 and 8.13±1.12 for segmented artery they were: 8.93±0.62, 5.83±1.16, 0.52±0.09 and 8.13±1.12.
5.14±0.68. No statistically significant variation was demonstrated in different sexes. Recently, colour and Doppler ultrasonography have been used increasingly as diagnostic tools in human medicine. There are some reports of the kidney hemodynamicity in veterinary and human medicine, which show similar results.

References

A P O T O P S I S I N N A T U R A L R A B I E S V I R U S I N F E C T I O N I N D O G S
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In the present study, apoptosis in the cornu ammonis and cerebellum of 10 dogs naturally infected with rabies virus was investigated. Among specimens from dogs sent to the Pendik Veterinary Control and Research Institute between the years 2006 and 2008 with suspicion of rabies disease, ten were determined to be rabies positive based on results of fluorescent antibody staining and experimental inoculation. Cornu ammonis and cerebellum samples pertaining to these dogs were also placed into buffered formalin. The tissue samples were subjected to routine tissue processing and embedded in paraffin. The tissue sections were stained with hematoxylin-eosin, Immunoperoxidase (IP), and Terminal deoxynucleotidyl Transferase Biotin-dUTP Nick End Labelling (TUNEL) methods. Histopathological examination revealed encephalomyelitis of varying severity and also the presence of Negri bodies. By IP staining, very evident rabies antibodies were determined in the motor neurons. In contrast, Bcl-2 protein and Bax protein showed positive reactions in 4 cases and in 2 cases, respectively. TUNEL staining demonstrated very marked apoptotic changes in the nuclei of neurons localised deep in the substantia alba of the cerebellum of the animals. Similar changes were also determined to exist in perivascular mononuclear cells and glia cells within the substantia alba. The absence of apoptotic changes in the motor neurons of the cornu ammonis was concluded to be due to the development of necrotic changes in these neurons.

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In the present study, p53 protein and metallothionein (MT) were investigated by immunohistochemically in benign and malignant mammary tumors. In addition, type of tumor, metastatic status and their correlation were determined. In total, 50 cases were included from different breeds and ranging in age from 6-15 years old. There were 36 malignant mixed tumors, 9 adenocarcinoma (1 papillary cystic adenocarcinoma, 4 ductal carcinoma, 4 tubulcar carcinoma), and 5 benign mixed tumors. Five of the tumors were seen in the thoracic, six in the abdominal, 18 in the inguinal, 11 in the thoraco-abdominal, and 10 in the abdomino-inguinal mammary glands.

Positive immunostaining for MT sera was found in 35 malignant mixed tumors, nine adenocarcinomas and three benign mixed tumors in both the mammary gland epithelium and ductal epithelium. Positive immunostaining for p53 protein sera was determined in 36 malignant mixed tumors and two benign mixed tumors generally in the mammary gland epithelium and rarely in the ductal epithelium. Also a positive staining for p53 protein and MT was seen in one benign mixed tumor.

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There is no reliable MRI based scoring system available to evaluate canine intervertebral disc degeneration (IVDD). The purpose of this study was to assess if a scoring system used for human lumbar sacral IVDD was applicable to IVDD in canine intervertebral disc degeneration.
dogs of different breeds and sizes. MR images of spinal segments from 202 dogs were reviewed and the degree of intervertebral disc degeneration was scored on every visible intervertebral disc. Scoring was done by three individual observers using the classification system according to Pfirrmann et al.1 for human lumbar intervertebral discs. A weighted kappa analysis resulted in kappa scores ranging between 0.81-0.93, which indicated a reliable intra- and interobserver agreement. Furthermore, the association between the degree of disc degeneration and the type of dog (chondrodystrophic or non chondrodystrophic), and between the age of the dog and the degree of disc degeneration were evaluated. There was a significant association between the variables, but the correlation was not very strong.

References

"DIESEL’S MISSTEP?"
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Diesel, a 4 year old male Rottweiler was referred with a history of acute lameness of his left hind limb, during a normal walk. He never had any problems before and beside his lameness, he was an active, healthy dog. On physical examination, the left stifle showed effusion, pain and instability. Caudocranial and mediolateral radiographs demonstrated signs of moderate osteoarthrosis (OA). Based on the radiographs and physical exam this dog was diagnosed with cranial cruciate ligament (CCL) rupture with a suspected medial meniscal lesion.

Acute cranial cruciate ligament rupture as occurs in human patients, is very rare in dogs. In a study at the Department of Clinical Science of Companion Animals, Faculty of Veterinary Medicine, Utrecht University, 94 dogs with cranial cruciate ligament rupture were screened for the severity of OA in the stifle joint. The radiographs were taken when the patients were presented for lameness. Only 1% had no signs of OA. 40% had mild OA, 52% moderate OA and 7% had severe signs of OA. These results indicate a chronic problem in the canine stifle which precedes the clinical signs of cranial cruciate ligament rupture. This study revealed a significant correlation between bodyweight and the severity of OA. There was no significant correlation between OA and age or gender.

Therapy for cranial cruciate ligament rupture can be conventional (analgesics and restricted activity) or surgical. In most cases, surgical stabilisation of the stifle and partial meniscectomy are necessary. There are several surgical techniques. The most used techniques at Utrecht University are the lateral capsular imbrication and the Tibial Tuberosity Advancement (TTA). Prognosis in dogs is quite favourable despite progressive OA. Unfortunately, many patients develop a contralateral CCL rupture within a year.

The primary aim of fracture treatment is to achieve the fastest possible healing and enable the patient to function normally by allowing early walking.1,2 External skeletal fixation offers adjustibility after surgery, a unique advantage over plate- or pin fixation. Frames may be adjusted or reinforced in the postoperative period. External skeletal fixation is also less invasive than plate fixation, and allows better access to wounds than external coaptation does.1,2

The purpose of the study was to present the initial results of femoral fracture fixation using unilateral semicircular external skeletal fixation in dogs. The material of the study consisted of 10 dogs of different breeds, age, and sex in whom various types of femoral fractures were diagnosed. The external fixator designed for his study was made of carbon-fiber quarter-rings and stainless steel connecting equipment which allowed for half pin application of up to 3 pins at any level. In the study, configurations composed of 3 to 5 quarter-rings with 4 to 7 positive profile schanz pins were used. Full weight-bearing occurred between 6 to 48 hours after the operation. The fixators were removed between 19-57 days after surgery. Except one non-union, functional limb use and cosmetic results were excellent in 9 cases following fixator removal. We demonstrated that unilateral semicircular external skeletal fixation was practical and efficient in the treat-
ment of the femoral fractures of dogs. In addition, light-weight and radiolucent carbon-fiber quarter-rings enhanced the fixator tolerance and eased radiographic evaluation.

References