Oral 1
Presumed optic neuritis of non-infectious origin in dogs treated with immunosuppressive medication: a retrospective study from 2000 to 2015

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Purpose: To describe clinical findings, MRI features, management, and outcome of 25 canine cases with suspected optic neuritis presented to the AHT from January 2000 to December 2015.

Materials: The clinical database was searched for optic neuritis. Information collected included age, gender, breed, clinical signs and duration, physical, ophthalmic and neurological examination, systemic disease, MRI findings, CSF and PCR analysis for Toxoplasma gondii, Neospora caninum and canine distemper virus, biochemistry, haematology, abdominal ultrasound, radiographic findings, treatment and outcome. Dogs with acute onset of vision impairment, systemic immunosuppressive treatment and follow-up periods of at least 6 months were included. Dogs with pathology involving the visual pathway(s) caudal to the optic chiasm or within the visual axis, retinal optic nerve disease, metastatic/primary neoplasms, severe systemic illness, progression of neurological disease despite immunosuppressive treatment and abnormal ERG were excluded.

Results: Ages ranged from 8 months to 10 years. The duration of clinical signs varied from 1 day to 2 months. MRI revealed contrast enhancement and swelling of the optic nerve in 10 and eight cases, respectively. CSF was available in all cases. It was cloudy in all cases. The mean protein level was 0.45 g/L (0.00–21/25 cases and cytosine arabinoside in 10/25 cases. Fundoscopy of optic nerve disease was present in 10/25 cases. The proportion of post-malacic scarring. The recipient bed on the penetrating keratoplasties was created (PK) in two cases of corneal endothelial degeneration post-phacoemulsification and one case of limbal melanoma (LM). All LMs were removed by full thickness en bloc resection with reconstruction of the globe wall using corneoscleral allografts harvested from a cold-stored corneoscleral button. All cases received topical and systemic broad-spectrum antibiotic, systemic immunosuppressants and topical immunosuppressive agents and started shortly after surgery. Results: Good corneal clarity was achieved in 2/3 PK cases. One of the corneal endothelial degeneration cases that had moderate corneal edema post-PK surgery, the eye retained a good menace response. One of the LM cases sustained a hypertensive episode shortly after surgery. In another LM case the graft was superficially ulcerated during weeks. All cases achieved good visual and comfortable outcomes (follow-up 120–367 days).

Conclusions: Canine corneoscleral tissue stored in Cornes Gold® resulted in good transparency in 2/3 penetrating keratoplasty cases and both good transparency and tectonic support when used for corneoscleral reconstruction.

Oral 2
Density and distribution of feline conjunctival goblet cells

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Purpose: To examine the density and distribution of goblet cells (GC) in the feline conjunctiva and investigate a potential effect of age on GC density. Methods: Forty-one eyes of 22 cats (14 males and 8 females) were included in this study. Fixed upper and lower eyelids were divided into nasal and temporal regions. Third eyelids were excised and investigated separately. Samples were embedded in paraffin wax; sections were stained with periodic acid–schiff's reaction (PAS) and analyzed with light microscopy. To determine the topographic distribution of GC, each region was subdivided into marginal, palpebral and bulbar zone. Results: The palpebral zone of both eyelids contained significantly (P = 0.001) more GC (27.4–31.9%) than the marginal or bulbar areas. Highest GC density was found in the nasal zone of the lower eyelid (2.6%). Overall the nasal region contained significantly (P < 0.0001) more GC than the temporal region but there was no significant difference in GC densities between the upper and lower eyelids. Correlation analysis showed no significant effect of age on GC counts. Conclusions: Goblet cells density in the palpebral zones was similar to those found in dogs. However, GC numbers in the bulbar sites were more similar to those found in horses. Age does not have an effect on GC density. This is the first morphological study that describes distribution and density of GC in the feline conjunctiva.

Oral 3
Clinical applications of canine cold-stored corneoscleral tissue

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Purpose: To assess the use of cold-stored canine corneoscleral allografts both in penetrating keratoplasty and corneoscleral reconstruction. Methods: Corneoscleral buttons, harvested aseptically within 24 h of donor death, were stored in Cornes Gold® (Bausch & Lomb Surgical) at 2–6°C. Donor tissue was used to perform a penetrating keratoplasty (PK) in case of corneal endothelial degeneration post-phacoemulsification and one case of post-cataract surgical intervention. Additional corneoscleral tissue was harvested using a Hessburg-Barron vacuum trephine (Alton®). Donor corneal tissue was harvested using a donor punch (Alton®) from the corneoscleral button that had been hyperthermally stored. It was also used for reconstructive surgery in four cases of limbal stem cell deficiency (LSCD). All LMs were removed by full thickness en bloc resection with reconstruction of the globe wall using corneoscleral allografts harvested from a cold-stored corneoscleral button. All cases received topical and systemic broad-spectrum antibiotic, systemic immunosuppressants and topical immunosuppressive agents and started shortly after surgery. Results: Good corneal clarity was achieved in 2/3 PK cases. One of the corneal endothelial degeneration cases that had moderate corneal edema post-PK surgery, the eye retained a good menace response. One of the LM cases sustained a hypertensive episode shortly after surgery. In another LM case the graft was superficially ulcerated during weeks. All cases achieved good visual and comfortable outcomes (follow-up 120–367 days).

Conclusions: Canine corneoscleral tissue stored in Cornes Gold® resulted in good transparency in 2/3 penetrating keratoplasty cases and both good transparency and tectonic support when used for corneoscleral reconstruction.
topography machine (Keratix Scout). Coaxial phacoemulsification was performed via a 2.8 mm incision at 10 o’clock position. All corned side-port was treated at the 1 o’clock position. All eyes received a prosthesis intracorneal lens and both ports were sutured with 9.0 Vicryl. All incisions were taken pre-operatively, 6 and 12 weeks post-operatively. SIA was calculated by vector analysis with the Alpinex method. 

Results: The mean (±SD) values recorded were: pre-operative astigmatic error 1.4D (±0.51), post-operative astigmatic error 1.7D (±0.65). SIA magnitude 1.81D (±0.88), SIA axis 62.87° (±46.61). SIA of 1D were found in 77% of eyes and the largest SIA was 3.79D. 

Conclusions: Topographic examination is commonly used in human ophthalmological assessment, but has not been reported in the canine. The results indicate that bimanual cataract surgery, with sutured corned ports, creates SIA with a rotation of the keratometric axis.

ORAL 7

Comparison of the absorbptive rate of two Schirmer tear test strips in healthy dogs and cats

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Purpose: To compare the in vitro and in vivo absorbptive capacity of two currently available Schirmer strips. Methods: For the in vitro experiment, 20 standard NITEE strips (Virbac®) and 20 modified SST strips (Merck®) were used as recommended by the manufacturers and the folded end of each strip was dipped in a 0.9% sodium chloride solution. The wetted length of the strips was measured after 15 s. For the in vivo evaluation, 24 healthy dogs and 16 healthy cats were included in the study. For each animal, STTI was randomly measured twice on each eye, with a 30 min washout period, once with a Virbac® strip and once with a Merck® strip. A t-test was used for statistical analysis. Results: The in vitro experiment documented a significantly higher absorption rate of the Merck® strips (+42%) compared to the Virbac® ones. The in vivo evaluation showed a significantly higher wetting of the Merck® strips compared to the Virbac® ones. STTI mean values (±SD) were 21.8 ± 3.7 mm/min and 17.3 ± 4.9 mm/min for Merck® strips while they were 11.9 ± 2.8 mm/min and 6.2 mm/min for Virbac® strips, in dogs and cats, respectively. 

Conclusions: These results show that the absorbative rate significantly differ between the Virbac® and Merck® strips, both in vitro and in vivo. They confirm that STTI strips from different manufacturers can give significantly different wetting values. In conclusion, it is recommended that STTI strips of the same manufacturer be used for the follow-up of tear production over time in a dog or a cat.

ORAL 8

Use of cisplatin biodegradable beads for treatment of corneal endothelial squamous cell carcinoma (SCC) in Equidae

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Purpose: To verify the safety and the usefulness of cisplatin containing biodegradable beads in the treatment of corneal endothelial squamous cell carcinoma (SCC) in horses. 

Methods: Medical records of nine horses (five geldings and four females) of different breeds (five Haflingers, three Quarter Horses and one Thoroughbred) and ages (mean age of 14.1 ± 5.5 years) which had a keratopathy and conjunctivopathy of a corneal SCC were reviewed. All nine horses showed corneal abnormalities for 1-6 months before referral. The surface area of the tumors was classified as size I (< 1 cm²), size II: between 1 and 2 cm², size III: ≥ 2 cm². Surgery was performed under general anaesthesia. Cisplatin beads were inserted into the central area and anchored by a conjunctival flap sutured to the sclera with an absorbable suture. The beads were spaced 1 cm from each other. Histopathological analysis confirmed the nature of the mass. 

Results: No horse had local tumour recurrence by the time of the follow-up of the procedure. 

Conclusions: Cisplatin beads may be used for the treatment of equine corneal SCC.
ORAL 13
Effects of intraocular injection of medetomidine and medetomidine-ketamine combination on intraocular pressure (IOP) in rabbits
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Purpose: This study was designed to determine the effects of medetomidine alone and its combination with ketamine on IOP of rabbits. Methods: Eight adult New Zealand rabbits approximately 1 year old, weighing 2.1 ± 0.3 kg were used in this study. The pre-treatment IOPs in the left eye were recorded by using applanation tonometry. Animals were randomly divided in two categories: (i) 11 cases underwent tarsorrhaphy procedure; (ii) 13 cases underwent tarsorrhaphy and in deep corneal ulcers in dogs. Results: The study was conducted in the Ophthalmology Department of the Faculty of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada. The purpose of this investigation was to determine the etiology and incidence of various congenital lenticular and anterior segment anomalies including nuclear cataracts, posterior lenticonus, iridocorneal endothelial syndrome, persistent pupillary membranes, five with posterior lenticonus, and one with a lenticular anomaly. Methods: Five young Cngb1−/− dogs (eight eyes) were selected for this study. Results: The high-titer group had a dramatic improvement in dark-adapted ERGs with lowering ERG thresholds and markedly increased amplitudes. This has been maintained up to 1 year post injection. The low-titer group had a much smaller ERG improvement. Rod-mediated (dim light) vision was improved after treatment in all eyes. IOP measurements were evaluated by the ARVO Statement for the Use of Animals in Ophthalmic and Vision Research: Yes.

ORAL 14
Ophthalmic findings in 29 tigers (Panthera tigris tigris) in a private zoo in Thailand
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Purpose: To describe the ophthalmic abnormalities and associated factors in a group of captive wild tigers. Methods: Additional investigation into one of the problems in a closed colony of captive wild tigers. Results: There was increased activity of the area centralis (AC) and visual streak in a feline macular dystrophy model and in the AC at early stages of progressive retinal atrophy (PRA) in Cngb1−/− and Pde6a−/− dogs. Marked decrease in FAF was seen in late stages of PRA in the Cngb1−/− dog associated with decreased fundus lesions and in late stages of PRA in the Cngb1−/− cat associated with marked atrophy in the AC. SD-OCT enabled assessment of early changes in retinal structure and thicknesses of retinal layers. Early changes included loss of definition of the ellipsoid zone, interdigitation zone and external limiting membrane indicating altered integrity of photoreceptor inner and outer segments. These were seen as early changes in the Cngb1−/− cat and Rpe65−/− dog. SD-OCT imaging also showed early morphological changes in the AC in the Cngb1−/− cat and Rpe65−/− dog, as well as overall outer nuclear layer thinning in the Cngb1−/− cat, Cpg290−/− cat, and Cngb1−/− and Pde6a−/− dogs. Conclusions: Increase in FAF and loss of definition of the ellipsoid zone, interdigititation zone and external limiting membrane were early features of canine and feline retinal dystrophies. Support: Myers-Dunlap Endowment. George H. Bird and ‘Casper’ Endowment for Feline Initiatives, MSU Center for Feline Health and Well-Being. I confirm adherence to the ARVO Statement for the Use of Animals in Ophthalmic and Vision Research: Yes.

ORAL 15
The use of 72-h dissolvable collagen eye shield (VetShieldRtx) in deep corneal ulcers in dogs
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Purpose: The aim of this paper is to present the advantages of using collagen eye shields in deep corneal ulcers in dogs. Methods: The study was conducted in the Ophthalmology Department of the Faculty of Veterinary Medicine in Bucharest between September 2014 and 2020. During this period, 24 dogs were diagnosed with acute onset corneal ulcers affecting more than 50% of the corneal depth. Median age of the affected animals was 6 years (range 1–12 years), Shih-Tzu being the predominant breed. Results: The high-titer group had a dramatic improvement in dark-adapted ERGs with lowering ERG thresholds and markedly increased amplitudes. This has been maintained up to 1 year post injection. The low-titer group had a much smaller ERG improvement. Rod-mediated (dim light) vision was improved after treatment in all eyes. IOP measurements were evaluated by the ARVO Statement for the Use of Animals in Ophthalmic and Vision Research: Yes.

ORAL 16
cSL0 and SD-OCT features of retinal dystrophies in dogs and cats
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Purpose: To investigate features of dog and cat retinal dystrophies detectable in vivo by confocal scanning laser ophthalmoscopy (cSL0) and spectral-domain optical coherence tomography (SD-OCT). Methods: The fundus of dogs and cats with a variety of retinal dystrophies was imaged under general anesthesia using a confocal scanning laser ophthalmoscope (FAF) and with SD-OCT for detection of early morphological features. Results: There was increased IOP at T5 (11.5 ± 0.56 mmHg), T6 (10.25 ± 1.10 mmHg) and T2 (10.62 ± 1.35 mmHg) in comparison to the baseline values (P = 0.009, P = 0.004, P = 0.019). In the medetomidine-ketamine group no significant decrease in IOP was observed at T1 (11.5 ± 1.59 mmHg, P = 0.008) in comparison to baseline values but significant decreases in IOP were recorded at T1 (11.2 ± 1.03 mmHg; P = 0.014) and T2 (11.0 ± 1.49 mmHg; P = 0.001) in comparison to the baseline values. Comparison between T5, T6 and T2 in the two groups (P = 0.059, P = 0.104, P = 0.494) did not differ significantly. Conclusion: Increasing IOP after ketamine administration alone has been documented in previous studies. This study showed that IOPs decreased after IM injections of medetomidine alone and a medetomidine-ketamine combination.

ORAL 17
Congenital lenticular anomalies in a purebred holstein dairy herd
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Purpose: The purpose of this investigation was to determine the etiology and incidence of various congenital lenticular and anterior segment anomalies including nuclear cataracts, posterior lenticonus, iridocorneal endothelial syndrome, persistent pupillary membranes, five with posterior lenticonus, and one with a lenticular anomaly. Methods: Twenty-nine cases of congenital lenticular and anterior segment anomalies including nuclear cataracts, posterior lenticonus, iridocorneal endothelial syndrome, persistent pupillary membranes, five with posterior lenticonus, and one with a lenticular anomaly. Results: The study was conducted in the Ophthalmology Department of the Faculty of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

ORAL 18
Rescue of rod function by gene augmentation therapy in Cngb1−/−/− dogs
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Purpose: Progressive retinal atrophy type 1 in Papillons is due to a frameshift mutation in cyclic nucleotide gated channel beta 1 (Cngb1). Affected dogs (Cngb1−/−) lack normal rod function and undergo a progressive rod-led photoreceptor degeneration. They are a model for retinas pigmentosa type 45 in humans. The purpose of this study was to evaluate recombinant adeno-associated viral (rAAV) vector gene augmentation therapy for restoring rod function to Cngb1−/−/− dogs. Methods: Five young Cngb1−/−/− dogs (eight eyes) were selected for this study. Results: The high-titer group had a dramatic improvement in dark-adapted ERGs with lowering ERG thresholds and markedly increased amplitudes. This has been maintained up to 1 year post injection. The low-titer group had a much smaller ERG improvement. Rod-mediated (dim light) vision was improved after treatment in all eyes. IHC showed Cngb1 localization to rod outer segments in the treated retinal regions.

Support: Recombinant adeno-associated viral gene augmentation therapy for restoring rod function to Cngb1−/−/− dogs. I confirm adherence to the ARVO Statement for the Use of Animals in Ophthalmic and Vision Research: Yes.

Support: WCVM Disease Investigation Unit Grant.

Support: WCVM Disease Investigation Unit Grant.

Support: WCVM Disease Investigation Unit Grant.

Support: WCVM Disease Investigation Unit Grant.

Support: WCVM Disease Investigation Unit Grant.
POSTERS ABSTRACTS

POSTERS 1

Nuclear phenotypes in conjunctival epithelial cells from dogs with keratoconjunctivitis sicca vs. ‘normal’ dogs
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Purpose: The cell nucleus corresponds to a hierarchical epigenetic system. Alterations in this system have been associated with progression of some ocular surface disorders. This study's goal was to evaluate nuclear phenotypes, including chromatin condensation and DNA amount, of conjunctival epithelial cells (CEC) in dogs with and without keratoconjunctivitis sicca (KCS).

Methods: Twenty-four eyes of canine patients with KCS (Schirmer values less than 10 mm/min) and 24 eyes of control dogs were studied. CEC were collected by evasive cytology using a lido intertentinal brush, spread onto glass slides, and fixed in solution (ethanol 70%, glacial acetic acid and buffered formalin); then submitted to Feulgen reaction and the nuclei analysed using Olympus BX-53 microscope coupled with image analysis system (ImageJ, NIH, USA). Nuclear phenotypes, in terms of area (µm²), optical density (OD), integrated optical density (IOD), and chromatin diffusion index (CDI), were studied. Data were expressed as mean ± standard error. Differences were considered significant when P ≤ 0.05.

Results: The samples did not differ with respect to nuclear area (KCS: 42.89 ± 1.03 µm²; controls: 43.46 ± 7.50 µm²; P = 0.45) and IOD values (KCS: 27.18 ± 6.33; controls: 28.41 ± 4.61; P = 0.11). Conversely, the cell nuclei of patients with KCS showed reduced values of OD (KCS: 0.63 ± 0.03; controls: 0.67 ± 0.02; P < 0.0001) and CDI (KCS: 0.10 ± 0.03; controls: 0.15 ± 0.05; P = 0.0001).

Conclusions: Conjunctival epithelial nuclei of patients with KCS showed chromatin condensation alterations, which could change chromosome territory positions. Nuclear alterations, as cell function, could be involved with changes in activity related to biosynthesis of tear components and/or homeostatic conjunctival cells.

Support: National Institute of Drug and Scientific Development (CNPq-Pesq.300813/2010-5). Scholarship provided by CNPq.

POSTERS 2

The use of four-layer porcine small intestinal submucosa as single scaffold for the treatment of deep corneal defects in cats and dogs: preliminary data
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Purpose: To describe and evaluate the efficacy of a four-layer porcine small intestinal submucosa (Veritex® BioSIS plus) used as single scaffold for the treatment of deep corneal lesions in cats and dogs. Sixteen dogs and seven cats, each with various breeds and ages, were used. Deep or full-thickness corneal defects were treated surgically with keratectomy, when needed, and BioSIS plus graft. It was cut to size, placed over the corneal defect and sutured with 9.0 Vicryl® and interrupted sutures. The animals were examined at 7, 21, 30 days after surgery and further when possible. Corneal transparency scores (0-3), time of complete re-epithelialization and absence of foreign body sensation were evaluated at every follow up. Results: The treated lesions in dogs were two deep corneal ulcers, one descemeticetecne, two perforations and one limbal melanocytoma. In cats, there were one deep corneal ulcer, one descemeticetecne and one limbal melanocytoma. In all cases the methods were thoroughly applied successfully. Complications: in one case of perforation, partial collagenolytic occurred 7 days after surgery, but resolved with medical therapy. All the eyes were at the final examination with a good recovery of corneal transparency and only mild corneal fibrosis. Four-layer porcine graft was used porcine small intestinal submucosa. This method was successfully utilized for surgical treatment of deep corneal lesions in selected corneal diseases in a small series of dogs and cats. The procedure resulted in minimal fibrosis and functional vision in eight treated eyes.

POSTERS 3

LIG4 in uveal melanocytic tumors in dogs
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Purpose: LIG4 acts as DNA repair gene and its expression has been described to be reduced in more aggressive metastatic uveal melanomas in humans (Den Coute S, 2010). In dogs, despite the histological similarities with human melanoma, biological behavior regarding metastasis development is quite different. This abstract reports a study of the expression of the metastasis suppressor gene LIG4 in tumor tissues from dogs with metastatic uveal melanocytoma and comparative immunohistochemical analysis of the respective protein. Methods: Fifty-seven eyes of 57 dogs with clinical diagnosis of intraocular neoplasia, 33 melanomatos and 24 melanomas, according to the Toxics classification (1983), were used. Immunohistochemistry was performed using the Ventana BenchMark (Ventana Medical Systems Inc., Tucson, AZ, USA) fully automated machine. As positive controls samples of liver were used and as negative controls the primary antibody was omitted. Slides were incubated with monoclonal antibodies to rabbit LIG4 (Abcam, Cambridge, MA, USA) diluted 1:25. According to the extent of the staining in relation to the LIG4 positive cut off, the slides were classified as follows:

- 0: < 5% LIG4 positive cells
- +: 5–15% LIG4 positive cells
- ++: 15–30% LIG4 positive cells
- +++: > 30% LIG4 positive cells

Results: Mean intensity of the immunohistochemical reaction to LIG4 protein in tissue sections was 1.67 and 0.40 for melanoma and melanocytoma, respectively.

Conclusions: The low capacity of the canine uveal melanoma to promote metastasis maybe related to the LIG4 protein overexpression.

Support: CNPq grant # 302831/2011-8.

POSTERS 4

Primary glaucoma in two Ellos
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Purpose: The Elo is a relatively new dog breed and the result of a cross-breeding of Eurasier, Bohrats and Chow-Chow. Chows-Chows are predisposed to primary glaucoma with irreducible angle closure and pectinate ligament dysplasia. Thus the obvious question is whether Ellos could also be predisposed to primary glaucoma. This case report describes two cases of primary glaucoma with dysplastic pectinate ligaments in Ellos. Methods: A 5-year-old female and small Elo and a 6-year-old female large Elos were presented with a red eye each. Results: Ophthalmic examination revealed glaucoma with intraocular pressure of 75 mmHg in the right eye of dog 1 and 68 mmHg in the left eye of dog 2. In case two the right eye already been enucleated due to glaucoma and secondary lens luxation the year before by a private practitioner. Gonioscopy revealed totally dysplastic pectinate ligaments and iridocorneal angle closures in both dogs. In spite of intensive treatment with mannitol infusion, oral carbonic anhydrase inhibitors (CAI) and carprofen or methylprednisolone and additional topical treatment with CAI, β-blocker, prostaglandine-analogues and corticosteroids, the IOPs stayed high and were owners opted in both cases for enucleation. The histopathologic examination revealed a collapsed ciliary cleft and a loss of retinal ganglion cells in both cases. Conclusions: This is the first case report of two Ellos with primary glaucoma with dysplastic pectinate ligament and iridocorneal angle closure. Further investigations in this dog breed are therefore recommended.

POSTERS 5

Ocular melanosis with bilateral secondary glaucoma in a West Highland White Terrier
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Purpose: This report describes the clinical presentation, diagnosis, histological lesions and prognosis of bilateral ocular melanosis in a 1-year-old entire male West Highland White Terrier (WHWT). Methods: Complete physical and ophthalmic examination, routine blood analysis, thoracic radiographs, abdominal ultrasound and histopathology were performed. At the initial examination, the dog was bilaterally blind due to large choroidal melanomas involving the blepharospasm on the left eye (OS). Both eyes were buphthalmic with episceral congestion and extensive pigmented and epidermal pigmented patches dorsally and temporally. A secondary bilateral exposure keratitis was noted, with a large corneal perforation OS. The physical examination was unremarkable. Blood analysis, thoracic: radiographs and abdominal ultrasound were considered normal. Because of the severity of the lesions and the suspicion of end-stage glaucoma secondary to ocular melanosis, bilateral enucleation was performed. Histopathologically, melanocytic tumors diffusely and markedly infiltrated the anterior uveal tract. The posterior corneal surface were diffusely and markedly infiltrated by sheets of heavily pigmented cells, which obliterated the iridocorneal angle. These cells were consistent with melanophages and possibly some well-differentiated melanocytes. No atypia or malignancy was identified. The definitive histological diagnosis was bilateral ocular melanosis. General health remained good until the last follow up 6 months later. Conclusions: A bilateral inherited condition mainly affecting the Cairn Terrier and occasionally Boxers and Labras. The Cairn Terrier and WHWT are two closely related breeds but to the authors’ knowledge, this is the first report of ocular melanosis in a WHWT with a similar clinical and histopathological presentation.
POSTERS 6

Unilateral persistent hyperelastic tunica vasculosa lentis/persistent hyperelastic primary vitreous (PHTVL/PHPV) in two Wirehaired Dachshunds from the same litter

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Purpose: To describe unilateral PHTVL/PHPV associated with retinal dysplasia and cataract formation in the contralateral eye in two 1-year-old female Wirehaired Dachshunds from the same litter. Methods: A complete ophthalmologic examination including ultrasonic ophthalmoscopy was performed. Results: Due to severe glaucoma, affected eyes underwent transconjunctival enucleation and histology was performed. Results: At presentation, mature cataracts were observed in OD and hypermature cataracts with intracocular diffuse hemorrhage and mild anterior uveitis were diagnosed in OS of both dogs. Ultrasonographic findings were similar in both eyes: OD having a hypechoic lens. Lens dimensions and shapes and posterior segments were normal. A hypechoic lens with a retrolenticular triangular-shaped echo-dense structure was present OS, and a very thin hypechoic strand was noticed extending from the posterior pole of the lens to the optic disc. Conclusions: Persistent hyperelastic primary vitreous is rarely reported in Wirehaired Dachshunds. The close similarity of the disease in these litter-mates is suggestive of a congenital condition.

POSTERS 7

A case of undifferentiated retrobulbar round cell tumor involving the zygomatic gland in a dog

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Purpose: The present report describes clinical, surgical and histopathological findings of a case of undifferentiated retrobulbar round cell tumor involving the zygomatic gland in a dog. Methods: An 11-year-old, spayed female, mixed breed dog, was presented with a 3-week history of exophthalmos of the left eye. Ophthalmological examination revealed a prolapsed fluctuating mass with mild conjunctival chemosis and hyperemia. Bloodwork was within normal limits. Magnetic resonance imaging of the skull revealed a retrobulbar space occupying mass involving the zygomatic gland. Surgical excision was performed via a trans-zygomatic orbitotomy. Results: The tumor was completely resected and post-operative recovery was uneventful. The cosmetic result was good and the eye remained visual. No recurrence was observed within a 3 month follow up period. Cytological evaluation of a fine-needle aspirate of the mass revealed a neoplastic cell population consisting of round cells. Histopathological and immunohistochemical examinations were consistent with a poorly differentiated round cell tumor, suggestive of histiocytic sarcoma. Abdominal ultrasound revealed a spiculated nodular lesion, and subsequent cytological examination was negative for neoplastic cells. The dog is currently free of disease on chemotherapy. Conclusion: To the authors’ knowledge, this is the first report of a suspected histiocytic sarcoma involving the zygomatic gland in a dog. It should be considered as a differential diagnosis in orbital neoplasia.

POSTERS 8

Bovine amniotic membrane graft for reconstruction of a corneal perforation in a Sphinx cat

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Purpose: We describe a case of bovine amniotic membrane transplantation cryopreserved in glycerol used for reconstruction of the ocular surface in the context of a perforating ulcer in a Sphinx cat. Methods: A 1-year-old Sphinx male cat with a history of chronic herpetic keratitis complicated with corneal perforation was treated with surgical therapy including with superficial trephination and IOP. IOP was 12 mmHg in the right and 13 mmHg in the left eye. Surgical treatment was performed. Blood work was unremarkable. Topical treatment with tobramycin, gentamicin, and clotrimazole was performed. Surgery was performed on the right eye. An amniotic membrane was used to cover keratectomy to the removal of the corneal necrotic tissue. In the left eye the corneal sequeswas deep and large, occupying the upper and lower lateral quadrants. Sequeswas excised resulting in an intraocular corneal perforation measuring approximately 7 × 8 mm. Amniotic membrane (Unomove®; Vethological, Valencia, Spain) was placed over the defect, folded twice over itself and sutured with simple interrupted sutures using polyglyactin 9-0. Another similar layer fragment was placed over the entire defect. Both corneas were protected with three eyelid flaps for 10–14 days and medical treatment was maintained. Results: Both corneas healed completely with retained transparency within 3–8 weeks, although a central ulceration remained in the left cornea. No relapses were seen after 12 months follow-up. Conclusion: Neutrophilic inflammatory reactions noted during ingrowth of amniotic cells were observed. The cryopreserved bovine amniotic membrane grafts functioned as matrix and seemed to be a good alternative for the treatment of perforated ulcer.

POSTERS 9

Identifying the primary visual cortex in the horse

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Purpose: To find macro- and light-microscopic landmarks that allow easy identification of the primary visual cortex in the equine brain. Methods: Fresh and formalin-fixed brains from five horses were examined for the presence of Gennari’s, parallel, sagittal or transverse sections were made through the occipital cortex and the sections were observed by the naked eye. Double-staining of formalin-fixed sections was performed using cytochrome oxidase – cyan and Luxol fast blue and the sections were examined by light-microscopy. Results: The surface of the occipital lobe is heavily folded in the horse and a typical sulcus is not easily identified. However, the cortex of Gennari was readily observed macroscopically on sagittal and transverse sections through the cap of the posterior pole of the occipital cortex. The stria was approximately 0.5 mm wide and extended both medially and laterally. Fixation enhanced contrast made the stria easier to discern by the naked eye. Light-microscopy revealed that the striated area contained a thin line of myelinated fibers traversing the grey matter, corresponding to the macroscopically visible stria. Conclusions: The location of the primary visual cortex in the horse can easily be determined by observing the stria of Gennari. The presence of a stria in non-primate mammals has previously been questioned, but our results support the observations made by Takeuchi & Sugita (Kabukigawa Zasshi, 2001; 76: 211–212).

POSTERS 10

Epibulbar melanocytoma, uveal melanosis and uveal melanocytoma in the left eye of a German Shepherd dog

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Purpose: To describe a case of epibulbar melanocytoma, uveal melanosis and uveal melanocytoma in the left eye of a 7-year-old female German Shepherd dog. Methods: The dog was referred for evaluation of an enlarging melanocytic epibulbar mass located at the ventral limbus OS. A general examination showed that the left half of the head was particularly more pigmented than the right half and the iris OS was darker than OD. Ophthalmological examination of the left eye revealed a pigment epithelial inclusion in the ventral limbus area and a 6 mm pigmented mass affecting the cornea-scleral limbus at 6 o’clock. The intraocular pressure measured by rebound tonometry (Tonovet) was 9 mmHg OS. Gonioscopy (Koeppe lens) and UBM (10 MHz) revealed intra and iridocorneal angle structures and pigmentation. No ocular abnormalities were found in OD. The tentative diagnosis was epibulbar melanocytoma OS. However, the eye OS had been excessively pigmented for a long time and the lesion was not growing. A biopsy was performed and it was performed using a subconjunctival approach. In the follow-up period no complications were noted. Results: Histopathology confirmed the presence of an epibulbar and uveal melanocytoma. Surgical excision was performed via the ventral limbus area and the mass was excised. Conclusions: We conclude that the presence of one melanocytic disease does not exclude the presence of others. This is an unusual case with concurrent uveal melanosis and epibulbar melanocytomas.

POSTERS 11

Bacterial microbiota of the ocular surface of healthy rabbits and rabbits with epiphora

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Purpose: Knowledge about ocular surface microbiota is essential for prophylactic treatment and the differentiation of infectious diseases. Only few data of pet rabbits are available. Therefore, the aim of the study was to investigate the spectrum and sensitivity of bacteria of the ocular surface of pet rabbits. Methods: Group 1 (n = 15) healthy rabbits without ocular problems; Group 2 (n = 15) healthy rabbits without ocular problems; Group 3 (n = 15) healthy, elderly rabbits with serious epiphora (4-12.5 years). Swabs were taken from the conjunctival sac bilaterally and tested for aerobic and anaerobic microbiota. Sensitivity testing was done for each bacterial species. Statistical analysis was carried out using Fisher’s exact test, linear model and ANOVA. Results: Sixty-six microorganisms of 14 bacterial species were identified in 36/45 (80.0%) swabs. In all groups both gram-positive (e.g. Staphylococci [20/66]), and gram-negative bacteria (e.g. Acinetobacter [4/66]) were detected in a ratio of 35:13. In group 1 and 3 more macroorganisms (number of positive animals and number of bacteria) were detected, then in group 2 (P = 0.03, linear model). Bacteria were highly sensitive to amoxicillin/clavulanic acid and chloramphenicol. The least effective antibiotics were fusidic acid and polymyxin B. Conclusions: Microbiota of the ocular surface of pet rabbits are very similar to those of laboratory rabbits described in the literature. However, overall more gram-negative strains were present. Aminoglycosides can be used as a prophylactic treatment in case of corneal trauma.
POSTERS 12

Corneal cytology and bacterial isolates from stromal ulcers in 26 dogs: antimicrobial sensitivities and treatment outcomes
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Purpose: To describe antimicrobials found in ulcers and determine whether corneal cytology is useful in selecting a topical antibiotic when following a simple protocol (e.g. chloramphenicol for cocci and a fluoroquinolone for rods). Methods: Data were collected prospectively, and bacteriology samples taken, for dogs referred for systemic ulceration throughout 2015. Corneal cytology was not performed when there was imminent risk of perforation or poor patient cooperation. Initial antibiotic choice, culture and sensitivity results, subsequent treatment and outcome were recorded. Results: Twenty-six dogs, including 15 Pugs, five Shih-Tzu, four New England Bulldogs, one Boston Terrier, and one Maltese, Boxer, Jack Russell Terrier, Miniature Schnauzer and cross-bred met the inclusion criteria. Eleven were male (four neutered) and 15 female (five neutered). The median age was 4 years (3 months–12 years 3 months). Twenty-four cases were treated with conjunctival pencil grafts for corneum-conjunctional transplants, and two only medically. Positive bacterial cultures were obtained from 13/26 eyes. The most common isolates were Pseudomonas aeroginosa (7/14) and Streptococcus canis (3/14). Pseudomonas isolates were resistant to chloramphenicol and sensitive to ciprofloxacin, ofloxacin and gentamicin. Streptococcus canis isolates were resistant to fusidic acid but sensitive to either chloramphenicol (2/3) and/or ciprofloxacin (2/3). Cytology was performed in nine cases. There had bacteria on cytology but a negative culture. Treatment failure occurred in one patient in which the Streptococcus canis was resistant to the antimicrobial chosen (chloramphenicol). Conclusions: Antimicrobial sensitivities of Streptococcus canis poses a challenge and cytology alone is not valid for antimicrobial selection.

POSTERS 13

Development of a method for determining tear lysozyme concentration in dogs
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Purpose: To develop and standardize a method for determining tear lysozyme A concentration in dogs. Lysozyme A determination could have a remarkable diagnostic value in certain ocular disease diagnosis. Methods: Male (n=16) and female (n=8) beagle dogs (aged 4.5–10 years, University of Leon) without signs of systemic or ophthalmic disease were used. Five minutes before tear sampling Schirmer tear test (STT) was performed. Tears were collected from both eyes using 5 mm filter discs, which were inserted between the globe and the lower eyelid until the paper was wet. Samples were sealed in a 1.5 mL Eppendorf tube and maintained at 4°C. Lysozyme concentration was determined in 23 samples by the method of Mueller-Hinton agar plates (Biomérieux, France) of suspended Micrococcus luteus (ATCC N°6098; Sigma-Aldrich, USA), similar to antibiotic disc sensitivity testing. Results were read at 37°C for 24 h. Lysis diameter was read in two orthogonal directions. Lysozyme concentration was obtained by relating the lysis diameters to a reference standard of known enzyme concentration (Lysozyme from chicken egg). Statistical analysis was performed using Excel v15.5.9 (Microsoft Corporation, USA). Results: Schirmer tear test median±standard deviation values were 20.62±1.76 mm in male and 20±2 mm in female dogs. Lysis diameter range was 18–24 mm. Lysozyme concentration median±standard deviation values were 14.05±8.92 μg/ml in male and 17.01±10.9 μg/ml in female dogs. Conclusions: A method for determining canine tear lysozyme A concentration was developed and standardized. Tear lysozyme concentration after STT was determined in healthy male and female beagle dogs.

POSTERS 14

Case report: orbital paraganglioma in a dog
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Purpose: To describe a case of canine orbital paraganglioma. Methods: Findings of ophthalmic examination, magnetic resonance imaging (MRI), orbital ultrasound, cytology, histopathology and immunohistochemistry are documented. Case summary: A 10-year-old beagle female presented with a right-sided moderately painful exophthalmia, blindness, absence of dazzle light reflexes, a swollen optic nerve head and ventrolateral indentation of the globe. On MRI, a 3 × 2 × 2 cm mass with a fluid-filled centre and contrast-enhancing periphery was noted posterolateral of the globe. It was isointense to the zygomatic salivary gland on T1- and T2-weighted images. The mass caused mass-effect resulting in exophthalmia, compression of the globe, and medial deviation of the optic nerve. Regional lymph nodes were unremarkable. Orbital ultrasound was used for a guided fine needle aspirate of the mass. Cytology revealed moderate numbers of polygonal cells with lightly baso- philic cytoplasm. Anisokaryosis and anisocytosis were mild with few karyomegaly cells. Nuclear membrane sized and total diameter with finely stippled chromatin. Neoplastic cells showed nuclear pseudonucleoli. Histopathology following extention of the orbit revealed an infiltrative, extraluminal neoplasms surrounding the optic nerve. Polygonal cells were arranged in packets and separated by fibrous septae. Neoplastic cells were immunopositive for neuron specific enolase, synaptophysin and chromogranin A and immunonegative for cytokeratin. In conclusion, a canine orbital paraganglioma (neuroendocrine tumour). Although complete excision could not be confirmed on histopathology, the owners reported no apparent tumour recurrence 16 months after surgery. Conclusion: A paraganglioma should be considered as a diagnostic mass.

POSTERS 15

Doxorubicin chemotherapy effects on tear film and intraocular pressure in dogs with transmissible venereal tumor
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Purpose: To evaluate doxorubicin chemotherapy effects on tear film and intraocular pressure (IOP) in dogs treated for transmissible venereal tumor (TVT). Methods: Seven adult female dogs naturally affected with TVT were treated with an intravenous injection of 1 mg/kg of doxorubicin by bolus injection during four sessions (S1, S2, S3 and S4) separated from each other by regular 21-day intervals. Tear film was evaluated through Schirmer tear test (STT) I and tear film break-up time (TFBUT), IOP was evaluated by digital application tonometry (Tom vacant Vet, Reinehr, Germany). Evaluations were carried out immediately before (basal) and 4, 24 and 42 days after each session. Data were compared using non parametric ANOVA Differences were considered statistically significant when P<0.05. Results: Schirmer and IOP values varied significantly between each session or between each evaluation carried out during those sessions (P<0.05). In regards to the TFBUT, values gathered 24 h after the beginning of S1 were lower than basal data and than those registered on day 21 (P<0.001). However, alteration was detected in S2 (P<0.05). In S5 and S4, TFBUT values were lower than the basal data observed in every evaluation (P=0.001). No difference, in TFBUT, was identified between S1 basal values and the values obtained during the last evaluation (21 days after S4) (P=0.03). Conclusions: Doxorubicin chemotherapy did not alter STT I or IOP values. Nevertheless, it caused alterations in TFBUT during S1. Support: National Council of Technological and Scientific Development (CNPq-100813/2010-5).

POSTERS 16

Acoustic radiation force impulse (ARFI) elastography of brachycephalic dog eyes
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Purpose: Brachycephalic dog eyes were studied by acoustic radiation force impulse (ARFI) elastography to establish qualitative parameters relative to stiffness of the optic nerve, ciliary body and lens. Methods: This study included 84 eyes of 42 brachycephalic dogs aged between 1 and 6 years, of which 16 were Shih Tzu, 11 were French Bulldogs, 11 were English Bulldogs, and four were Pugs. All subjects underwent clinical anaesthesia. The study was performed by four laboratorial and ophthalmic (ultrasound mode A and B, digital application tonometry, fluoroscopy strip, Schirmer tear test, near-breakup time) evaluations and were found free of disease. ARFI elastography was performed using the ACUSON S2000/SIEMENS ultrasound system. Qualitative (gray scale images) and quantitative (shear wave velocity, SWV) parameters were evaluated in relation to the stiffness/elasticity characteristics of the optic nerve, the ciliary body (temporal and nasal regions), and lens were studied. The range of SWV was 6.9 m/s, by the manufacturer’s algorithm. Value beyond this range was displayed as ‘XX’ m/s. Data were compiled with descriptive statistics as mean±standard deviation. Qualitative elastography provided data on the homogeneity of the ciliary body (less stiff – medium grey) and the optic nerve (stiffer – dark grey). Mosaic-type grey scale images corresponding to the aqueous and vitreous humour were observed. Quantitative elastography showed that SWVs were 0.91 ± 0.24 m/s for temporal ciliary body, 0.91 ± 0.30 m/s for the nasal ciliary body, 1.01 ± 0.27 m/s for the optic nerve, and ‘XX’ m/s for the lens. Conclusions: Acoustic radiation force impulse elastography was effective in evaluating stiffness parameters of ocular structures and might be useful in the diagnosis of degenerative diseases. Support: Brazilian Federal Agency for Support and Evaluation of Graduate Education (Capes), National Council of Technological and Scientific Development (CNPq-100813/2010-5).
POSTERS 17

Additional wedge conjunctivectomy in the correction of prolapsed glands and cartilage deformities of the third eyelid in dogs: a retrospective study of 50 cases (2002–2014).

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Purpose: To describe a technique which when combined with the Morgan pocket technique (MPTC) is intended to reduce incidence of recurrence of prolapsed gland and cartilage deformity (PGCD) of the third eyelid (TE) in dogs for which MPTC alone results in an imperfect congruence between the leading edge and the ocular surface.

Methods: Medical records were reviewed from 2002 to 2014 of dogs with PGCD were included if wedge conjunctivectomy (WC) was additionally performed to augment MPTC and a minimum 12-month follow-up period was required. Full-thickness triangular wedge of TE attachments to the fornix were excised to bring the leading edge and ocular surface close together. Success was postulated complete at 12, 18 and 24 months postoperatively.

Results: Fifty eyes from 34 dogs met the inclusion criteria. Median age at initial examination was 7 months (2.8–85). The English Bulldog was the most often represented breed with 21.5% (9/42), 31.5% (13/42) were giant breeds. Median follow-up was 7.5 months (6–132). The success rate as defined by lack of recurrence of PGCD was 100%. Two lacrimal cysts were the only complication. Tear production was unaffected. Conjunctival hyperemia and edema persisted for up to 30 days, at which normal pruritus and mobility of TE were obtained after a good approximation of the leading edge and the ocular surface.

Conclusions: Additional WC provided a successful treatment of PGCD with resolution of normal mobility and ocular surface contact that is intended to reduce incidence of recurrence of PGCD following MPTC in predisposed dogs.

POSTERS 18

The effect of anesthetic agents on intraocular pressure in healthy Syrian hamsters

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Purpose: This study was aimed to determine effects of anesthesia on intraocular pressure (IOP) in healthy Syrian hamsters (Mesocricetus auratus). Methods: Ninety healthy adult Syrian hamsters (45 males, 45 females) were used in this study. Hamsters were randomly assigned to five groups. Ketamine, xylazine, diazepam, ketamine-diazepam (KD) and ketamine-suxamethonium (KS) were administered by intraperitoneal route in each group. Ketamine, xylazine and diazepam were used at a dose of 100, 5 and 10 mg/kg, respectively. The KD group received 40 mg/kg ketamine and 2 mg/kg diazepam and the KX group received 50 mg/kg ketamine and 3 mg/kg xylazine. Baseline IOP was measured prior to anesthesia. IOP measurements were then repeated at 10 min (T10), 30 min (T30), 60 min (T60), 90 min (T90), 120 min (T120), and 150 min (T150) following the administration of drugs.

Results: Mean ± SD of the baseline IOP for ketamine, xylazine, diazepam, ketamine-diazepam (KD) and ketamine-suxamethonium (KS) were 52.0 ± 2.8, 61.2 ± 2.6, 57.5 ± 0.6, 51.4 ± 1.0 and 45.0 ± 1.3 mmHg, respectively. In ketamine, diazepam, xylazine and KD groups, there were no statistically significant changes in IOP. In the KS group, a significant decrease in IOP was observed at T10, T60 and T90 (P < 0.01, P < 0.01, P = 0.001 and P < 0.01, respectively).

Conclusions: The present study demonstrated that the ketamine-suxamethonium increased IOP significantly in Syrian hamsters while the other agents had no significant effect on IOP.

I confirm adherence to the ARVO Statement for the Use of Animals in Ophthalmic and Vision Research.

POSTERS 19

Measurement of ganglion cell complex thickness in diabetic dogs using spectral domain optical coherence tomography (SD-OCT)

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Purpose: In humans diabetic retinopathy (DR) has many elements that suggest chronic neurodegeneration, amongst them, neural apoptosis of ganglion cell bodies leading to a reduction in thickness of the inner retina. Biochemical changes secondary to hyperglycemia, increased vascular permeability and vascular proliferation are involved in this complex disease. OCT allows evaluation of the retina, being an important imaging modality in the management of retinal diseases. The purpose of this study was to compare the thickness of the ganglion cell complex in different species of diabetic animals and the species differences in thickness of the inner retina.

Methods: Spectral domain optical coherence tomography (SD-OCT; Heidelberg Engineering, USA) was performed in 10 eyes of diabetic (seven females and three males), between 4 and 15 years old (mean ± St Dev, 9 ± 4.7 years), with retinal disorders or diabetes. The mean of diabetic duration was 19 months. The SD-OCT measurement was taken in the temporal or nasal superior retina using manual caliper. The localization of ganglion cell layer and inner plexiform layer was assessed.

Results: In diabetic dogs, the ganglion cell complex thickness was thinner than in diabetic cats. In diabetic cats, the thickness of the ganglion cell complex was thicker than 4.7 ± 2.4 um (P < 0.001, t-test was used). The diabetic cats revealed a focal fluid filled lesion in five cases. Indentation of the posterior aspect of the globe was performed in one case.

Conclusions: The ganglion cell complex thickness was thinner in diabetic dogs than in diabetic cats. This finding reinforces the damage caused by chronic hyperglycemia in the retinal layers. This observation suggests that diabetic retinopathy includes a neurodegenerative component in dogs.

POSTERS 20

Agreement between intraocular pressure measured using rebound and applanation tonometry in healthy chinchillas

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Purpose: Assessing the agreement of intraocular pressure (IOP in healthy chinchillas measured by rebound (Tonovet) and applanation (Tonopen XL) tonometry.

Methods: Twenty-three chinchillas (12 females) aged 5.6 ± 2.5 years were in the study. The agreement between the two methods was assessed using Bland–Altman analysis carried out on mean IOP from 10 measurements (under dry eye) and expressed as the upper and lower limit of agreement (LoA) with 95% confidence intervals (95% CI). A correction for repeated measurements was applied.

Results: Mean ± SD IOP was 11.8 ± 2.9 (SD 11.7 ± 3.3) mmHg OS by rebound tonometry and 13.6 ± 7.1 (SD 12.8 ± 6.2) mmHg, respectively, by applanation tonometry. Repeatability coefficients were 4.6 and 12.0, respectively. Upper LoA was 7.9% (95% CI, 4.3, 11.7) mmHg OS and lower LoA was 6.8% (95% CI, −0.6, 7.2) mmHg OS. The two methods yielded highly inconsistent results. IOP measured in a given chinchilla using rebound tonometry was expected to be ± 8 mmHg higher to 11 mmHg lower than IOP measured in the same chinchilla with applanation tonometry. Rebound tonometry had two fold better repeatability.

POSTERS 21

Abnormalities of retinal architecture resembling retinal dysplasia in cats – histological and immunofluorescence studies

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Purpose: The aim of this study was to characterize microsopic organization of abnormally developed parts of two feline retinas and to determine the expression of rod opsin, glial fibrillary acidic protein (GFAP) and calbindin in these areas. The eyes from two cats of different breeds were taken for histological and immunohistochemical studies. The eyes were fixed in paraformaldehyde, dehydrated and embedded in paraffin. For histopathological studies, 1-μm-thick sections were stained with hematoxylin and eosin. Immunofluorescent stainings were performed using anti-GFAP (G1893), anti-rod opsin (CERN922) and anti-calbindin (G55-28) antibodies. Histological and immunohistochemical studies showed multiple areas of retinal folding formed by invaginations of all or individual retinal layers. The rosette-like structures composed of one nuclear layer surrounding a central lumen were occasionally observed between the different layers. The study was supported by KNOW (Leading National Research Centre), decision of Ministry of Science and Higher Education No. 05/KNOW2/2015.

POSTERS 22

Eight cases of canine orbital cellulitis

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Purpose: To describe eight cases of canine orbital cellulitis. Methods: Complete clinical examinations were performed in all cases. Diagnostic imaging, either ultrasonography or computed tomography scan was undertaken. An ultrasound-guided sampling or computed tomography scan was performed. The samples were submitted for cytological examination (in all cases) and microbiological examination (in one case). The results revealed acute suppurative orbital cellulitis in five cases. Orbital cellulitis was associated in two cases with abscesses. Surgical excision of orbital cellulitis was performed in six cases. Microbiological cultures were positive in four samples. Treatments included antibiotics (enrofloxacin IV and PO in all cases), corticosteroids (IV, PO) and...
Conclusions: Magnetic resonance imaging helped to decribe the lesion in the retinal space and possibly its extensions. Foreign bodies are often suspected, but even with MRI, they are challenging to identify.

Most of the time, orbital cellulitis is easy to treat but recurrence is a possible complication. One case with extension of the septic inflammation to the central nervous system was identified.

POSTERS 23
Bovine boviseniosis in Ireland
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Purpose: To document and illustrate the clinical appearance and ocular features of bovine boviseniosis as found in Ireland. Methods: A herd health investigation of a closed dairy herd in Co. Tipperary, Ireland, was undertaken due to the appearance of a chronic dermatitis resembling photointimi- stination. Clinical and ophthalmic examinations were conducted of affected and contact animals. Post mortem examinations, led and conjunctival biopsies and serological tests were carried out. Results: The protozoal parasite Bovisen bovisen was demonstrated within mucosal cystic lesions and affected skin. Multiple, very small shiny white but grossly visible elevated cyst nodules affected the bulbar conjunctiva. On histopathological examination these thick walled cysts were seen to contain packets of the bradyzoite stage of the protozoan life cycle.

Within Europe Besnoitia has historically been endemic in France and Portugal. This is the first report from Ireland or the UK. Further investigation is required to find other affected herds, mode of introduction into Ireland and means of control. Veterinary awareness of the disease and the differential diagnostic importance of ocular lesions must be promoted.

POSTERS 24
Effects of topical 0.5% tropicamide on pupil size and intraocular pressure in dogs sedated with butorphanol
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Purpose: To assess whether topicalically applied 0.5% tropicamide can induce changes in pupil size and intraocular pressure in dogs sedated with butorphanol. Methods: Twelve healthy beagles were included in a crossover designed study in which each dog received 0.2 mg/kg of butorphanol by intramuscular (IM) route or the same volume of 0.9 NaCl in a random order, with a washout period of 1 week. Baseline values of intraocular pressure (IOP) and pupil size (PS) were obtained 20 min (T0b), 10 min (T0a) and immediately before (T0) IM injection of butorphanol or NaCl. Then, in one randomly selected eye, the dog received one drop of 0.5% tropicamide ophthalmic solution, applied twice 5 min apart (T1 and T0). The time course of IOP and PS values were followed at the T20,T 30,T 45 and T60 after tropicamide droplet application. Results: Tropicamide-induced mydriasis was not significantly different between the butorphanol and NaCl treatment groups (P = 0.39) and a non-significant delay in the mydriasis setting was observed with butorphanol. However, tropicamide-induced mydriasis was associated with a significantly (P = 0.001) higher rise in IOP after butorphanol administration (13.9 ± 1.5 mmHg) than after IM injection of NaCl (11.9 ± 0.6 mmHg). Conclusions: Tropicamide-induced mydriasis is not prevented by butorphanol sedation in dogs, but is associated with a significant increase in IOP in the sedated dogs. This should be taken into account in ophthalmic patients affected with or predisposed to glaucoma.

POSTERS 25
Serum immunoglobulin G and M antibodies against lens alpha-crystalline in dogs with ocular diseases
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Purpose: To investigate immunoglobulin IgG and IgM of serum antibodies against alpha crystalline in dogs with a variety of ocular diseases. Methods: The sera of 82 dogs with eye diseases and 21 normal dogs were collected to assess the titer of IgG and IgM antibodies against alpha crystalline using indirect ELISA. The subunits of alpha crystalline were identified using western blotting. Cross-reactivity of labeled secondary antibodies of dog-IgG and dog-IgM was 3.80% and 2.88%, respectively. Data were analyzed using contingency table analysis. Results: Presence of IgG and IgM antibodies against alpha crystalline was 19.3% and 21.7% in 83 dogs with cataracts, 30.3% and 33.3% in 33 dogs with corneal diseases, 21.9% and 18.8% in 12 dogs with glaucoma; 40.0% and 31.3% in 15 dogs with fundus diseases, 35.7% and 28.6% in 14 dogs with anterior uveal diseases, and 0% and 0% in 5 dogs with lens luxation, compared to 19.0% and 38.1% in 21 dogs with lens luxation, 33.3% in 15 dogs with fundus diseases, 35.7% and 28.6% in 14 dogs with anterior uveal diseases, and 0% and 0% in 5 dogs with lens luxation, respectively. There was no significant percent elevation in IgG and IgM antibodies among the six diseases with control eyes (P > 0.05). There was a significant positive correlation of titer of IgG and IgM antibody in dogs with cataracts, corneal disease, glaucoma and controls (P < 0.01). IgG and IgM antibodies of the two subunits were detected by western blotting. Conclusions: Production of IgG and IgM antibodies against alpha crystalline may be influenced by various eye diseases and controls.
POSTERS 29
Retinopathy in two closely related Goeldi’s monkeys (Callimico goeldii)
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Purpose: To describe the retinopathy as a cause of impairment of vision in two closely related Goeldi’s Monkey (GM) (Callimico Goeldii).

Methods: A 14 year old female GM was presented for assessment of her recent visual deterioration. Neuroophthalmic examination revealed a negative menace response, papillary light reflex involves only inferiorly. Ophthalmologic examination revealed a normal anterior segment, with a marked nuclear sclerosis. Postmortem examination revealed a pale, cloudy, atrophic, and aphakic eye, with increased retinal vasculature and patchy increased retinal pigmentation. Subsequently, her 2 year old male offspring was euthanized on humane grounds, due to clinical disease unrelated to ophthalmologic problems.

Results: The GM examined histopathologically. Results: Histopathological examination of the female GM revealed diffuse, marked outer retinal atrophy characterised by loss of the photoreceptor processes and marked depletion of the outer nuclear layer nuclei. Conclusions: This increase may have implications for condensation of stromal collagen fibres due to birefringent and pathological conditions. This study aimed to quantify the supraorganization of healthy New Zealand white rabbit corneas as quantified by optical retardation measurements.

Support: National Council of Technological and Scientific Development (CNPq-300833/2010-5 and 467289/2014-0), and São Paulo Research Foundation (FAPESP-2012/17380-5 and 2013/01494-7).

I confirm adherence to the ARVO Statement for the Use of Animals in Ophthalmic and Vision Research.

POSTERS 30
Normal ocular conjunctival microflora and antimicrobial resistance in clinically healthy Whooper Swans (Cygnus cygnus)
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Purpose: To identify normal conjunctival bacterial flora and its antimicrobial resistance in clinically normal Whooper Swans (Cygnus cygnus).

Methods: Three healthy adult swans and 46 young and 4-week-old cygnets underwent a complete ophthalmologic examination, including slit-lamp microbiochemistry, ophtalmoscopy, and tonometry. Sterile swabs were used for microbial sampling from the central conjunctival area of each eye. Bacteria were isolated on Trypticase soy agar with 5% sheep blood and identified by morphological assessment, Gram staining, oxidase test, catalase test and a CB BBIM/Crystal violet identification system (BD, USA), a miniaspiration and medical ID system that used modified conventional biochemical tests and phage typing as described in the Methods section.

Results: Resistant bacteria were found in 14 Swans with a disc diffusion method and agar dilution method on Mueller-Hinton agar plates. Bacteria were isolated from the central corneal epithelial cells (LECs) before and after cultivation on human amniotic membrane epithelial cells (HAE cells) and corneal limbal epithelial cells before and after cell cultivation with human amniotic membrane epithelial cells (HAE cells).

Conclusions: This study aimed to quantify the supraorganization of healthy New Zealand white rabbit corneas as quantified by optical retardation measurements.

Support: National Council of Technological and Scientific Development (CNPq-300833/2010-5 and 467289/2014-0), and São Paulo Research Foundation (FAPESP-2012/17380-5 and 2013/01494-7).

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POSTERS 31
Concanavalin a-positive glycoproteins in the nuclei of corneal limbal epithelial cells before and after cell culture
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Purpose: To describe the retinopathy as a cause of impairment of vision in two closely related Goeldi’s Monkey (GM) (Callimico Goeldii).

Methods: A 14 year old female GM was presented for assessment of her recent visual deterioration. Neuroophthalmic examination revealed a negative menace response, papillary light reflex involves only inferiorly. Ophthalmologic examination revealed a normal anterior segment, with a marked nuclear sclerosis. Postmortem examination revealed a pale, cloudy, atrophic, and aphakic eye, with increased retinal vasculature and patchy increased retinal pigmentation. Subsequently, her 2 year old male offspring was euthanized on humane grounds, due to clinical disease unrelated to ophthalmologic problems.

Results: The GM examined histopathologically. Results: Histopathological examination of the female GM revealed diffuse, marked outer retinal atrophy characterised by loss of the photoreceptor processes and marked depletion of the outer nuclear layer nuclei. Conclusions: This increase may have implications for condensation of stromal collagen fibres due to birefringent and pathological conditions. This study aimed to quantify the supraorganization of healthy New Zealand white rabbit corneas as quantified by optical retardation measurements.

Support: National Council of Technological and Scientific Development (CNPq-300833/2010-5 and 467289/2014-0), and São Paulo Research Foundation (FAPESP-2012/17380-5 and 2013/01494-7).

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POSTERS 32
Supraorganization of stromal collagen fibres in New Zealand white rabbit corneas as quantified by optical retardation measurements
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Purpose: Rabbits are widely used as experimental models in ophthalmology; therefore, a quantitative understanding of the supraorganization of their stromal collagen fibres (CF) may be important in the interpretation of structure-function relationships under normal and pathological conditions. This study aimed to quantify the supraorganization of healthy rabbit corneal stromal CF by optical retardation (OR) measurements due to birefringent and polarizing properties.

Methods: Six adult New Zealand white rabbits were submitted to euthanasia by anesthetic overdose (xylazine-ketamine). Afterwards corneas were harvested and sectioned to 8 μm thickness. Untreated corneal sections were immersed for 24 h in solutions with increasing refractive indices (distilled water, refractive index [n] = 1.333, 20%, 40%, 60%, and 80% glycerine-water solutions, n2 = 1.360, 1.386, 1.413, and 1.435, respectively). After each immersion, OR measurements, in nanometres (nm), were taken with a polarization-based imaging system (Olympus BX-51). Corneas were incubated with Série A at 0.1 mg/dl ConA and incubated at 5 °C, and with an imbrication band-pass filter of 546 nm. Results: Intensity of birefringence brightness varied according to the refractive index of immersion solution. OR values were 15.45 ± 2.03 nm (water), 12.05 ± 2.08 (20% glycerine), 9.72 ± 1.71 (40% glycerine), 8.36 ± 1.46 (60% glycerine), 2.42 ± 0.29 (80% glycerine), and 1.49 ± 0.41 (pure glycerine). Conclusions: Since OR values depend on refractive index, rabbit corneal stromal CFs must be treated as an overall active supraorganization of mixed and irregular-fibril-shaped macromolecules, which display birefringence and non-linear optical properties.

Support: National Council of Technological and Scientific Development (CNPq-300833/2010-5). E16 abstracts.

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POSTERS 33
Highly infiltrative corneal carcinoma in a dog
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Purpose: To describe a very infiltrative primary corneal carcinoma in a dog. Methods: A 1 year old male French Bulldog was referred for a corneal mass on the left eye. Slitlamp microbiochemistry revealed an exophytic white irregular mass, occupying approximately 60% of the corneal pterygium. Clinical signs were consistent with corneal neoplasia. The rest of the ocular examination including STT-1 (19 mm/min) and IOP (13 mmHg) were within normal limits. The dog had a complete excision of the third eyelid gland 5 years before and developed an iatrogenic KCS that was being controlled with topical cyclopentolate and artificial tears. Clinically, differential diagnoses included: granulation tissue secondary to, and pure glycerine, n2 = 1.473. For each immersion solution, 8 OR measurements were performed under general anesthesia and a diagnosis of carcinoma was made. Transcorneal immunohistochemistry was performed using antibodies against pancytokeratin and p63. Histologic examination showed an epidermoid with vesicular and parakeratinized neoplasm, which expanded from the corneal epithelium into the deepest portions of the conjunctiva with pancytokeratin positive stains. Conclusions: This dog was diagnosed with a very infiltrative corneal carcinoma. The morphologic (tubular formation and absence of squamous differentiation) was most consistent with a squamous cell carcinoma than a sarcoma. However, since there are no glands present in the cornea, the origin of the tumor remains unclear.

POSTERS 34
Clinical features and treatment possibilities of equine ocular habronemiasis in Hungary and South-Africa
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Purpose: To describe clinical, cytologic and therapeutic features of equine ocular habronemiasis in Hungary and South-Africa.

Methods: In this clinical study some selected cases of ocular habronemiasis of equine patients examined in the last 5 years were reviewed. Ophthalmic examinations including biomicroscopy and indirect ophtalmoscopy were performed. From two cases cytologic samples from the granuloma, Rw swaps samples for bacterial culture and in one case punch biopsy from the skin lesion were taken.

Results: Habronema cases had uni- or bilateral mucopurulent ocular discharge. Multifocal granulomatos nodular lesions were present at the corneal stromal conjunctiva and oral disparity and at the medial canthus. Cytology from the gatce inacrotic mineralised tissue revealed eosinophilic infiltration of the conjunctiva. Streptococcus equi was isolated from the granuloma. None of the treated horses showed any clinical improvement. Conclusions: Ocular habronemiasis in horses is approximately 10 times more common in Africa than in Hungary. Location and type of glycoproteins in the nuclei of LEcCs. This increase may have implications for condensation of stromal collagen fibres due to birefringent and pathological conditions. This study aimed to quantify the supraorganization of healthy New Zealand white rabbit corneas as quantified by optical retardation measurements.
ocular lesions were the same. Good response to surgical debulking, topical and systemic therapy was observed. Habronemiasis must be considered as a differential diagnosis of conjunctival mass lesions.

POSTERS 35
Ligneous conjunctivitis in Australian Shepherds
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Purpose: The aim of this study was to confirm the presumptive diagnosis of a rare and unusual form of chronic conjunctivitis, in a four-year-old dog. The authors report and discuss a new therapeutic strategy.

Methods: We evaluated five affected dogs (two females, three males) of 2 L (each with six poodles) of Australian Shepherds all affected with mostly bilateral chronic progressive membranous conjunctivitis, appearing at the age of 4-6 months. Complete clinical and ophthalmic examinations were performed. Conjunctival biopsy samples were obtained, processed routinely and fixed with 10% buffered formalin. The histopathological findings, results and effects of treatment were recorded and compared with the existing knowledge in human and veterinary literature. Results: The normal values for plasminogen were 80–100%. All affected dogs had plasminogen values between 2% and 9.6%. The diagnoses were based on very low values of plasminogen as primary cause of ligneous conjunctivitis and supported by the histopathological results of our biopsies including: amorphous masses and fibrin deposition showing the characteristic wood-like consistency of the mass, large amounts of homogenous eosinophilic poorly cellular proteinaceous material in the superficial and deep conjunctival substantia propria and in the epithelium causing marked dissection of the epithelial cells by accumulating lakes of this material. Conclusions: We confirmed the presumptive diagnosis of ligneous conjunctivitis. The study will continue with the monitoring of the dogs and the follow-up for the location of epithelial damage and deep corneal defects. We plan to remove the proliferations by laser surgery and the aid of plasminogen and inhibition.

POSTERS 36
Treatment of pre-descentemetic keratitis with cornal collagen cross-linking in three dogs
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Purpose: Collagen cross-linking (CXL) by riboflavin absorbing ultraviolet-A light (UV-A) has been proven efficient in the treatment of melting keratitis in both human and veterinary ophthalmology. Although a minimal corneal thickness of 100 μm is necessary for safety reason, very thin corneas might be stiffened by CXL and prevented from perforating. We present three cases in which CXL was used to treat pre-descentemetic keratitis (PDMD). The aim of this study is to present a new minimally invasive therapeutic strategy.

Methods: All three eyes were treated with accelerated CXL with obtaining owner consent. Corneas were irradiated by UV-A (370 nm) at 10 mW/cm² irradiance for 1 min after soaking with isotonic riboflavin for 30 min. Medical therapy was continued until results of microbiological culture and antibiotic susceptibility tests were obtained. Follow-up examinations were conducted at 2, 7, 14, 28, 56 days (D) and included slit-lamp examination, fluorescein staining and only Jararacas were sedated in a carbon dioxide chamber for 5 min before the exam with the aid of plasminogen and inhibition. Results: Complete clinical and ophthalmic examinations were performed. Conjunctival biopsy samples were obtained, processed routinely and fixed with 10% buffered formalin. The histopathological findings, results and effects of treatment were recorded and compared with the existing knowledge in human and veterinary literature. Results: The normal values for plasminogen were 80–100%. All affected dogs had plasminogen values between 2% and 9.6%. The diagnoses were based on very low values of plasminogen as primary cause of ligneous conjunctivitis and supported by the histopathological results of our biopsies including: amorphous masses and fibrin deposition showing the characteristic wood-like consistency of the mass, large amounts of homogenous eosinophilic poorly cellular proteinaceous material in the superficial and deep conjunctival substantia propria and in the epithelium causing marked dissection of the epithelial cells by accumulating lakes of this material. Conclusions: We confirmed the presumptive diagnosis of ligneous conjunctivitis. The study will continue with the monitoring of the dogs and the follow-up for the location of epithelial damage and deep corneal defects. We plan to remove the proliferations by laser surgery and the aid of plasminogen and inhibition.

POSTERS 37
Contrast-enhanced ultrasonography (CEUS) in feline uvea after injection of a second-generation ultrasound contrast media (Sonovue; Bracco).
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Purpose: The current study provides information on the thickness of retinal structures in two species of snakes and demonstrates a noninvasive assessment of the retinal morphology without having to fully anesthetize the animals for safety reasons. Supported: FAPESP 2011/24039-8.

POSTERS 38
Ocular ultrasonographic biometry of European pond turtles (Emys orbicularis)
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Purpose: This study was aimed to determine normal ocular biometry of European Pond Turtles (Emys orbicularis) using B-mode ultrasonography. Methods: Twenty-two captive adult and juvenile European pond turtles (12 males and 10 females) with similar ages were used for this study. Ultrasonographic biometry was performed using a B-mode system with a linear 8-MHz transducer. The axial globe length (AGL) was measured from the anterior corneal surface to the posterior surface. The anterior chamber depth (ACD) was assessed as the distance between echoes from the posterior corneal surface and the anterior lens surface. The lens thickness (LT) was the distance between echoes from the anterior and posterior lens surfaces. The vitreous chamber depth (VCD) was the distance between echoes from the posterior lens surface and the retina. Results: Mean ± SD body weight and length for females and males were 392.28 ± 27.63 g. 12.24 ± 0.30 cm and 258.84 ± 20.24 g. 19.01 ± 0.29 cm, respectively. Mean ± SEM AGL, ACD, LT and VCD for all animals were 5.66 ± 0.02 mm (ranging from 5.59 to 5.81), 1.20 ± 0.02 mm (ranging from 1.11 to 1.36), 1.26 ± 0.01 mm (ranging from 1.20 to 1.32) and 2.99 ± 0.01 mm (ranging from 2.90 to 3.04), respectively. Significant differences were not found in measured parameters between the right and left eye or males and females. Conclusions: Ultrasound biometry of the European pond turtle. I confirm adherence to the ARVO Statement for the Use of Animals in Ophthalmic and Vision Research.

POSTERS 39
Retinal measurement using optical coherence tomography (OCT) in two snake species, Boa constrictor and Botrops jararaca
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Purpose: To measure the retinal thickness of the two most common Brazilian snakes Boa constrictor (nonvenomous) and Botrops jararaca (venomous), in an unprecedented way using optical coherence tomography (OCT). Methods: Optical coherence tomography was performed in 20 healthy adult snakes. Boa constrictors (five males and five females) and Jararacas (five males and five females) from Butantan Institute. The animals were sedated, positioned by manual restraint and their retinas examined by OCT (Spectralis Hsvelberg, USA). The thickness of the outer retina, neurosensory retina and ganglion cell complex (nerve fiber layer, ganglion cell layer and inner plexiform layer) were measured and analyzed from images obtained with magnification of 400x. It was not necessary to dilate the pupils and only Jararacas were sedated in a carbon dioxide chamber for 5 min before the exam with the purpose of avoiding accidents. Results: Optical coherence tomography images demonstrated a large number of radial vessels overlying the retina departing from the optic nerve. From the current study it was possible to visualize blood flow in the vessels. Mean and standard deviation of total retinal thickness, neurosensory thickness and ganglion cell complex thickness were 208.5 μm ± 8.93 μm, 193.8 μm ± 9.27 μm and 69.3 μm ± 4.76 μm, respectively. In Jararacas the thickness measurements of the total retina, neurosensory retina and ganglion cell complex were 201.3 μm ± 12.47 μm, 189.1 μm ± 5.98 μm and 4.78 μm ± 0.78 μm, respectively. Conclusions: The current study provides information on the thickness of retinal structures in two species of snakes and demonstrates a noninvasive assessment of the retinal morphology without having to fully anesthetize the animals for safety reasons. Supported: FAPESP 2011/24039-8.

POSTERS 40
Circadian variation of intraocular pressure in healthy chinchillas
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Purpose: The purpose of this study was to describe the perfusion of the normal and neo-plastic feline uvea after injection of a second-generation ultrasound contrast media (Sonovue; Bracco). Methods: Nine healthy cats (8 eyes) and six cats (eight eyes) affected by uveal neoplasia, confirmed by cytologic/histopathologic evaluation (two melanomas, six lymphomas) were studied. Animals underwent ophthalmic examination and ocular sonography (12 and 18 MHz) before product injection. CEUS followed a standard fine scale evaluation medium (0.03 mL/kg) was injected into the cephalic vein, followed by 5 mL of saline solution. An objective evaluation of the videos, three region of interest (ROI) were drawn on the iris (I), ciliary body (CB) and choroid (C). Time-intensity curves were generated using a commercial software (Qcontrast; Bracco) and perfusion parameters were calculated. Results: The mean PI values of choroid changed significantly different between the neoplasia and control group (healthy cats). Conclusions: CEUS was effective in visualizing uveal perfusion in healthy and pathological eyes, neoplasia was associated with subjective increased vascularization, however perfusion parameters were not statistically different in the two groups.
differ significantly between OD and OS. Mean IOP tended to change over the 24 h period (P = 0.12). Mean (SD) IOP was 10.1 (1.8) mmHg at 10 a.m. and significantly lower than the 2 p.m. (12.1 (2.7) mmHg, P = 0.003), 1 a.m. (12.4 (2.8) mmHg, P = 0.001), and 6 a.m. (13.2 (2.5) mmHg, P = 0.005), but similar to the 7 p.m. (12.2 (3.3) mmHg, P = 0.14) reading. At 6 a.m. IOP was significantly higher than at 10 a.m. (P = 0.001) and 7 p.m. (P = 0.004). Conclusion: Intracocular pressure seems to reach the highest values during the night and early morning and then drop abruptly in the late morning.

POSTERS 41

Uptetion of GFAP expression in retinal Müller cells in cats with feline infectious peritonitis (FIP)  
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Purpose: The study was performed to determine whether glial fibrillary acidic protein (GFAP) expression and distribution change in the retinal glial cells during ocular inflammation in cats with feline infectious peritonitis (FIP). Methods: Eyes from five cats of different breeds, naturally infected with FCoV (feline coronavirus), were taken for histological and immunohistochemical studies. Before euthanasia examination of the anterior segment of the eye was performed. The eyes without any signs of disease were used as controls. The eyes were fixed in formalin, dehydrated and embedded in paraffin. Immunohistochemical studies were performed using anti-GFAP antibody (G189), Sigma-Aldrich). In addition, anti-GFAP was used to confirm the presence of coronavirus antigen in ocular tissues. Results: Ocular examination showed inflammation of the iris, decreased intraocular pressure and keratinization of the corneal endothelium. Strong GFAP immunoreactivity was demonstrated in Müller cells (Mc), which form numerous radial columns extending through the entire thickness of the retina. The positive staining was observed in perikarya of Mc located in the outer nuclear layer and both plexiform layers of the retina. Conclusion: The inflammatory process demonstrated in Mc from the uveal tract to the inner retina. The Mc of the feline retina accumulate GFAP which suggests that activation and retinal gliosis could be a consequence of inflammatory processes caused by FCoV. Support: The study was supported by research grant (no. 05-1/KNOW2/2015).  

POSTERS 42

Effects of a new soft cryosurgical method on conjunctiva and cornea in isolated pig eyes and comparison with standard LN2 cryosurgery: a preclinical study  
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Purpose: To evaluate the safety on the conjunctiva and cornea of a new cryosurgical method based on the application of a dimethyl ether, propane and isobutene solution (FGV, Sigma-Aldrich) compared to that observed in standard LN2 cryosurgery (Cry-Ac Cryogun – Advantec).  
Methods: Fifty-two isolated pig eyes were removed at the end of the slaughter process, preserved for 2 h and divided in four groups. First group included eyes treated with two applications of the HistoFreezer in the center of the cornea and in the lateral equatorial conjunctiva. Second group included eyes treated with HistoFreezer on the third eyelid’s conjunctiva. The third group included eyes treated with Cry-Ac Cryogun on the third eyelid’s conjunctiva. The fourth group included eyes treated with LN2 on the central cornea. Each application of the cryogen (0.8 cm area) was of 40 s. Each group included one eye (not treated) control eye. The eyes were maintained for 1 h in a darkened environment, and intraocular and anterior segment examination by a single examiner (RA) were performed. Results: No difference between the groups in terms of conjunctival integrity, corneal clarity or vascularization of epithelial basal cells, but all the alterations were mild without significant differences between the groups and the controls. Conclusion: No significant damage to cornea or conjunctiva was detected and no significant difference between the two methods was recorded. Soft cryosurgery could represent a safe and same method to treat different corneal and conjunctival pathologies, but clinical studies should be performed.

POSTERS 43

Peculiar foreign body inside the cornea in a Yorkshire terrier  
E Delgado and D Conceição  
CISVA, Clinics Department, Faculdade de Medicina Veterinária, Universidade de Lisboa, Lisbon, Portugal  
Purpose: A case of peculiar intrastromal corneal foreign body in a dog is described. Methods: A 2-year-old Yorkshire Terrier male dog presented with a history of blepharoconjunctivitis, squinting and epiphora one month duration in the left eye. Following ocular trauma 1 month before, the referring veterinarian diagnosed a fluorescein-positive corneal lesion and prescribed topical broad-spectrum and topical corticosteroid. Later the patient underwent several follow-up visits but never stopped having a painful eye. At ophthalmological consultation IOP was 16 mm/Hg in the right and 10 mm/Hg in the left eye. The left eye presented with blepharoconjunctivitis and erythema. Slitlamp biomicroscopy demonstrated the presence of a corneal lesion in the dorsoconal quadrant beneath which there was a dark straight line of approximately 1.5 cm length. Surgical treatment included a linear deep keratotomy to retrieve the foreign body, which was deep in the stroma and partially in contact with the anterior chamber. A thin dark structure similar to a hair was removed. The corneal incision was closed with simple interrupted sutures using polyglycolic 9.0. Oral prednisolone and carprofen plus topical tobramycin and tropicamide were prescribed. Results: The thin dark structure was confirmed to be a hair. The cornea healed completely, although a linear dorsal limbal scarring was noticed. No evidence of recurrence were seen during 4 months of follow-up visit. Conclusion: In this peculiar case, apparently the initial traumatic lesion healed, leaving a hair retained inside the corneal stroma and in contact with the anterior chamber, which resulted in chronic uveitis. Surgical treatment was curative.

RESIDENTS' ABSTRACTS

RESIDENTS 1

Accuracy of contrast enhanced ultrasonography (CEUS) and color doppler (CFM) to diagnose neoplastic intraocular masses in small animals: preliminary results  
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Purpose: To evaluate contrast enhanced ultrasonography (CEUS) and CFM for detection of blood flow in intracocular masses detected using grey-scale B-mode ultrasonography and CFM. A cephalic vein injection of 0.05 mL/kg stabilized phospholipid coated with sulphur hexafluoride microbubbles (SonoVue, Bracco, Milan, Italy) was administered as contrast medium for CEUS examination. Dedicated software: Contrast Tuned Imaging (ESA-OTE, Mylab 70 CN, Genoa, Italy) and coded Contrast Imaging Application (GE E18). Results: Before euthanasia examination of the anterior segment of the eye was performed. The eyes without any signs of disease were used as controls. The eyes were fixed in formalin, dehydrated and embedded in paraffin. Immunohistochemical studies were performed using anti-GFAP antibody (G189, Sigma-Aldrich). In addition, anti-GFAP was used to confirm the presence of coronavirus antigen in ocular tissues. Results: Ocular examination showed inflammation of the iris, decreased intraocular pressure and keratinization of the corneal endothelium. Strong GFAP immunoreactivity was demonstrated in Müller cells (Mc), which form numerous radial columns extending through the entire thickness of the retina. The positive staining was observed in perikarya of Mc located in the outer nuclear layer and both plexiform layers of the retina. Conclusion: The inflammatory process demonstrated in Mc from the uveal tract to the inner retina. The Mc of the feline retina accumulate GFAP which suggests that activation and retinal gliosis could be a consequence of inflammatory processes caused by FCoV. Support: The study was supported by research grant (no. 05-1/KNOW2/2015).  

RESIDENTS 2

Ocular abnormalities in a herd of Old Kladruber Grey Horses: a cross-sectional study  
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Purpose: To screen a closed herd of Old Kladruber Grey Horses (OKGH) for specific ophthalmic problems. Methods: One hundred and twenty horses were included in the study. All horses were housed in the district of the main National Stud Farm Kladruby nad Labem (the Czech Republic). Horses, breeding stock and1livery horses were examined. Both eyes of each horse were examined in a darkened environment by a single examiner (RA) before and after topical administration of tropicamide. The animals were manually restrained without sedation. A complete ophthalmic examination was performed using a portable slit-lamp biomicroscope, a direct ophthalmoscope and a Finnoff transflectometer with 20D condensing lens. Fluorescein testing was performed when indicated. Results: The age ranged from 2 to 27 years (mean 8.84 years, median 8 years). The gender distribution (males: females) was 47:72. Both eyes were normal in 33 (44.2%) horses, affected eyes exhibited no side predilection. The most common abnormalities were cataract formation (22 eyes), iris hyperpigmentation (20 eyes), corneal haze (14 eyes), corneal punctate subepithelial opacities (nine eyes) and alterations in corpora nigra size (nine eyes). The most frequent variations of normal ocular anatomy were posterior lenticular suture lines (19 eyes), tapetal hypoplasia (6 eyes) resulting in a multicolored tapetal fundus (20 eyes), nuclear sclerosis (56 eyes) and senile visual degeneration (28 eyes). Conclusions: To our knowledge, this is the first report on the prevalence of ocular abnormalities in a closed herd of OKGH through examination of a substantial cross-section of the OKGH population.

RESIDENTS 3

Presence of opioid receptors in feline and canine optic nerve and cornea: a pilot study using radioactive binding  
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Purpose: The aims of the study are to demonstrate the existence of μ, κ and δ opioid receptors in optic nerve and cornea of dogs and cats, using a radioactive binding assay and...
RESIDENTS 4
Combination of brow suspension and modified celsion-hrotz for the treatment of redundant facial skin folds and entropion in the dog
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Purpose: To describe the outcome of Brow suspension in combination with Celsion-Hrotz for the treatment of redundant facial folds and entropion in canine patients with redundant facial skin folds. Methods: Medical records from 1999 to 2015 were retrospectively reviewed. Only dogs that underwent Brow suspension and Celsion-Hrotz techniques for treatment of redundant facial folds and entropion were included in the study. Recorded data included: breed, age, gender, cause of the facial fold and entropion, size of the fold and entropion, treatment and follow-up time and outcome. Results: Twenty-five adult dogs of different breeds and breeds and gender were included. The mean age was 5.0 years (range: 1.5 to 10 years). The mean size of the redundant face folds was 6.2 mm (range: 2.6 to 9.5 mm). The mean follow-up time was 15.6 months (range: 6 to 48 months). Good and optimal functional results were obtained in 21 of the 25 dogs (84%). In 3 of 25 dogs (12%) the facial folds and entropion were not improved. Conclusions: Brow suspension, in conjunction with modified Celsion-Hrotz, is a surgical technique to be considered in canine patients with ptosis and entropion secondary to redundant facial skin folds, especially if facial appearance is to be preserved.

RESIDENTS 5
A multicenter retrospective study on human and bovine amniotic membrane transplantation for the treatment of complicated corneal ulcers in dogs
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Purpose: To describe the surgical technique and outcome of amniotic membrane transplantation (AMT) for the treatment of complicated corneal ulcers in dogs. Methods: Canine medical records of seven Spanish veterinary practices, from 2010 to 2015, were reviewed for suitable cases. Results: One hundred and eleven dogs of different breeds, age and gender were included. Brachycephalic breeds were overrepresented (74/111, 66.6%). Only three dogs were bilaterally affected. There were 51 melting ulcers (51/111, 46.3%), 31 stromal ulcers (31/111, 28.0%), 17 descemetomes (17/111, 15.4%) and 13 perforations (13/111, 11.8%). Mean size of the corneal defects was 6.2 mm (2.15 mm). Human (32/111, 28.9%) and bovine (82/111, 74.5%) (Annovo®) cryopreserved amniotic membranes were used. Monolayer (1/111, 0.9%) bilayer (46/111, 41.8%) or multilayer technique (56/111, 50.4%) was preferred. The mean size of the graft was 13.9 mm (10.8 to 15.6 mm). Post-operative treatment consisted of frequent administrations of topical antibiotics and anti-inflammatory drugs. Mean follow-up time was 12 months (1 to 24 months). Good and optimal functional results were obtained in 83 of the 111 cases (75%). The mean follow-up time was 14.9 months (6 to 24 months). Conclusions: AMT is a surgical technique to be considered in canine patients with complicated corneal ulcers, especially if outcomes are to be improved.

RESIDENTS 6
Outcome of intensive medical therapy for melting corneal ulcers in 38 canine eyes
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Purpose: Many studies report the success rate of surgical procedures to stabilize melting corneal ulcers in dogs but no data is available for the outcome of intensive medical therapy. Methods: Dogs with melting corneal ulcers were identified through a search of records from 2013 to 2015. Criteria for inclusion was a diagnosis of corneal ulcer with signs of stromal melting and intensive treatment with topical antibiotic and protease-inhibitors. Dogs that required initial surgery were excluded. Successful outcome was defined as corneal reepithelialisation without need of surgical procedure. Data collected from the medical records included ophthalmic examination findings, treatment and number of days to achieve healing. Results: Thirty-nine eyes (28 focal and 11 diffuse ulcers) in 14 females and 19 males. Seventy-eight percent of cases (26/38) were treated with frequent administrations (every 2–4 h) of tobramycin in combination with heterologous serum. The success rate of intensive medical therapy was 61.6% (24/38). Initial lesion size was significantly smaller in dogs with successful outcome (mean 41.3 mm2) compared to dogs that required surgery (mean 98.1 mm2) (P < 0.05). Age, duration of clinical signs and degree of stromal loss were not significantly different between these two groups (P > 0.05). Ulcers treated successfully had a mean healing time of 8 ± 3.3 days. Ulcers that failed to heal with medical therapy received surgery after a mean time of 5 ± 4 days. Conclusion: AMT is a suitable way to achieve healing of certain melting corneal ulcers. Increasing healing size was associated with less successful outcomes.

RESIDENTS 7
Histopathologic features of equine recurrent uveitis: a controlled light microscopic study
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Purpose: The objective was to examine previously published criteria for the histologic diagnosis of equine recurrent uveitis (ERU). One hundred and eleven dogs of different breeds, ages and genders were included. Brachycephalic breeds were overrepresented (74/111, 66.6%). Only three dogs were bilaterally affected. There were 51 melting ulcers (51/111, 45.5%), 31 stromal ulcers (31/111, 27.9%), 17 descemetomes (17/111, 16.2%) and 13 perforations (13/111, 11.8%). Mean size of the corneal defects was 6.2 mm (2.15 mm). Human (32/111, 28.9%) and bovine (82/111, 74.5%) (Annovo®) cryopreserved amniotic membranes were used. Monolayer (1/111, 0.9%) bilayer (46/111, 41.8%) or multilayer technique (56/111, 50.4%) was preferred. The mean size of the graft was 13.9 mm (10.8 to 15.6 mm). Post-operative treatment consisted of frequent administrations of topical antibiotics and anti-inflammatory drugs. Mean follow-up time was 12 months (1 to 24 months). Good and optimal functional results were obtained in 83 of the 111 cases (75%). The mean follow-up time was 14.9 months (6 to 24 months). Conclusions: AMT is a surgical technique to be considered in canine patients with complicated corneal ulcers, especially if outcomes are to be improved.

RESIDENTS 8
Prevalence of antibody sero-conversion against Toxoplasmosis in dogs with and without uveitis
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Purpose: Toxoplasmosis has been associated with canine uveitis in many publications. Our hypothesis is there is no significant difference in Toxoplasma seroprevalence in dogs with and without uveitis presented at South Devon Referrals. Methods: Medical records of dogs with uveitis tested for toxoplasmosis were reviewed from 2005 to 2015. Toxoplasma serology was also performed in dogs without uveitis. In total, 135 dogs were evaluated, 51 dogs with uveitis, and 84 dogs without uveitis. All dogs underwent a full ophthalmological examination, performed by an ECVO Diplomate. Latex agglutination tests were performed on all sera and results were evaluated. The level of significance for positive results has been validated for all immunoglobulin classes at dilution of 1:64. Positive results were defined as a dilution of greater or equal to 1:64. Results: 79% and 6% of samples were serologically positive for Toxoplasma in the uveitis and non-uveitis groups, respectively. The frequency distribution of variables was tested using Fisher’s exact test. There was no statistically significant difference between groups (P = 0.008). Three of the controls showed any histologic criteria of ERU. Conclusions: Hyaline membranes and eosinophilic inclusion bodies are highly specific (1.0%) but not very sensitive (0.56 and 0.45, respectively) whereas pockets of lymphocytes and plasma cells had low specificity (0.46) but moderate sensitivity (0.78) for ERU.
**RESIDENTS 9**

Intraocular pressure measurements in cattle, sheep and goats with two different tonometers

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**Purpose:** To investigate normal intraocular pressure (IOP) values of cattle, sheep and goats with two different tonometers (TonoVet® [TV] and TonoPen AVIA® [TPA]). Calibration of the tonometers was performed for cattle and sheep eyes.

**Methods:** Twenty healthy cattle, sheep and goats each underwent slit-lamp biomicroscopy and IOP readings of both eyes were taken with the two different tonometers (TV in setting ‘d’). IOP results were statistically analyzed (Wilcoxon-test, \( P \leq 0.05 \)). For calibration purposes the IOP was preset from 5 to 60 mmHg in steps of 5 mmHg in 10 bovine and eight ovine freshly enucleated eyes from slaughtered animals. For every interval, readings were taken with both tonometers and compared to the manometrically controlled IOP (Mann-Whitney-U-test, \( P \leq 0.05 \); Bland-Altman; regression analysis).

**Results:** In cattle, sheep and goats median IOP (min–max) obtained with the TV was 23 mmHg (12–40 mmHg), 11 mmHg (7–20 mmHg) and 23 mmHg (9–37 mmHg), 10 mmHg (5–18 mmHg) and 23 mmHg (9–37 mmHg), 10 mmHg (5–18 mmHg) and 23 mmHg (9–37 mmHg) and with the TPA 16 mmHg (8–27 mmHg), 10 mmHg (5–18 mmHg) and 13 mmHg (4–25 mmHg), respectively. There were statistically significant differences between the readings taken with the TV and TPA in all species (Wilcoxon-test, \( P \leq 0.05 \)). All measurements obtained with the TV and TPA within the calibration procedure differed statistically significantly from the manometrically controlled IOP (Mann-Whitney-U-test, \( P \leq 0.05 \)). For both instruments regression formulas were calculated to correct the measurements (TV: cattle mano = (TV + 5.392)/1.226, \( r^2 = 0.98 \); sheep mano = (TV + 2.560)/0.816, \( r^2 = 0.98 \); TPA: cattle mano = (TPA + 2.780)/0.714, \( r^2 = 0.92 \); sheep mano= (TPA + 1.184)/0.637, \( r^2 = 0.98 \)).

**Conclusion:** In consideration of the specific regression formula both tonometers can be used effectively to assess the intraocular pressure in ruminants.

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**RESIDENTS 10**

In-vitro effects of three blood derivates on corneal wound healing

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**Purpose:** To determine the in-vitro effects of three blood derivatives on corneal wound healing.

**Methods:** Blood of 35 healthy horses was used to produce serum, platelet rich plasma (PRP), and plasma rich in growth factors (PRGF). Commercially available kits were used to produce both PRP (E-PET; PALL Cooperation, NY, USA) and PRGF (Endoret® Technology; BTI, Deutschland Gmbh), according to manufacturer’s specifications. Healthy corneas of horses euthanized for reasons unrelated to this study were used. Limbal stem cells, corneal epithelial cells, and stromal cells were harvested within 1 h after euthanasia under sterile conditions. Proliferation rates of limbal stem cells were analyzed after 72 h of treatment with either 20% serum, PRP or PRGF. To assess the migration capacity of limbal stem cells upon before mentioned blood derivate treatment, scratch assays were performed. Lesions were created in 80% confluent monolayers using a 10 mL pipette tip and closure of the defect was monitored over 24 h.

**Results:** Preliminary results indicate that proliferation of limbal stem cells was highest after PRP treatment. Moreover, migration capacity of these cells was equally increased after cultivation with PRP and PRGF.

**Conclusion:** The results clearly demonstrate beneficial effects PRP on in-vitro growth of limbal stem cells. The next phase of the project will study the effects of serum, PRP, and PRGF on corneal stromal cells and epithelial cells.

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