

Archives of Veterinary Science



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Colégio Brasileiro de Oftalmologistas Veterinários (CBOV)

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Organização:



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OFTALMOLOGISTAS VETERINÁRIOS

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Programação científica:

Dia 17/11 (Tarde e noite):

A partir das 12:00 hs - Entrega do material na Secretaria do Congresso

14:00h às 14:20h - "O Especialista em Oftalmologia Veterinária no Brasil". Palestrante: Dra. Paula Galera (DVM, PhD, DCBOV, DCLOVE, UnB, Brasil)

14:30h as 15:10h – “Visual ecology of retina across many different species” – Online - Palestrante: Dr. Bret Moore (DVM, PhD, DACVO, Florida-USA)

15:20h às 16:00h: "A evolução da visão" Palestrante: Dr. Leandro Lima – Presencial - (DVM, PhD, UFPR, Brasil)

16:10h às 16:50h: "Genetics and Future Therapies for Glaucoma" - Online - Palestrante: Dra. Gillian McLellan (DVM, PhD, DACVO, Wisconsin-USA)

16:50h às 17:20h - Coffee break – Visita aos expositores

17:20h às 18:00h “Feline Glaucoma” - Online - Palestrante: Dra. Gillian McLellan (DVM, PhD, DACVO, Wisconsin-USA)

18:10h as 18:50h “Developing Treatments of Blinding Retinal Disease: Examples of Gene Therapy in Two Dog Models ” - Online - Palestrante: Dra. Laurence Occelli (DMV, PhD, DACVO Michigan-USA)

18:50 às 19:10 “Evolução da cirurgia do glaucoma em humanos” - Online - Palestrante: Dra. Heloisa Russ (MD, PhD, Hospital de Olhos do Paraná-PR - Brasil)

19:10h as 19:45h: Mesa redonda

20:00h - ABERTURA OFICIAL DO XVII CONGRESSO DO CBOV / Coquetel

Dia 18/11 (Manhã)

9:00 as 12:00h - Apresentação oral de trabalhos

Moderadores: Dra. Cristiane Honsho (DVM, PhD, DCBOV) e Dra. Maria Guadalupe Sereno (DVM, PhD, DCLOVE)

Dia 18/11 (Tarde e noite)

12:00h as 14:00h - Almoço

13h as 14h - Apresentação de Pôsteres dos Trabalhos científicos

14:00 as 14:15h - Consenso: Uso da antibioticoterapia nas úlceras de córnea em cães - Abertura dos trabalhos. Moderador: Prof. Dr. Alexandre Lima de Andrade (DVM, PhD, UNESP-SP).

14:15h às 14:30 - Microbiota x Microbioma da superfície ocular em cães no Brasil. Palestrante: Profa. Dra. Paula Diniz Galera (DVM, PhD, DCLOVE, DCBOV, UnB-DF)

14:30h às 14:45h - Bactérias da superfície ocular e sua patogenicidade. Palestrante: Prof. Dr. Fábio Luiz da Cunha Brito (DVM, PhD, Dr. Fábio Brito – Oftalmologia Veterinária-Faculdade Qualittas-SP)

14:45h às 15:00h - Disponibilidade terapêutica de antibióticos no Brasil. Palestrante: Prof. Dra. Silvia Franco de Andrade (DVM, PhD, UNOESTE-SP)

15:00h às 15:15h - Antibioticoterapia nas úlceras de córnea: minha abordagem. Palestrante: Dr. Fabrício Mamede (DVM, PhD, Oftalmovet-Ribeirão Preto)

15:15h as 15:30h: - Antibioticoterapia nas úlceras de córnea: minha abordagem. Palestrante: Profa. Dra. Daniela Cremonini (DVM, PhD, DCLOVE, PetVision-SP/ Faculdade Qualittas-SP)

15:30h às 15:45h - Resistência bacteriana e suas consequências. Palestrante: Prof. Dr. Alexandre Lima de Andrade (DVM, PhD, UNESP-Araçatuba)

15:45h as 16:30h - Mesa redonda/Questionamentos da plateia

16:30h as 17:15h - Coffee break – Visita aos expositores

17:15h às 19:30h - Discussão para formação do consenso e formação do eixo norteador – * a discussão do consenso será realizada com os membros do CBOV e aberta a todos os congressistas. Moderador: Prof. Dr. Alexandre Lima de Andrade (DVM, PhD, UNESP-SP)

Dia 19/11 (Tarde e noite)

13h as 14h - Apresentação de Pôsteres dos Trabalhos científicos

14:00 às 15:00h - Herpetic keratitis in dogs and cats: updates in antiviral therapy. Palestrante: Dr. Eric C. Ledbetter – Presencial - (DVM, DACVO, Cornell University College of Veterinary)

15:00h às 15:15h - Perguntas

15:15h as 16:15h - Application of in vivo confocal microscopy in evaluation of ocular surface - Part 1. Palestrante: Dr. Eric C. Ledbetter – Presencial - (DVM, DACVO, Cornell University College of Veterinary)

16:15h as 16:30h - Perguntas

16:30h as 17:15h - Coffee break – Visita aos expositores

17:15h as 18:15h - Application of in vivo confocal microscopy in evaluation of ocular surface - Part 2. Palestrante: Dr. Eric C. Ledbetter – Presencial - (DVM, DACVO, Cornell University College of Veterinary)

18:15h às 18:30h - Perguntas

18:30h as 19:30h - Retinal surgery: fundamentals and perform surgery. – Online - Palestrante: Ronald A. Spatola (DMV, DACVO, The Animal Eye Institute-USA)

19:30h às 19:45h - Perguntas

19:45 às 20:00h – Encerramento do Congresso (Premiação dos 3 melhores trabalhos científicos)

SUMÁRIO

ANALYSIS OF miRNA EXPRESSION IN DOG LENSES WITH IMMATURE AND MATURE CATARACTS.....	15
APPLICATION OF ENUCLEATION AND EXENTERATION TECHNIQUES IN <i>Cavia porcellus</i>	16
ASSESSMENT OF TEAR FILM OSMOLARITY USING THE IPEN®VET OSMOMETER IN PUG AND SHIH-TZU DOGS WITH AND WITHOUT KERATOCONJUNCTIVITIS SICCA	17
ATYPICAL FIBROEPITHELIAL POLYP IN THE CORNEA OF A LHASA APSO DOG: CASE REPORT	18
BACTERIAL DIVERSITY IN DOGS WITH CORNEAL KERATITIS BY HIGH-THROUGHPUT SEQUENCING OF 16S rRNA AMPLICONS	19
BILATERAL CONGENITAL RETINOPATHY IN A GERMAN SPITZ DOG: CASE REPORT.....	20
BILATERAL UVEITIS SECONDARY TO MULTICENTRIC HEMANGIOSARCOMA IN DOG: CASE REPORT.....	21
BLEPHAROPLAST COMBINED WITH CARBON DIOXIDE CRYOSURGERY COMBINED WITH FOR RESECTION PALPEBRAL MELANOMA IN A RABBIT: CASE REPORT.....	22
CANINE CORNEAL SQUAMOUS CELL CARCINOMA: CASE REPORT	23
CARBON DIOXIDE CRYOSURGERY FOR ADJUVANT TREATMENT OF CORNEOCONJUNCTIVAL HEMANGIOSARCOMA IN A DOG: CASE REPORT ...	24

CARDIOVASCULAR, OPHTHALMIC AND ELECTROLYTE PARAMETERS IN PREGNANT AMERICAN BULLY DOGS.....	25
CHARACTERIZATION OF RETINAL VASCULARIZATION USING VAMPIRE® SOFTWARE AND FLUORESCEIN ANGIOGRAPHY IN HEALTHY RABBITS	26
COMPARATIVE ANALYSIS OF HORSES LACRIMAL PROTEOME.....	27
COMPARISON BETWEEN REBOUND TONOMETER TONOVET® AND TD800® IN NORMOTENSIVE DOGS.....	28
COMPARISON BETWEEN TONOVET, TONOVET PLUS, TONO-PEN AVIA VET AND KOWA HA-2 PORTABLE TONOMETERS IN MEASURING INTRAOCULAR PRESSURE IN CATS.....	29
COMPARISON BETWEEN TONOVET, TONOVET PLUS, TONO-PEN AVIA VET AND KOWA HA-2 PORTABLE TONOMETERS IN MEASURING INTRAOCULAR PRESSURE IN HORSES	30
CORNEAL CARCINOMA EXERESIS: CASE REPORT	31
CORNEAL SQUAMOUS CELL CARCINOMA ASSOCIATED WITH PIGMENTARY KERATITIS AND KERATOCONJUNCTIVITIS SICCA IN A DOG: A CASE REPORT	32
CORNEAL SQUAMOUS CELL CARCINOMA TREATMENT WITH MITOMYCIN C 0,02% AND DEXAMETHASONE 0,1% IN A DOG: CASE REPORT.....	33
CYCLOCRYOSURGERY IN THE TREATMENT OF CANINE GLAUCOMA: REPORT OF 10 CASES	34
DIAGNOSIS OF LEISHMANIASIS THROUGH CONJUNCTIVAL CYTOLOGY IN A FELINE WITH BILATERAL UVEITIS.....	35

DIFFUSE PIOGRANULOMATOUS CONJUNCTIVITIS ASSOCIATED WITH <i>SPOROTHRIX</i> SP INFECTION IN A FELINE PATIENT: CASE REPORT	36
DISTINCT OCULAR REPERCUSSIONS CAUSED BY <i>LEISHMANIA</i> SPP INFECTION IN DOGS: FOUR CASES REPORT IN FOZ DO IGUAÇU/PR/BR	37
EFFECT OF DEXAMETHASONE AND TROMETHAMINE KETOROLAC EYE DROPS ON INTRAOCULAR PRESSURE AND BLOOD GLUCOSE LEVELS IN HEALTHY DOGS	38
EFFECT OF OMEGA 3 ASSOCIATED OR NOT WITH THE USE OF 1% CYCLOSPORINE IN THE TREATMENT OF KERATOCONJUNCTIVITIS SICCA IN DOGS.....	39
EFFICACY OF A 0.3% TOBRAMYCIN OPHTHALMIC VETERINARY SOLUTION WITH PERMEABILIZING AGENT IN THE TREATMENT OF EYE DISORDERS IN DOGS AND CATS.....	40
ESTABLISHMENT OF PRIMARY CULTURE OF INTRAOCULAR MELANOCYTIC NEOPLASMS IN DOGS	41
EVALUATION OF BACTERIAL MICROBIOTA IN CORNEAL ULCERS OF DOGS REPAIRED WITH TILAPIA SKIN GRAFT	42
EVALUATION OF OPTICAL AND MECHANICAL PARAMETERS OF THE IOVET VETERINARY INTRAOCULAR LENS.....	43
EVALUATION OF THE CORNEAL ENDOTHELIUM OF SHEEP (<i>OVIS ARIES</i>) USING A SPECULAR MICROSCOPE FOR AN EYE BANK.....	44
EXTRAOCULAR POLYMYOSITIS IN DOG	45
FELINE BLEPHAROCONJUNCTIVITIS CAUSED BY <i>PROTEUS MIRABILIS</i> : CASE REPORT.....	46

FELINE CORNEAL SEQUESTRA: A SCANNING ELECTRON MICROSCOPY VIEW	47
FELINE IRIS DIFFUSE MELANOMA: A CASE REPORT	48
FELINE METASTATIC PERIOcular MALIGNANT PERIPHERAL NERVE SHEATH TUMOR	49
GRANULOMATOUS PANOPHTHALMITIS IN A PINSCHER DOG: CASE REPORT	50
GRANULOMATOUS SCLERITIS WITH INTRAOCULAR INVOLVEMENT IN A CAT	51
HETEROTOPIC BONE FORMATION IN EYES OF Guinea pig (<i>CAVIA PORCELLUS</i>): REPORT OF THREE CASES.....	52
HISTOPATHOLOGICAL CLASSIFICATION OF 28 EYES ENUCLEATED DUE TO GLAUCOMA	53
HOMEOPATHY FOR THE TREATMENT OF MEIBOMITIS IN DOG: CASE REPORT	54
IDENTIFICATION OF BACTERIA SPECIES IN SPIDER'S WEBS PRESENT IN HORSE STABLES BY USING NEXT GENERATION SEQUENCING – NGS.....	55
IMPLANT OF POLYMER POLI (BUTYLENE ADIPATE-CO-TEREFTALATE) (PBAT) IN THE TREATMENT OF ULCERATIVE KERATITIS IN DOGS	56
INTERFEROMETRY FOR EVALUATION OF THE LIPID LAYER IN DOGS WITH QUALITATIVE DEFICIENCY OF THE TEAR FILM.....	57
INTRAOCULAR TERATOID MEDULLOEPITHELIOMA IN HORSE – CASE REPORT	58

KERATOCONJUNCTIVITIS SICCA IN DOGS TREATED WITH CYCLOSPORINE ASSOCIATED WITH ORAL MUCOSA TRANSPLANT	59
LAMELLAR KERATECTOMY ASSOCIATED WITH CRYOTHERAPY AND MITOMYCIN C IN THE TREATMENT OF SQUAMOUS CELL CARCINOMA IN THE CORNEA OF A PUG DOG - CASE REPORT	60
LIMBIC MELANOMA IN DOG TREATED BY SURGICAL RESECTION ASSOCIATED WITH ELECTROCHEMOTHERAPY	61
MARSUPIALIZATION OF A CYST OF THE NICTITATING MEMBRANE IN DOG: CASE REPORT	62
MEASUREMENT OF INTRAOCULAR PRESSURE WITH REBOUND TONOMETER IN MARMOSETS (<i>Callithrix jacchus</i> and <i>Callithrix penicillata</i>) OF DIFFERENT AGES AND CIRCADIAN RHYTHM VARIATION.....	63
MICROPHTHALMIA IN DOG WITH MERLE COAT AND HOMOZYGOSIS PHENOTYPE: CASE REPORT.....	64
MICROPULSE TRANSSCLERAL CYCLOPHOTOCOAGULATION IN THE TREATMENT OF CANINE GLAUCOMA.....	65
NEXT GENERATION SEQUENCING HAS BEEN PROVEN TO BE A FAST AND EFFECTIVE TOOL FOR IDENTIFYING FUNGI IN SPIDER'S WEBS PRESENT IN HORSE STABLES.....	66
NODULAR KERATOCONJUNCTIVITIS ASSOCIATED WITH CANINE VISCERAL LEISHMANIASIS.....	67
NUCLEAR STABILIZATION DURING PHACOEMULSIFICATION OF UNSTABLE LENSES IN DOGS	68

OCULAR AND PERIOCULAR ALTERATIONS IN A DOG NATURALLY INFECTED BY <i>Leishmania (Leishmania) chagasi</i>	69
OCULAR CONDITIONS OF THE BARED-FACED CURASSOW (<i>Crax fasciolata</i>) IN CAPTIVITY AT THE BELA VISTA DE ITAIPU BIOLOGICAL REFUGE IN FOZ DO IGUAÇU – PR, BRAZIL	70
OCULAR HETEROTOPIC BONE FORMATION IN A GUINEA PIG - A CASE REPORT WITH 24- MONTHS FOLLOW UP	71
OCULAR MANIFESTATION AS THE MAIN CLINICAL SIGN OF LYMPHOMA IN CATS.....	72
OCULAR MELANOMA IN DOGS AND CATS: EPIDEMIOLOGICAL SURVEY IN PORTUGAL.....	73
OCULAR PARTICULARITIES OF THE BACURAU SPECIES (<i>NYCTIDROMUS ALBICOLLIS</i>): BY LIGHT MICROSCOPY AND SCANNING ELECTRON MICROSCOPY	74
OPHTHALMIC PARAMETERS AND SCHIASCOPIE IN STAFFORDSHIRE BULL TERRIER DOGS	75
ORBITARY EPITHELIAL CYST - CASE REPORT.....	76
OSCAR FISH ELECTRORETINOGRAPHIC ANALYSIS.....	77
PHACOEMULSIFICATION IN FELINE WITH POSTERIOR LENTICONUS: CASE REPORT.....	78
PHACOEMULSIFICATION IN A RABBIT: CASE REPORT	79
PIGMENTARY DISPERSION SYNDROME IN A DOG	80
PIGMENTARY UVEITIS ASSOCIATED WITH IRIDOCILIARY CYSTS IN GOLDEN RETRIEVER: CASE REPORT	81

PRESENCE OF <i>LEISHMANIA spp.</i> ON A DOG'S CORNEA: CASE REPORT.....	82
PRESUMED INHERITED CATARACT IN A 5-MONTH-OLD RAGDOLL CAT: CASE REPORT.....	83
PRIMARY OPEN ANGLE GLAUCOMA IN A CAT - CASE REPORT.....	84
RETROBULBAR HEMANGIOSARCOMA IN A DOG	85
SUBRETINAL TRANSPLANTATION OF HUMAN EMBRYONIC STEM CELL-DERIVED RETINAL TISSUE IN A FELINE LARGE ANIMAL MODEL	86
SURGICAL EXCISION ASSOCIATED WITH CHEMICAL ABLATION WITH TRICHLOROACETIC ACID TO TREAT MULTIPLE AND BILATERAL EYELID APOCRINE HIDROCYSTOMAS IN A PERSIAN CAT: CASE REPORT	87
THE DEVELOPMENT OF THE NORMAL SCHIRMER TEAR TEST RESULTS ALONG THE DOG'S FIRST YEAR OF AGE	88
THIRD EYELID'S LYMPHOMA GUINEA PIG	89
TILAPIA (<i>Oreochromis niloticus</i>) SKIN GRAFT IN DOG CORNEAL ULCER REPAIR: CASE REPORT	90
TRANS-SURGICAL ANALYSIS OF EYELID AND NICTITATING MEMBRANE NEOPLASMS: THREE CASES REPORT	91
TREATMENT WITH HETEROLOGOUS SERUM AND AMNIOTIC MEMBRANE OF KERATOMALACIA AFTER PHACOEMULSIFICATION IN FELINE: CASE REPORT.....	92
USE OF CRYOTHERAPY IN THE TREATMENT OF DISTICHIASIS IN SHIH-TZUS DOGS: PRELIMINARY STUDY.....	93
USE OF GS-441524 NUCLEOSIDE ANALOG IN THE TREATMENT OF FELINE INFECTIOUS PERITONITIS: CASE REPORT	94

USE OF MODIFIED AXIAL ORIS ANGULARIS RETAIL: CASE REPORT	95
USE OF PORCINE SMALL INTESTINAL SUBMUCOSA MEMBRANE IN FULL AND PARTIAL THICKNESS CORNEAL LESIONS IN DOGS.....	96
VIRAL PAPILLOMA IN THE BULBAR CONJUNCTIVA OF A DOG - CASE REPORT	97

ANALYSIS OF miRNA EXPRESSION IN DOG LENSES WITH IMMATURE AND MATURE CATARACTS

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ABSTRACT: Purpose: To analyze the global expression of miRNAs in dog cataract lenses (immature and mature) compared to normal dog lenses. **Methods:** Fragments (5mm) of the anterior capsules (capsulorrhexis) were obtained by phacoemulsification surgery and were frozen at -80°C. Three study groups were established: immature, mature and control cataract, composed of 5 samples (pool), each. Total RNA extraction was performed using the miRVANA miRNA Isolation kit (Life Tech®). The amount of RNA was evaluated by spectrophotometry (Nanodrop). Transcriptomic analysis was performed using Affymetrix® GeneChip miRNA 4.1 Array Strips, following the manufacturer's protocol. The samples were identified, hybridized, and scanned in the GeneAtlas equipment (Affymetrix®). After normalization with the Expression Console Affymetrix® program, the Affymetrix® Transcriptome Analysis Console (TAC) program was used to analyze the differential expression of miRNAs (ANOVA with p-value correction by Benjamini-Hochberg-FDR, for multiple analyses). **Results:** Two canine miRNAs differentially expressed between the control and immature groups were identified. The *cfa-miR-1307* and *cfa-miR-450b* miRNAs are down-regulated in the immature group, therefore, less expressed. The mean expression of *cfa-miR-1307* in the immature group was 1.42 ± 0.18 , and in the control group 2.6 ± 0.32 ($P=0.0016$ and fold change = -2.26); and the mean expression of *cfa-miR-450b* in the immature group was 1.19 ± 0.89 , and in the control group 3.54 ± 0.28 ($P=0.0097$ and fold change = -5.11). **Conclusions:** It is possible to make predictions by homology in other species, due to the high conservation of genomes. In humans, for example, these miRNAs identified are related to approximately 300 different metabolic pathways, enabling future studies in an attempt to elucidate the etiopathogenesis involved in dog cataracts.

Key Words: miRNA, cataract, dog.

APPLICATION OF ENUCLEATION AND EXENTERATION TECHNIQUES IN *Cavia porcellus*

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ABSTRACT: Ocular proptosis is among the most recurrent ocular affections in *Cavia porcellus*, occurring from different causes. In this species, displacement of the eyeball may occur due to internal compression caused by the tooth root. The aim of this paper is to report two cases of enucleation and exenteration for correction of ocular proptosis secondary to acquired dental disease syndrome (ADDS). **Case report:** Two guinea pigs were treated with proptosis of the right eyeball, consanguineous and were affected by dental disease, with tooth root growth of the premolars and reserve crowns, with an aspect of dental intrusion, and alteration of the table occlusal of molars and premolars, promoting force and expulsion of the eyeball. As there was no tissue viability, they were submitted to surgery with enucleation and exenteration techniques and collections of secretion for culture with antibiogram in the pre- and intraoperative period and histopathology of the ocular tissues were performed. **Results:** The application of surgical techniques proved to be effective for the correction of the installed pathology, with effective healing and aesthetic character. The result of bacterial cultures was positive for only one of the animals, with results of *Staphylococcus* sp. negative coagulase and *Aeromonas* sp. pre- and trans-operatively, respectively, being sensitive to the antibiotic of choice. In addition to demonstrating tissue alterations compatible with panophthalmitis and squamous metaplasia, both course with a neutrophilic character. **Conclusions:** It is concluded that the techniques of enucleation and exenteration are effective in correcting proptosis, and ADDS is one of the main causes of this disease in this species, so clinical follow-up is essential to prevent and/or contain the worsening of the syndrome, preventing the evolve with the need to remove the eyeball.

Key Words: Guinea pig, eye prosthesis, enucleation, exenteration.

**ASSESSMENT OF TEAR FILM OSMOLARITY USING THE IPEN®VET
OSMOMETER IN PUG AND SHIH-TZU DOGS WITH AND WITHOUT
KERATOCONJUNCTIVITIS SICCA**

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ABSTRACT: Purpose: To establish tear film osmolarity values in Pugs and Shih-Tzus, with and without keratoconjunctivitis sicca (KCS). **Methods:** A total of 82 adult dogs were evaluated. Fifteen healthy Pugs and 15 healthy Shih-Tzu dogs as well as 22 Pugs and 30 Shih-Tzus with signs of KCS STT-1 ≤ 10 mm/min were enrolled in the study. The inclusion criteria for the healthy group was a Schirmer tear test (STT-1) ≥ 15 mm/min. The inclusion criteria for the KCS group was STT-1 ≤ 10 mm/min. All animals underwent complete ophthalmological evaluation besides the specific tests STT-1 and tear film osmolarity (TFO). Dogs with other concurrent eye diseases such as corneal ulcers, uveitis or glaucoma were excluded from both groups. **Results:** Mean TFO in Pugs with healthy eyes was 317.26 ± 6.34 mOsm/L OD and 319.06 ± 5.70 mOsm/L OS and in the Pugs with KCS was 352.86 ± 17.47 mOsm/L OD and 353.54 ± 15.73 mOsm/L OS. In the normal Shih-Tzus the mean TFO was 315.26 ± 6.02 mOsm/L OD and 317.46 ± 5.93 mOsm/L OS and with KCS dogs was 353.13 ± 16.18 mOsm/L OD and 351.70 ± 18.53 mOsm/L OS. In both situations it was observed a significant increase ($P < 0.001$). There was a moderate negative correlation between STT-1 and TFO in the dogs with KCS. No significant difference between the mean TFO in the studied breeds was noted. **Conclusions:** The present study indicated the potential value to determine reference TFO values to diagnose immune-mediated KCS in dogs, especially in brachycephalic breeds. However, it was not possible to determine a reference value.

Key Words: dry eye, dogs, osmolarity, ocular surface, canine.

ATYPICAL FIBROEPITHELIAL POLYP IN THE CORNEA OF A LHASA APSO DOG: CASE REPORT

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ABSTRACT: Purpose: Describe ocular and histopathological changes of an aggressive corneal fibroepithelial polyp in a dog. **Case report:** A 20-year-old Lhasa Apso dog with a history of progressive corneal neof ormation in the right eye for four months. **Results:** In the right eye Lacrimal Schirmer Test: 20mm/min and intraocular pressure 10 mm/Hg were verified. The biomicroscopy showed mild mucopurulent discharge in the nasal area, nodule in the lower eyelid (± 3 mm), moderate conjunctival hyperemia, corneal vascularization and edema between 12 and 5h, presence of a reddish proliferative mass in 3h affecting anterior stroma and lens opacity was observed. In the left eye only lens opacity was present. Due to the presence of the neof ormation in the cornea, the patient was submitted lamellar keratectomy to excise the mass. The tissue was then submitted to histopathology. The histopathological examination showed a proliferation of fibrous component with areas presenting reactive fibroblasts, with acidophilic cytoplasm s and with low volume and slight vascularization, presence of hyperplasia of the lining epithelium and cells with round to oval nuclei, with inconspicuous nucleoli, compatible with fibroepithelial polyp, without evidence of malignancy. After 18 months, the patient presented a recurrence with a history of slow evolution (about ten months). Histopathological evaluation was performed again and the findings were similar to the initial lesion. **Conclusion:** Based on histopathological and ophthalmic findings, we can conclude that this is a fibroepithelial polyp with recidivating features, not described yet in the veterinary ophthalmology literature, with an atypical presentation affecting the cornea.

Key Words: Fibroepithelial, polyps, corneal, dog.

BACTERIAL DIVERSITY IN DOGS WITH CORNEAL KERATITIS BY HIGH-THROUGHPUT SEQUENCING OF 16S rRNA AMPLICONS

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ABSTRACT: Purpose: Describe the bacterial microbiome from the ocular surface of dogs with healthy eyes and, dogs with ulcerative keratitis through analysis of rRNA16S. **Methods:** Ocular surface swabs were collected from 12 dogs, with healthy eyes (randomly selected among 49 dogs), G1 group and eight dogs with corneal keratitis, G2 group. Swabs were used for bacterial isolation, morphotintorial evaluation, and total DNA extraction. The V4 region of the 16S rRNA gene was amplified by PCR and sequenced by high-performance sequencing. Fastq sequences were imported into QIIME2 for analysis. The Shannon diversity index of the two groups was evaluated using the Mann-Whitney test (p-value 0.07) using the R package (4.0.2). **Results:** 16S rRNA analysis identified a variety larger than the culture. The diversity in healthy eyes revealed a predominance of *Pseudomonas* (51.98%), *Staphylococcus* (10.08%), and *Acinetobacter* (9.84%), and eyes with ulcerative keratitis *Pseudomonas* (44.21%), *Acinetobacter* (11,77%) and *Bacillus* (8.92%). Five hundred fifty-seven different Amplicon Sequence Variant (ASVs) were identified; among them, 237 ASVs were observed in G1, 108 in G2, and 212 ASVs were found in both groups. **Conclusions:** The species identified with the highest incidence of ASVs in G1 group were *Mycoplasma fastidiosum* and *Pseudomonas thermotolerans*, and in G2 group were *Streptococcus canis* and *Brevundimonas olei*. The ulcerated eyes showed a different bacterial composition from healthy eyes, although no statistical difference was found between them. **Key Words:** microbiome, ocular surface, dogs, ulcerative keratitis, 16S rRNA

Note: Approval of the Ethics Committee (CEUA/UNB)

BILATERAL CONGENITAL RETINOPATHY IN A GERMAN SPITZ DOG: CASE REPORT

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ABSTRACT: Purpose: To report a bilateral retinopathy in a German Spitz dog. **Case report:** A 4-months year-old dog, male, German Spitz breed was referred to the Veterinary Ophthalmology Service with a history of blindness. At anamnesis was observed difficulty in orientation and obstacles test. Patient underwent ophthalmic examination through slit lamp biomicroscopy, chromatic pupillary light reflex, rebound tonometry, retinoscopy with Volk iNview camera, ultrasonography, electroretinography and optical coherency tomography (OCT). **Results:** Ophthalmic exam showed bilateral mydriasis, absent of menace response test, dazzle and pupillary light reflex. During fundus examination, the right eye optic disc was not seen but retinal blood vessels were present. Left eye's optic disc was also not seen, but tapetal fundus was colored green without retinal blood vessels in this eye. Ultrasonography did not reveal retinal detachment. Under OCT the optic discs from both eyes were not found, retinal blood vessels were also absent in left eye. Bilateral visual impairment was diagnosed. **Conclusions:** This report describes bilateral optic nerve hypoplasia (ONH) and the importance of an ophthalmic examination in puppies in view of possible congenital retinopathies as well as describing the ophthalmic, ultrasonographic and OCT changes. This is probably the first case of optic nerve hypoplasia associated with retinal changes described in the literature in German Spitz dog.

Key Words: Blindness, optic nerve hypoplasia, dog, german spitz.

**BILATERAL UVEITIS SECONDARY TO MULTICENTRIC HEMANGIOSARCOMA
IN DOG: CASE REPORT**

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ABSTRACT: Uveitis is an intraocular inflammation of infectious, autoimmune, idiopathic and/or neoplastic etiology. Hemangiosarcoma is the second metastatic neoplasm that most affects the eye. The objective was to report a clinical case of bilateral uveitis secondary to a multicentric hemangiosarcoma. **Case report:** A nine-year-old female Yorkshire dog was referred to the Visãovet Clinic with blepharospasm and hyphema in the right eye (OD). In ophthalmic examination, the intraocular pressure (IOP) was 14mmHg (OD), and 12mmHg in left eye (OS). The primary diagnosis was hypertensive uveitis in OD. Prednisolone 1% eye drops were prescribed four times a day and topical dorzolamide 2% twice daily, both in the OD. Blood count, biochemical and serological tests were requested for infectious and contagious diseases, without any changes. Seven days later, the patient showed no improvement, starting uveitis with hyphema in the OS, in addition to respiratory difficulty. Imaging exams were then performed to identify the presence of neoplasms in the heart, lungs, liver and kidneys. **Results:** After the aggravation of the respiratory condition, euthanasia was chosen. At necropsy, multicentric hemangiosarcoma was identified, with bilateral uveitis being caused by metastases. **Conclusion:** This case demonstrates the importance of complementary exams to identify the etiology of uveitis and that some neoplasms can cause bilateral eyes metastases.

Key Words: dog, uveitis, hemangiosarcoma.

**BLEPHAROPLAST COMBINED WITH CARBON DIOXIDE CRYOSURGERY
COMBINED WITH FOR RESECTION PALPEBRAL MELANOMA IN A RABBIT:
CASE REPORT**

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ABSTRACT: The aim of this paper is to report a surgical case of palpebral melanoma in a lagomorph. Melanoma is an extremely rare and a highly malignant kind of tumor in rabbits regardless its pigmentation status. **Case report:** A 7 yo male Lion breed with good corporal condition was brought for ophthalmic evaluation a 0.9mm black lesion compromising the medial palpebral commissure of the right eye. A dermoscopy evaluation was performed, as well as hematological and biochemical tests, a toracic radiography and an abdominal ultrasonography. Surgery was performed using pentagonal wedge resection and a recommended safety margin of 5mm was guaranteed. Additional cryosurgery was performed with double freeze-thaw cycle, using a CO₂ cryo-unit (Cryofast CT 908 Alimed, Brazil), 3.2mm retinal cryoprobe tip, to create a hairless palpebral margin. In the skin edge it was applied the freezing time at 60 seconds. Postoperative care consisted of antimicrobial ointment applied in the surgical wound and in the eye. Orally meloxicam (0,5mg/kg, every 24 hours, for three days), enrofloxacin (5mg/kg, every 12 hours, for 5 days) and dipyrone sodic (25mg/kg, every 8 hours, for three days). **Results:** Histopathological evaluation diagnosed na epithelioid melanoma. The palpebral function and aesthetics were preserved. Swelling and redness were resolved within 10 days and there was no evidence of corneal ulceration. The 1-year follow-up showed no clinical evidence of tumoral recurrence. **Conclusion:** The palpebral blepharoplasty followed by cryosurgery was a simple, quick and low cost alternative to avoid the complications of the trichiasis induced by palpebral resection.

Key Words: cryotherapy, neoplasm, eyelid, trichiasis, lagomorphs.

CANINE CORNEAL SQUAMOUS CELL CARCINOMA: CASE REPORT

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ABSTRACT: Corneal squamous cell carcinoma (SCC) is an epithelial cell neoplasm. A malignant disorder is uncommon in dogs. Brachycephalic breeds with a history of chronic keratitis, exposure ultraviolet radiation, and trauma are predisposed. Treatment consists of surgical removal combined with adjuvant therapies. The objective was to report occurrence of SCC in cornea of a dog. **Case report:** A 10-year-old female Shih Tzu with single eye (OS) was examined at a specialized private practice, with a history of keratoconjunctivitis sicca. Ophthalmic examination revealed granulation tissue in central area of cornea measuring about 4 mm in diameter, keratitis, mucopurulent secretion, conjunctival hyperemia, and negative fluorescein test result. Treatment with steroidal anti-inflammatory eye drops and lubricants was instituted for 1 month, addition to continuous topical immunomodulatory drug. After 15 days, the patient returned and a subconjunctival injection of corticosteroid was administered. After 30 days, the inflammatory condition had improved. Five months after, however, there was a relapse of granular tissue formation. After being readmitted, she was put under topical anesthesia, and a fragment removed for histopathological analysis. The results confirmed the diagnosis of SCC. While under general anesthesia an anterior lamellar keratectomy was performed while using surgical microscope, which then followed by cryotherapy with CO₂. **Results:** The animal remains visual despite the central leucoma, and showed no recurrence thus far. **Conclusion:** SCC in the cornea partially responds to the use of topical corticosteroids, but it does recur after discontinuation of treatment. However, anterior lamellar keratectomy combined with cryotherapy is crucial to effectively reduce the chances of recurrence of the condition.

Key Words: carcinoma, cornea, canine, cryotherapy.

CARBON DIOXIDE CRYOSURGERY FOR ADJUVANT TREATMENT OF CORNEOCONJUNCTIVAL HEMANGIOSARCOMA IN A DOG: CASE REPORT

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ABSTRACT: The corneoconjunctival hemangiosarcomas are diagnosed more frequently in dogs than other domestic species. The alone excision commolly implies in recurrence and enucleation. We aimed a case about the treatment for corneoconjunctival hemangiosarcoma using carbon dioxide cryosurgery in dog. **Case report:** A ten-years-old, male, Australian Cattle Dog, with clinical presentation of a reddish mass in temporal conjunctiva extending to cornea in right eye. Realized incisional biopsy to confirm the diagnosis of corneoconjunctival hemangiosarcoma. The surgery was performed with corneoconjunctival resection and safety margin of 4 mm, combined with double freeze-thaw cycle, using a CO2 cryo-unit (Cryofast CT 908 Alimed, Brazil), 3,2 mm retinal cryoprobe tip. In the conjunctival margins was applied the freezing time at 15 seconds, includes limbus and cornea at 8 e 6 seconds with slowly thaw. Gatifloxacin and diclofenac eye drops were prescribed four times a day. Orally, prednisolone 1 mg/kg, every 24 hours during five days. For corneal protection was performed a third eyelid flap during 15 days. **Results:** Histologic examination of the resected mass (3,5x2,0x0,3cm) confirmed hemangiosarcoma. Evaluation of the surgical margins indicated they were clear of any neoplastic cells. In 15 days, the patient was visual, only with a limbal leucoma. The follow-up of 1.5 years was no clinical recurrence tumoral. **Conclusion:** Completeness of surgical excision associated with cryosurgery was effective therapy in the treatment of canine corneoconjunctival hemangiosarcoma, preventing recurrence and loss of the eyeball.

Key Words: cryotherapy, vascular neoplasm, conjunctiva, cornea, canine.

**CARDIOVASCULAR, OPHTHALMIC AND ELECTROLYTE PARAMETERS IN
PREGNANT AMERICAN BULLY DOGS**

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ABSTRACT: Changes in cardiovascular, ophthalmic and electrolyte parameters at the beginning and at the end of pregnancy were evaluated in bitches. **Methods:** The present study aimed to identify changes during gestational times (D0; D30, D40 and D60) in 10 adult American Bully bitches, with a mean age of 22 ± 3.4 months. Rhythm and heart rate data were collected using an electrocardiogram; non-invasive blood pressure values; changes in tear production, intraocular pressure, and corneal sensitivity; as well as the analysis of the main electrolytes involved in maternal and fetal metabolism, mainly sodium, potassium, calcium and phosphorus. **Results:** It was found that systolic blood pressure increased, remaining within the normal range for the species, from D40 to D60 ($P < 0.007$). Electrocardiogram indicates increased heart rate at D60 ($P < 0.001$); and increased duration of P wave and QRS complex in all evaluation periods, compared to expected values for the species. Regarding electrolyte analysis, lower mean sodium values were identified at D30 ($P < 0.009$) and at D40 ($P < 0.01$). Tear production decreased on D60 compared to the other intervals ($P < 0.01$), however, within the normal range for the species. Important electrolyte and electrocardiographic correlations were observed at D30 and D60. **Conclusion:** Although electrocardiographic, cardiocirculatory, electrolytic and ophthalmic alterations were found, they did not affect the physiological state of the animals. However, it should be noted that even with the results, the possibility of pathological changes that may occur during this period justifies the need for follow-up throughout the management of bitches.

Key Words: pregnant, eye, dog.

Note: Approval of the Ethics Committee (CEUA/UNIFRAN)

CHARACTERIZATION OF RETINAL VASCULARIZATION USING VAMPIRE® SOFTWARE AND FLUORESCEIN ANGIOGRAPHY IN HEALTHY RABBITS

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ABSTRACT: Purpose: To characterize the retinal vascularization of healthy rabbits by measuring vascular diameter and fluorescein angiography. **Methods:** 24 healthy adult male New Zealand rabbits were used. Anesthesia was performed with ketamine (40mg/kg) and midazolam (8mg/kg), by the intramuscular route. For photodocumentation a retinograph equipped with angioimage was used. Fluorescein sodium 10%, intravenously, in bolus, at 10mg kg⁻¹ dose was applied. To measure, in pix, the caliber of the vessels the VAMPIRE® software was used and the left veins (SV), right veins (RV), the left arteries (LE) and right arteries (RA) were evaluated. Data were subjected to analysis of variance (ANOVA) followed by Tukey's test with a significance index of 5%. **Results:** The means and standard deviation for retinal vessel diameters were: VS=26.75±4.12, VD=25.80±3.70, AS=15.37±3.6712 and AD=15.66±2.87. There was no significant difference between right and left veins and arteries (p≥0.05). For angiography evaluation nine animals were removed from the study, because it was not possible to evaluate the images of all of them. In the 15 animals evaluated, it was observed, in seconds, that the beginning of the arterial phase averaged 3.26± 1.09, the end 6.86±1.30, totaling a mean time of 3.6±1.05. In the venous phase, the mean values of the beginning, end and total time were 6.86±1.30, 23.53± 8.54, 16.66± 8.0416, respectively. The mean duration of the arterio-venous phase was 37.8667±11.0703 and the mean total angiography time was 61.4±5.74. **Conclusion:** Retinal vessel characterization was possible using the VAMPIRE® and fluorescein angiography in healthy rabbits and the data will serve as a basis for future studies.

Key Words: fundus ocular, retina, habbits, image analysis algorithms.

Note: Approval of the Ethics Committee (CEUA/UNB)

COMPARATIVE ANALYSIS OF HORSES LACRIMAL PROTEOME

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ABSTRACT: Purpose: To perform the comparative analysis of the lacrimal protein profile of horses (*Equus caballus*). **Methods:** Thirty-two healthy horses of the Brazilian race of equestrianism, of both sexes and of different ages were selected. Tear film was collected from the lower lateral meniscus of the eyes, using a graduated glass microcapillary. The animals were divided into 16 groups of two individuals, with uniform characteristics regarding sex and age group. Lacrimal samples underwent trypsin digestion and desalting before being injected into the liquid chromatography-mass spectrometry system. **Results:** Eight age-regulated proteins and 54 sex-regulated proteins were identified; of these, 24 were upregulated in females and 30 were upregulated in males. Eleven proteins were regulated by the interaction of both factors, sex and age. **Conclusions:** The lacrimal proteins identified are related to the defense and maintenance of ocular health, suggesting that these constituents are in higher concentrations in the lacrimal fluid of these animals. In addition, they exhibited different profiles, varying with the age and sex of the individual. Such information may in the future assist in the diagnosis of diseases and point out possible biomarkers.

Key Words: equine, tears, proteome, biomarkers.

COMPARISON BETWEEN REBOUND TONOMETER TONOVET® AND TD800® IN NORMOTENSIVE DOGS

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ABSTRACT: Intraocular pressure (IOP) measurement has an important role in the diagnosis of ocular diseases and monitoring of glaucoma in dogs. The purpose of this study was to compare intraocular pressure obtained by the portable rebound tonometers Tonovet® (ICare- Helsinki, Finland) and TD 8000® (Apramed Equipamentos Oftalmológicos-Brazil) in normotensive dogs. **Methods:** Three hundred and twenty-one dogs (172 females and 149 males) of different breeds and ages, intact and neutered, without ophthalmic lesions related to IOP, were clinically and ophthalmologically evaluated. Their IOPs were collected with both tonometers, bilaterally, and the data were statistically analyzed; 642 ocular measurements were considered. **Results:** The mean IOP reading were 13.73 +/- 4.97 mmHg for Tonovet® and 12.44 +/- 3.21 mm Hg for TD 8000®. Data were analyzed for normality by the Shapiro-Wilk test, not having normal distribution. Then, the data were analyzed using the Wilcoxon test (Wilcoxon Signed-Rank Test). Intraocular pressures obtained with both tonometers were concordant but there were statistically significant differences between the two measuring devices $p < 0.0001$, for the significance level $\alpha: 0.05$. When were tested and correlated with animal's gender, significant differences were not found. **Conclusion:** The Tonovet® measurements were superior to those of the TD 8000® although concordant within normotensive eyes.

Key Words: Rebound, Tonometer, Tonovet®, Td800®, Dogs.

COMPARISON BETWEEN TONOVET, TONOVET PLUS, TONO-PEN AVIA VET AND KOWA HA-2 PORTABLE TONOMETERS IN MEASURING INTRAOCULAR PRESSURE IN CATS

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ABSTRACT: Tonometry is an important exam for measuring intraocular pressure (IOP) that can detect ocular diseases such as glaucoma and uveitis. The aim of this study was to compare the accuracy of four tonometers, for the first time in cats, with different methodologies for IOP measuring, Tonovet and Tonovet Plus (rebound), Tono-Pen Avia Vet (applanation) and Kowa HA-2 (Goldmann applanation). **Methods:** A hundred and eight healthy eyes of fifty-five cats were used. The cats were divided in three studies: ex vivo study correlating the values of manometry versus tonometry and calculating the correlation coefficient (r^2); in vivo study comparing the real IOP (manometry) with tonometers; and an outpatient study in healthy eyes. **Results:** The results obtained in the ex vivo study of (r^2) values in descending order were: Tonovet Plus (0.9248), Tonovet (0.9231), Kowa HA-2 (0.9013) and Tono-Pen Avia Vet (0.8767). The IOP values in mmHg in the in vivo study were: aneroid manometer (16.1 ± 2.7), Tonovet (21.1 ± 3.6), Tonovet Plus (19.7 ± 7.2), Tono-Pen Avia Vet (17.6 ± 7.9) and Kowa HA-2 (16.8 ± 2.0); outpatient study: Tonovet (19.7 ± 6.6), Tonovet Plus (17.1 ± 5.4), Tono-Pen Avia Vet (16.3 ± 4.3) and Kowa HA-2 (14.5 ± 2.2). **Conclusions:** It was concluded that there was a strong correlation between IOP values and manometry in all tonometers. The highest IOP values were with Tonovet and the lowest with Kowa HA-2. All tonometers were accurate in measuring IOP in cats with an excellent correlation coefficient.

Key Words: Rebound tonometry, applanation tonometry, Goldmann tonometry, ocular manometry, cats.

Note: Approval of the Ethics Committee (CEUA)

COMPARISON BETWEEN TONOVET, TONOVET PLUS, TONO-PEN AVIA VET AND KOWA HA-2 PORTABLE TONOMETERS IN MEASURING INTRAOCULAR PRESSURE IN HORSES

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ABSTRACT: The measurement of intraocular pressure (IOP) can be performed in veterinary using different methodologies, especially rebound (Tonovet and Tonovet Plus) and applanation (Tono-Pen Avia Vet) and less used applanation by the Goldmann methodology (Kowa HA-2). The objective was to compare and evaluate the accuracy, for the first time in horses, of all these methodologies in measuring IOP. **Methods:** IOP was measured in 72 eyes of 36 horses. An in vivo study was carried out in sedated horses comparing actual IOP values by manometry versus values measured by tonometry, and a field study with unsedated horses, healthy with normal eyes, using tonometry with different tonometers. **Results:** In the in vivo study, the IOP values in mmHg measured in ocular manometry were: 24.9 ± 4.0 (20.0-30.0) and in tonometry: Tonovet 25.7 ± 5.8 (19.5 -33.0), Tonovet Plus 24.8 ± 7.1 (13.2-33.2), Tono Pen Avia Vet 19.2 ± 4.7 (13.1-26.5), Kowa Ha-2 24.1 ± 1.2 (22.8-25.8); in the field study the IOP values were: Tonovet 30.7 ± 5.6 (21.7-38.0), Tonovet Plus 29.6 ± 6.7 (16.2-38.6), TonoPen Avia Vet 27.3 ± 5.8 (14.6-37.1), Kowa HA 23.4 ± 2.2 (20.2-28.7). **Conclusions:** There was a strong correlation between IOP values and manometry in all tonometers. Higher IOP values were measured with Tonovet Plus and lower values with Tono-Pen Avia Vet. All tonometers used were accurate in measuring the IOP of horses, including the most recent tonometer, the Tonovet Plus, which showed an excellent correlation with manometry.

Key Words: Rebound tonometry, applanation tonometry, Goldmann tonometry, ocular manometry, horse.

Note: Approval of the Ethics Committee (CEUA/UNB)

CORNEAL CARCINOMA EXERESIS: CASE REPORT

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ABSTRACT: Squamous cell carcinomas are malignant keratinocyte neoplasms. The eyelid of dogs is the structure most frequently affected, followed by the conjunctiva, being rare in the cornea. There is an important limitation in clinical treatment. This paper aims to report the occurrence of squamous cell carcinoma in the cornea of a dog removed by the corneconjunctival transposition technique. **Case report:** The neof ormation was delimited with a 6mm surgical punch to the deep stroma. A lamellar keratectomy was performed. Then, transposition of a portion of healthy cornea and the attached bulbar conjunctiva, being sutured to the keratectomy bed. The neoplastic tissue was preserved in 10% formalin. The suture was performed with 10-0 nylon thread, buried and removed on the thirtieth postoperative day. **Results:** Histopathological examination revealed a squamous cell carcinoma. There was moderate corneal vascularization and no stitch dehiscence. Patient evolved in a comfortable way. After 6 months, there is no clinical sign of recurrence. The patient has corneal transparency in the pupillary axis. **Conclusions:** Squamous cell carcinoma poses great risks to predisposed individuals. Its removal through corneconjunctival transposition proved to be an option. The patient has his vision preserved, but he will be under follow-up, due to the nature of the neoplasm.

Key Words: Ophthalmology, surgery, dog.

**CORNEAL SQUAMOUS CELL CARCINOMA ASSOCIATED WITH
PIGMENTARY KERATITIS AND KERATOCONJUNCTIVITIS SICCA IN A DOG:
A CASE REPORT**

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ABSTRACT: Purpose: To report a case of corneal squamous cell carcinoma (SCC) associated with pigmentary keratitis and keratoconjunctivitis sicca in a Pug. **Case Report:** A nine-year-old, 15 kg, male Pug diagnosed with chronic pigmentary keratitis and keratoconjunctivitis sicca under treatment (tacrolimus) for four months. Ocular examination showed the presence of an exophytic irregular pink mass occupying less than 25% of the total corneal surface of the left eye. A SCC was suspected on cytology, and clinical investigations showed no evidence of metastases. Was performed an ultrasound biomicroscopy (UBM) and the corneal mass was surgically removed with a lamellar keratectomy and application of cryotherapy. **Results:** UBM suggested imaging of epithelial neoplasia with stromal invasion. The SCC was confirmed on histopathology. Seven days after the operation, excessive granulation tissue was observed in the medial conjunctiva, responsive to corticosteroid therapy. After lamellar keratectomy, the cornea was healed on the 12th day of postoperative evaluation and showed a minimal level of scarring in a cornea that regained the transparency. **Conclusions:** Until now, the combination of lamellar keratectomy and cryotherapy is an effective therapy for the treatment of SCC and pigmentary keratitis. The patient remains under follow-up.

Key Words: Corneal squamous cell carcinoma, chronic superficial keratitis, cryotherapy, dog.

CORNEAL SQUAMOUS CELL CARCINOMA TREATMENT WITH MITOMYCIN C 0,02% AND DEXAMETHASONE 0,1% IN A DOG: CASE REPORT

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ABSTRACT: Squamous cell carcinoma (SCC) is an uncommon tumor in the cornea of dogs and can lead to severe vision consequences. Chronic exposure of the eye in brachycephalic breeds, exposure to solar radiation, and keratoconjunctivitis sicca may be related to etiopathogenesis. The aim of this study was to report a case of corneal SCC treated with topical mitomycin C 0.02% and dexametasone 0.1% with vision restoration. **Case report:** a French Bulldog, 10 years old, with a history of breast tumor, ulcerative keratitis and reddish mass in the right eye without improvement, was being considered for enucleation by a fellow veterinarian. Proliferation on the cornea of the right eye was observed without signs of ulcerative keratitis without intraocular involvement. Ocular ultrasound and biopsy examinations were requested, but not authorized by the owner. Imprint cytology was performed and a diagnosis of squamous cell carcinoma was obtained. The patient was treated with topical mitomycin C 0.02%, TID for 15 days and dexamethasone 0.1% BID for 20 days with two sets of chemotherapy at 15-day intervals. **Results:** Total remission of the corneal proliferation and return of vision with slight loss of transparency and melanosis were observed. There were no topical or systemic side effects with the use of mitomycin C. **Conclusion:** The possibility of squamous cell carcinoma and the need of complementary tests should be considered in cases of corneal surface proliferation, complementary tests are essential to establish a diagnosis. The use of mitomycin C 0.02% topical solution and 0.1% dexamethasone was effective and safe in the treatment without the need for prior keratectomy.

Key Words: neoplasia, bulldog francês, agente quimioterapêutico.

**CYCLOCRYOSURGERY IN THE TREATMENT OF CANINE GLAUCOMA:
REPORT OF 10 CASES**

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ABSTRACT: Purpose: To report the efficacy of cyclocryosurgery in the adjuvant treatment of glaucoma in dogs. **Methods:** Ten dogs (12 eyes), three males and seven females, diagnosed with glaucoma through routine ophthalmic examination and intraocular pressure (IOP) using a rebound tonometer. As for the glaucoma classification, 5/12 eyes were classified as primary and 7/12 eyes as secondary. The equipment used for cyclocryosurgery was the Cryofast CT 909 (Alimed) with carbon dioxide gas supply (CO₂) that, according to the manufacturer, the temperature reached in the cryogenic pen is -44°C and a working pressure of 52 kgf/cm². Three continuous cycles of 15 seconds with a 5 second pause between them were performed in each application point. In 11 eyes 6 trans-scleral applications were performed in 360°, 3 points in the dorsal region and 3 points in the ventral region, except for the areas 3h and 9h. In one eye only one application point was performed at 12h. The application in all eyes was performed at a distance of 3 to 5 mm from the limbus. Patients were evaluated 7, 15, 30, 60, and 90 days after application. **Results:** Four patients were visual at the time of the ophthalmic exam and remained visual for a period of 90 days. Overall, there was a mean IOP reduction of 25.74% in the treated eyes. Of the treated eyes 50% (6/12) maintained IOP below 25mmHg after 90 days without the use of antiglaucomatous eye drops; other 50% (6/12) even after the cyclocryosurgery there was a need to maintain the treatment with antiglaucomatous associations. **Conclusion:** Cyclocryosurgery proved to be a safe and effective method in the adjuvant treatment for glaucoma. However, a larger number of patients are needed to confirm the real efficacy of cyclocryosurgery.

Key Words: Glaucoma, cryosurgery, intraocular pressure, dog.

DIAGNOSIS OF LEISHMANIASIS THROUGH CONJUNCTIVAL CYTOLOGY IN A FELINE WITH BILATERAL UVEITIS

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ABSTRACT: Leishmaniasis is an infectious-parasitic disease and is one of the main zoonoses in Brazil. Infected cats can develop mucocutaneous lesions, lymphadenomegaly and organomegaly. Ophthalmologic changes include bilateral uveitis with a granulomatous pseudotumoral pattern. The purpose of this report is to describe a case of feline leishmaniasis with ophthalmological alterations whose diagnosis was concluded by means of aspiration cytology of the palpebral conjunctiva. **Case Report:** A 10-year-old female feline of mixed breed was seen at CEMEVA, complaining of an enlarged left eye conjunctiva for 6 months, with previous treatment with tobramycin and 1% prednisolone acetate topically, without success. During ophthalmological evaluation, bilateral conjunctival hyperemia, extensive chemosis in the left eye with abnormal growth of the conjunctiva, corneal opacity, flare +++, iritis with granulomatous aspect in the right eye and bilateral rubeosis iridis were observed, thus concluding a picture of uveitis. **Results:** Hematological laboratory tests were performed with observation of the increase in the number of globulins, in addition to testing for FIV and FELV, which results for both were negative. Material was collected to perform cytology of the palpebral conjunctiva of the left eye, which was hyperplastic; in this material, amastigote forms of *Leishmania* sp. were observed, concluding the diagnosis of uveitis secondary to Leishmaniasis. **Conclusions:** Despite being uncommon in feline routine, this disease can present ocular manifestations. For diagnosis include: serology, bone marrow PCR and cytology. In this report, conjunctival cytology was performed, which proved to be a minimally invasive and useful tool for the conclusion of the case.

Key Words: Amastigote, chemosis, feline, PAAF.

**DIFFUSE PYOGRANULOMATOUS CONJUNCTIVITIS ASSOCIATED WITH
SPOROTHRUX SP INFECTION IN A FELINE PATIENT: CASE REPORT**

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ABSTRACT: Objective: to report a case of diffuse pyogranulomatous conjunctivitis associated with *Sporothrix* sp. **Methods:** A 5 years old feline patient, SRD, female was referred to the veterinary ophthalmology service at Clínica Oftalmocenter Vet (Ribeirão-Preto/SP), with a ventrolateral ocular conjunctiva increase of volume, associated with presence of ocular hyperemia, chemosis, keratic pre-cipitates, paralytic mydriasis, rubeosis iridis, presence of posterior segment bleeding, retinal detachment, and negative menace test in both eyes. Ocular ultrasound exam confirmed bilateral retinal detachment. A surgery to remove the conjunctival nodule was recommended, and referred for histopathological analysis, associated with clinical treatment. **Results:** Histopathological exam revealed similar histomorphological characteristics, showing a marked inflammatory infiltrate formed predominantly by macrophages, neutrophils and some lymphocytes. Special staining with Grocott-Gomori silver nitrate methenamine (GMS) showed yeast-like fungal structures, located both extra and intracellular. Then, fungus isolation was indicated for definitive diagnosis and was confirmed the presence of *Sporothrix* Sp. Systemic treatment was started with itraconazole, 10mg/kg SID, associated with 10% potassium iodide, 5mg/ kg, every 24 hours. Due to the severity of the intraocular inflammation, retinal detachment and bilateral presentation, it was not possible to restore the patient's vision. **Conclusion:** Earlier referral to the specialist could avoid visual loss, as the accuracy of diagnosis and the correct treatment at early stages prevent the disease to progress quickly. We must emphasize that the biopsy and fungal culture was essential for the correct diagnosis, because the clinical signs are similar to conjunctivitis found in the feline species.

Keywords: Fungal conjunctivitis, cats, *Sporothrix* Sp, itraconazole

**DISTINCT OCULAR REPERCUSSIONS CAUSED BY *LEISHMANIA* SPP
INFECTION IN DOGS: FOUR CASES REPORT IN FOZ DO IGUAÇU/PR/BR**

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ABSTRACT: Canine visceral leishmaniasis (CVL) is caused primarily by the protozoan *Leishmania infantum*. It's a zoonotic disease with several clinical signs, including eye injuries. The main characteristics of these injuries are the high incidence, predisposition to the anterior segment of the eye and persistence even with specific treatments. Those eye injuries are the result of direct parasitism and the immune-mediated mechanism caused by the agent. The present study aims to share three types of ophthalmologic repercussions that CVL can cause in dogs. **Case report:** Four dogs were attended from April 2019 to January 2021 where the ophthalmic changes were the main reason for the appointment. Two dogs were diagnosed with anterior uveitis (n=2), one was diagnosed with corneal nodule full of amastigotes forms of *Leishmania* spp (n=1) and one was diagnosed with retinal detachment (n=1). **Results:** All four patients live in an endemic area for CVL. They were staged for CVL based on screening tests, RIFI/ELISA serology, blood test, serum creatinine and total protein. **Conclusions:** The main ocular change caused by CLV is anterior uveitis. Retinal changes are less frequent, but could be associated with posterior uveitis, thrombocytopenia or renal disease. Nodules can be seen in the conjunctiva and cornea. Ocular repercussions can lead to the CVL diagnosis, especially when it's the only clinical sign. Therefore, differential diagnoses for CLV should be considered in cases of anterior and posterior uveitis and corneoscleral nodules.

Key Words: Leishmaniasis, anterior uveitis, posterior uveitis, corneal nodules, dogs.

EFFECT OF DEXAMETHASONE AND TROMETHAMINE KETOROLAC EYE DROPS ON INTRAOCULAR PRESSURE AND BLOOD GLUCOSE LEVELS IN HEALTHY DOGS

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ABSTRACT: Purpose: To evaluate the effect of dexamethasone and tromethamine ketorolac eye drops on intraocular pressure (IOP) and blood glucose in healthy dogs. **Methods:** Thirty healthy mixed breed dogs were used and submitted to a complete ophthalmic examination. The animals were divided into 3 groups, with 10 animals: G1 - sodium chloride 0.9%, G2 - dexamethasone 1mg/ml and G3 - tromethamine ketorolac 5mg/ml, instilled in 01 drop in both eyes, TID for 10 days. The animals were submitted to IOP measurement by rebound tonometry on days 0 (M0), 5 (M5) and 10 (M10), and blood glucose measurement on days 0 (M0) and 10 (M10). All data were subjected to the Shapiro-Wilk normality test and were normally distributed. Only data from the right was used. IOP and blood glucose values were subjected to the T-Student test. Considered significant with a value of $p \leq 0.05$. **Results:** In G1, no significant difference was observed between the evaluated times ($p \geq 0.05$). In G2, significant increase was observed when comparing the means between the moments M0 (12.60 ± 0.96 mmHg) and M5 (13.70 ± 0.94 mmHg) $p = 0.0034$; M0 (12.60 ± 0.96 mmHg) and M10 (14.10 ± 1.19 mmHg) $p < 0.0001$. In G3, significant decrease between M0 (13.20 ± 1.31 mmHg) and M5 (12.10 ± 0.87 mmHg), $p = 0.0087$; M0 (13.20 ± 1.31 mmHg) and M10 (11.50 ± 0.97 mmHg), $p = 0.0029$ and between M5 and M10, $p = 0.0255$ were observed. As for blood glucose, no significant difference was observed in any of the groups ($p \geq 0.05$). **Conclusion:** Dexamethasone and ketorolac tromethamine eye drops alter IOP, but do not influence blood glucose in healthy dogs.

Key Words: anti-inflammatory, glaucoma, dexamethasone, tromethamine ketorolac.

**EFFECT OF OMEGA 3 ASSOCIATED OR NOT WITH THE USE OF 1%
CYCLOSPORINE IN THE TREATMENT OF KERATOCONJUNCTIVITIS SICCA
IN DOGS**

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ABSTRACT: Purpose: The aim of this study was to evaluate the effect of omega 3 alone or associated with 1% cyclosporine, through Schirmer Tear Test (STT-1) and Tear Film Osmolarity (TFO) in dogs with Keratoconjunctivitis sicca (KCS). **Methods:** We evaluated 40 animals, randomly divided into two groups: Group 1 (n = 20): lubricating eye drops based on 0.2% sodium hyaluronate and 0.3% carboxymethyl cellulose at a dose of 1 drop every 8 hours for 60 days + Omega 3 in the ratio EPA: DHA of 33:22 containing Selenium and Vitamin E, one capsule every 24 hours for 60 days and Group 2 (n = 20): same protocol as Group 1, with the addition of 1% cyclosporine eye drops, one drop every BID for 60 days. All animals were submitted to routine ophthalmic examination, as well as STT-1 and TFO, considering time zero (T0) before treatment, (T1) at 30 days and (T2) 60 days after treatment. **Results:** In the evaluation throughout treatment both groups showed significant improvement. Regarding the comparison between groups, Group 2 showed higher absolute values at T2 (15.62 ± 1.00 mm/min), while in Group 1 the mean was 10.15 ± 1.62 mm/min. As for the TFO, the mean values at T2 in G1 and G2 were 294.82 ± 14.82 mOsm/L and 273.25 ± 9.76 , respectively. **Conclusions:** It can be concluded that the association of omega-3 with cyclosporine presents a significant improvement in OFL and TLS-1, when compared to the isolated use of omega-3 with ocular lubricant. **Key Words:** osmolarity, cyclosporine, omega, dry eye, canine.

EFFICACY OF A 0.3% TOBRAMYCIN OPHTHALMIC VETERINARY SOLUTION WITH PERMEABILIZING AGENT IN THE TREATMENT OF EYE DISORDERS IN DOGS AND CATS

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ABSTRACT: Purpose: Conjunctivitis, keratoconjunctivitis sicca and keratitis are common ophthalmic disorders in small animal clinic's that are usually associated with bacterial infections of primary or secondary origin. Thus, the institution of an adequate antimicrobial therapy is crucial to achieve the clinical cure. We aimed to evaluate the efficacy of a 0.3% tobramycin ophthalmic veterinary solution in the treatment of conjunctivitis, keratoconjunctivitis sicca and keratitis in dogs and cats. **Methods:** Thirty-two clinically healthy animals were selected, except for the diagnosis of the respective ophthalmic disorders. Each species was divided into two equal groups: Commercial Product Group (GI) and Test Group (GII). GI were treated with a commercial formulation for veterinary use, while the GII received the 0,3% tobramycin ophthalmic veterinary solution with permeabilizing surfactant agent. Both products followed the same dosage: one drop per affected eye, every 12 hours, until clinical improvement. **Results:** The treatments duration ranged from 9 to 14 days and all animals showed clinical and microbiological cure, verified, respectively, by the clinical signs remission and by the negative results in bacterial isolations with emphasis on *Pseudomonas aeruginosa* one of the most resistant causing keratitis. There were no adverse events, which demonstrated that the 0,3% tobramycin ophthalmic solution, besides being effective, is safe for dogs and cats. **Conclusions:** The 0,3% tobramycin ophthalmic veterinary solution can be considered a valuable tool in the treatment of conjunctivitis, keratoconjunctivitis sicca and keratitis clinical cases associated with different bacterial agents, alternative to human drugs, which don't have tests in the target species.

Key Words: dogs, cats, eye disorders, efficacy, tobramycin.

Note: Approval of the Ethics Committee (CEUA)

**ESTABLISHMENT OF PRIMARY CULTURE OF INTRAOCULAR
MELANOCYTIC NEOPLASMS IN DOGS**

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ABSTRACT: Purpose: To obtain primary cell culture of intraocular neoplasms from dogs, to be further used in the study of novel anticancer therapies. **Methods:** Tumors were obtained from two dogs, with indication for enucleation. Small tumoral fraction was collected for cell culture, being the rest the eye bulb subjected to the histopathological analysis. The collected tissues were dissected into pieces of approximately 1mm. Two culture protocols were tested: enzymatic digestion and explant culture. The tumor fragments were incubated with Trypsin in DMEM culture medium for 60 min with mechanical stirring at 37°C. The digestion medium was collected, centrifuged and the sedimentation fraction was collected. This procedure was repeated three times and the cells collected were cultured in adherent culture conditions, with F12 medium, 10% of fetal bovine serum, 1mg/mL of cholera toxin and antibiotics. After the enzymatic digestion process, the remaining tumor fragments were distributed in a culture dish and maintained with same medium. The biological material was kept in an incubator at 37°C. Cell culture medium was renewed every two to three days and the cultures were monitored by microscopy. **Results:** Histopathological results revealed a melanocytoma and a melanoma. It was possible to obtain high cellularity, and cells with replication capacity in culture. Considering the samples described, explant culture proved to be the most suitable technique for intraocular tissues. **Conclusions:** The present work allowed obtaining a primary cell culture of dogs intraocular neoplasms, which suggests the possibility of using these cells in further studies, such as the evaluation of anticancer therapies.

Key Words: enzymatic digestion, explant, melanocytoma, melanoma.

EVALUATION OF BACTERIAL MICROBIOTA IN CORNEAL ULCERS OF DOGS REPAIRED WITH TILAPIA SKIN GRAFT

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ABSTRACT: Purpose: Corneal ulcer is characterized by a loss of corneal epithelium and activation of stromal fibroblasts, leading to swelling of the stroma and migration of inflammatory cells, with subsequent loss of corneal integrity and transparency. This lesion can quickly become contaminated with bacteria, even after repair, so treatment with antibiotics should always be prioritized. This research aims to evaluate the bacterial microbiota of corneal ulcers in dogs that received the tilapia skin graft for corneal repair. **Methods:** After corneal repair, a sample was collected for microbiological examinations, using a sterile swab, rubbed directly over the central and peripheral part of the ulcer, and transferred to a tube containing Stuart culture medium. For this, all 10 patients underwent topical anesthesia. **Results:** The evaluation of the results suggests that the microbiota site of corneal ulcers repaired with tilapia skin graft deserves constant attention. Despite the low bacterial growth observed, there is a predominance of strains related to the genus *Staphylococcus*, which indicates the need for care and microbiological preventions and precision in the therapeutic prescription of animals affected with this pathology, even after receiving a tilapia skin graft. **Conclusions:** This research was innovative in veterinary ophthalmology, as it elucidated the microbiological scenario of canine corneas repaired with a biotechnological graft.

Key Words: microbiota; tilapia skin; graft; corneal ulcer.

**EVALUATION OF OPTICAL AND MECHANICAL PARAMETERS OF THE IOVET
VETERINARY INTRAOCULAR LENS**

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ABSTRACT: Purpose: Eye diseases in domestic animals leading to vision loss are major challenge. One example are cataracts, a condition that can be surgically corrected by phacoemulsification and implant of an intraocular lens. This paper aims to evaluate the optical and mechanical performance experimental tests of the IOVET intraocular lens made by VIZoo, Brazil (one piece four legs, foldable, 41 D+ measuring 14 mm, dogs only), regarding the parameters of optical quality, suitability to different sizes of capsular bags and capacity for introduction into small incisions. **Methods:** Optical quality was evaluated using the protocol recommended by ISO 11979-2 (Optical Properties and Test Methods). Suitability for capsular bags was tested by simulating mechanical properties using a software of finite elements and bench performance testing. To verify the outcome of the lens in small incisions, tests with 2.4 mm injection systems were performed. **Results:** The results of the optical evaluation demonstrated that the IOVET lenses generated optical quality results with values close to the upper limit of test performance. The evaluation of mechanical compression demonstrated that the lenses are flexible enough to fit in capsular bags up to 2 mm smaller than the lens size. The injection test showed that the parameters regarding the performance, safety and acceptance of the product maintained the requirements established in the project after handling process in 2.4 mm injectors. **Conclusions:** The IOVET intraocular lens showed excellent performance in the evaluated parameters, and it can be used for the purpose of sight restoration of animals.

Key Words: intraocular lenses, optical quality, phacoemulsification, cataract, capsular bag.

**EVALUATION OF THE CORNEAL ENDOTHELIUM OF SHEEP (OVIS ARIES)
USING A SPECULAR MICROSCOPE FOR AN EYE BANK**

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ABSTRACT: Purpose: In human eye banks, specular microscopy is used to assess the corneal endothelium. Based on the results obtained in this examination, the cornea may be considered suitable for optical transplantation. The present study aimed to evaluate and quantify the parameters of the corneal endothelium of sheep using a specular microscope for an eye bank. **Methods:** Twenty-four corneas from 12 male or female sheep (*Ovis aries*) were studied, crossing the Ideal and Corriedale breeds, aged between 12 and 24 months. The eyes were obtained from a licensed Brazilian commercial slaughterhouse. The animals were slaughtered for reasons unrelated to the study. Four photomicrographs of the central areas of each cornea were taken. The parameters analyzed included cell density, mean cell area, polymegathism and pleomorphism. **Results:** The mean endothelial density was $3198,3 \pm 428.3$ cells/ mm². The mean cell area was 318.7 ± 42.3 μm². Polymegathism was 38.0 ± 7.9 . The pleomorphism was 57.7%. Statistical analysis was performed using the Kolmogorov Smirnov test. Then, data obtained from the right and left eyes were compared using Student's t test for paired samples. No significant difference was found when comparing the right eye with the left eye. **Conclusion:** It was possible to photograph and analyze the corneal endothelium of sheep with a specular microscope on an eye bank. Furthermore, it was possible to establish reference values for endothelial parameters with this technique in sheep. **Key Words:** microscopic evaluation. sheep. corneal endothelium.

EXTRAOCULAR POLYMYOSITIS IN DOG

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ABSTRACT: Objective: To present a clinical case of extraocular polymyositis in a dog diagnosed with the use of ocular ultrasonography (US). **Case report:** Patient was referred to the clinic with suspicion of autoimmune disease and was being treated with prednisolone 0.5mg/kg. Clinical examination revealed bilateral exophthalmos, ataxia, muscle pain, apathy and sarcopenia. Bilateral edema in extraocular muscles was verified by US. Muscle biopsy (pterygoid, masseter, or temporal) was recommended, but the owner refused. Prednisolone was adjusted to a dose of 3mg/kg, oral administration, twice a day, for 15 days leaving the diagnosis to be confirmed by therapy. **Result:** After 15 days, the patient did not demonstrate pain, but still exhibited exophthalmos. Medication was administered once a day. On the twentieth day, there was a noticeable improvement in the patient's condition, therefore the dose was reduced to 2mg/kg, once a day, for 7 days, and then changing to 1mg/kg, once a day. After 30 days the patient remained well, but the owner reported that when he stopped administering the medication he noticed swelling at the base of the muzzle and hair loss on the face. Due to the patient's development, the use of prednisolone at a dosage of 1mg/kg, twice a day, was recommended, associated with pentoxifylline 10mg/kg, once a day, for 30 days, eliminating those symptoms. **Conclusion:** The usage of US associated with the clinical signs and the anamnesis was important for the diagnosis and the initiation of the treatment, even with the absence of histopathology. There are few studies and accounts of extraocular polymyositis in dogs, which makes its diagnosis difficult.

Key Words: Exophthalmos, autoimmune diseases, ocular ultrasonography.

**FELINE BLEPHAROCONJUNCTIVITIS CAUSED BY *PROTEUS MIRABILIS*:
CASE REPORT**

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ABSTRACT: Purpose: Blepharoconjunctivitis is a disease that corresponds to eyelid inflammation and can be caused by several factors and the diagnosis of its cause depends on complementary tests. *Proteus mirabilis* is a free-living gram-negative saprophyte bacteria, present especially in organic substances, which has already been described in humans as a cause for necrotizing blepharitis; however, the organism had not been identified in chronic ulcerative blepharoconjunctivitis in domestic cats, which is presented in this study. **Case report:** A male mixed-breed, 9-year-old cat, presented generalized upper and lower eyelid edema, ulceration, crusts, bloody mucus secretion, eyelid fissure closure and ipsilateral nasal discharge for more than 30 days. Collection of cytology, culture and antibiogram, blood count, renal and hepatic function and serology for feline immunodeficiency virus and feline leukemia virus (FIV/FELV) were performed **Results:** Cytology suggested a bacterial inflammatory process, blood count with thrombocytopenia, blood biochemistry without alterations and reagent serology for FIV. In the culture, *Proteus mirabilis* was identified. Treatment started with ciprofloxacin and dexamethasone ophthalmic ointment every 6 hours and amoxicillin with potassium clavulanate. After 3 weeks, there was complete remission of the changes when a new culture was performed and no bacterial agent was isolated with total suspension of treatment. **Conclusions:** *Proteus mirabilis* was identified in blepharoconjunctivitis necrotic and ulcerative, both in humans and in the cat reported in this study, which seems to be a characteristic common to this agent. The importance of identifying the causal agent of blepharoconjunctivitis is evident.

Key Words: Blepharoconjunctivitis, *Proteus mirabilis*, feline.

FELINE CORNEAL SEQUESTRA: A SCANNING ELECTRON MICROSCOPY VIEW

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ABSTRACT: Purpose: To describe the structure of the feline cornea affected by corneal sequestra using scanning electron microscopy. **Methods:** A corneal sample was collected by keratectomy from a 3-year-old male Persian cat, presenting a blackened area from the epithelium to the posterior stroma. Another sample was collected from a 9-year-old female short-haired cat with no ocular alterations immediately after her euthanasia for reasons unrelated to this research. These samples were fixed for 24 h in 2% paraformaldehyde and 2% glutaraldehyde solution in 0.1 M sodium cacodylate buffer, pH 7.2, for 24 h at room temperature (28°). After washing with 0.1 M sodium cacodylate buffer pH 7.2, they were routinely processed for evaluation by scanning electron microscopy (SEM). **Results:** By SEM we observed the structural and lamellar decharacterization of the corneal sequestra sample, the irregular arrangement of collagen fibrils interspersed with amorphous tissue was evidenced in the midst of keratocyte necrosis. Discontinuous membranes were visualized in the portion adjoining the cut area of the tissue, characterizing the sequestration of membranes in the region of the ulcerative lesion. Unlike the other sample, where such fibrils are anatomically arranged in parallel. **Conclusion:** The anatomical irregularity of the cornea, deposition of amorphous tissue and necrosis present in the sample are characteristics of corneal sequestra, this evaluation allows the visualization of these changes more accurately.

Key Words: Cornea, cat, anatomy, ultrastructure, necrosis.

Note: Approval of the Ethics Committee (CEUA/UNB)

FELINE IRIS DIFFUSE MELANOMA: A CASE REPORT

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ABSTRACT: Purpose: Diffuse melanoma of the feline iris (MDIF) is a rare neoplasm that clinically manifests as a slow progressive pigmentation that may develop simultaneously in several areas of the iris. The present report aims to describe a case of MDIF in a 13-year-old female, 4.5 kg, Persian cat. **Case Report:** The main complaint of the owner was a black spot in the animal's right eye. The clinical findings included the presence of a nodule in the region of the third eyelid, a nodule in the dorsal and ventral regions of the eyeball, as well as buphthalmia and central corneal ulcer. With an unfavorable prognosis and presumptive diagnosis of ocular tumor, ocular enucleation was performed and a histopathological evaluation later. **Results:** Histopathological examination revealed a proliferation of neoplastic cells, located in the anterior chamber, posterior and infiltrating the sclera, also proliferating adjacent to the eye. The cells are rounded; have a cytoplasm filled with brownish pigment inside. There was high anisocytosis and anisokaryosis, besides marked karyomegaly and areas of necrosis were observed. **Conclusion:** Melanoma is a potentially malignant primary intraocular tumor that can metastasize to the liver, lung, spleen, lymph nodes, and bone. In cases where there is no progression of the pigmented areas, only monitoring is recommended. However, in more severe cases, with rapid neoplastic progression, enucleation of the affected eye is indicated.

Key Words: Melanoma, neoplasm, iris, feline.

FELINE METASTATIC PERIOcular MALIGNANT PERIPHERAL NERVE SHEATH TUMOR

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ABSTRACT: Purpose: Ocular tumors affect only 0.34% of all cats but may cause vision impairment, blindness, discomfort and eye loss. Malignant Peripheral nerve sheath tumor (MPNST) is a neoplasia arising from perineural fibroblasts, Schwann cells or perineural cells in the neural sheath of peripheral, cranial or autonomic nerves. Since veterinary literature on ocular MPNST is limited, the aim of this report is to present a case of metastatic periorcular MPNST diagnosed immunohistochemically and treated with surgery associated to electrochemotherapy.

Case Report: An 8-year-old, neutered male, mixed breed cat that was previously treated and diagnosed with a cutaneous MPNST in the left upper eyelid presented with a metastatic mass in the respective conjunctiva. The patient underwent orbital exenteration associated to electrochemotherapy, and then follow-up was performed every 3 months. Nine months later, left submandibular lymph node enlargement was noticed, thus lymphadenectomy was performed. **Results:** The first histopathological analysis suggested intermediate grade spindle cell sarcoma. Immunohistochemistry revealed that the tumor was positive for S100 and GFAP markers and negative for CD31, desmin, HHF35, MyoD1 and 1A4 markers, which confirmed it was a MPNST. The second histopathological analysis showed that the upper eyelid and conjunctiva were affected by a neoplasia suggestive of MPNST, without eyeball involvement. Lymph node histopathology corroborated MPNST metastatic disease. **Conclusion:** Surgical treatment associated to electrochemotherapy was effective in controlling local recurrence; however, it did not prevent metastasis. Therefore, follow-up is critical to allowing early detection of cancer relapse.

Key Words: Ophthalmology, schwann cells, cat, oncology, electrochemotherapy, neoplasia.

GRANULOMATOUS PANOPHTHALMITIS IN A PINSCHER DOG: CASE REPORT

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ABSTRACT: Purpose: Phacoclastic uveitis in dogs is related to massive release of crystalline proteins in the anterior chamber, which may exceed the anterior chamber-associated immune deviation (ACAID) phenomena, resulting in cell-mediated response reduction. Our purpose was to describe a panophthalmitis process in a dog with severe clinic and ophthalmic signs, which also required differential diagnosis with neoplasia. **Case report:** A 10-year-old male pinscher was presented with facial asymmetry, exophthalmos, swelling in the right eye region, eyelid edema, panuveitis, mucopurulent discharge, low visual acuity; and during seven days of clinical course worsening was observed. After seven days of systemic (prednisone, amoxicillin-clavulanate, tramadol and dipyrone) and topic ocular (prednisolone and gatifloxacin), there was slight improvement. Ocular ultrasonography showed vitreous chamber with hyperechoic content and loss of definition of intraocular structures. After 21 days of clinical treatment, unsuccessfully, enucleation was performed. **Results:** Histopathology of right eye and orbital content revealed granulomatous panophthalmitis, intense inflammatory infiltration in the cornea, iris, ciliary body, ciliary cleft, choroid, and sclera with involvement of the orbital fat and extraocular muscles, also rupture of the anterior lens capsule and lenticular content in the chamber anterior and vitreous cavity, and absence of infectious agent were observed. **Conclusion:** Due to the initial nonspecific signs of inflammation and infection the differential diagnosis of intraocular or retrobulbar neoplasia was made. According to histologic features no tumor was evidenced. However, granulomatous intraocular inflammation with lens content in atypical locations, such as anterior and vitreous chambers, and extensive extraocular inflammation, suggests a phacoclastic origin for panophthalmitis.

Key Words: Granulomatous, panophthalmitis, phacoclastic, uveitis, dog.

GRANULOMATOUS SCLERITIS WITH INTRAOCULAR INVOLVEMENT IN A CAT

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ABSTRACT: Purpose: To report an atypical case of granulomatous scleritis with intraocular involvement in a cat. **Case Report:** A 12-year-old cat, male, Persian breed was referred to the Veterinary Ophthalmology Service with a history of fungal disease 3 years before the visit, which was treated orally with itraconazole for 3 months and subsequent loss of vision. At anamnesis was reported bilateral eye problem with red eye, discharge and increased eyeball volume. Patient underwent complete ophthalmic examination and ocular ultrasonography due to the opacity of transparent eye' structures. **Results:** In the left eye, mucoid discharge; granulomatous formation of reddish color, vessels in ventral sclerocorneal transition area; moderate diffuse corneal edema and destruction of the uveal tissue were noted. Left eye ultrasound exam showed loss of intraocular architecture, lens luxation, increased echogenicity in the anterior chamber, sclera and of the posterior eye wall. Left eye histopathology revealed mucosal lining epithelium with mild to moderate acanthosis. In sclera an intense mixed nodular to diffuse inflammatory infiltrate was observed, with stretches extending to the uveal region, composed of lymphocytes, plasma cells, neutrophils and histiocytes. There also were patches of pyogranulomatous appearance; a fibrous proliferation and neovascularization. Periodic Acid Schiff (PAS) and Ziehl Nielsen histochemical reaction did not show infectious agents. **Conclusion:** Based on the findings, it was possible to identify an atypical case of granulomatous scleritis with intraocular involvement in a cat. As far as the authors are aware and in the literature search, this is the first report of this type of scleritis presentation in cats.

Key Words: Granulomatous scleritis, feline, eye, ocular ultrasound.

HETEROTOPIC BONE FORMATION IN EYES OF Guinea pig (*CAVIA PORCELLUS*): REPORT OF THREE CASES

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ABSTRACT: Purpose: It is to report three cases of heterotopic bone formation (HBF). **Case Report:** Patients P1, P2 and P3, all of the Abyssinian breed, male, intact, with no history of clinical and/or ophthalmic affections, unrelated, inserted in the same environment, fed pelleted feed, vegetables and fruits and supplemented with minerals and vitamin C were examined following the ophthalmic technique, with the exception of TLS-1. **Results:** PIO: P1-OD12/OE11mmHg, P2-OD11/OE11mmHg, P3-OD11/OE11mmHg (Tonometer of Rebound TD-8000). Negative fluorescein in all eyes and other tests and structures showed no noteworthy changes. In biomicroscopy with slit lamp (Keller PSL Classic) was observed to emerge from the limbic region and of the iridocorneal angle of both eyes of the three patients a structure whitish, demarcated and reflective the light that invaded the anterior chamber and established contact with the iris and corneal endothelium, without important repercussion. The changes observed, combined with the profile of the patients and linked to the history of vitamin C supplementation allows us to infer that this is a FOH, which is characterized by abnormal growth of bone tissue in eyes and muscles, whose diagnosis is made by histopathology of the affected eyes, however, it was not performed in these cases due to ocular viability. **Conclusion:** It is a condition related to the use of vitamin C in doses inadequate, without specific treatment and progressive evolution, which may be course or not with ocular hypertension, which requires ophthalmic follow-up of these patients.

Key Words: Glaucoma, Ciliary Body, Vitamin C, Unconventional Pets.

HISTOPATHOLOGICAL CLASSIFICATION OF 28 EYES ENUCLEATED DUE TO GLAUCOMA

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ABSTRACT: Purpose: This study aimed to report the incidence and histopathological classification of glaucomatous eyes from a specialized veterinary ophthalmology clinic. **Methods:** Ocular histopathology reports with diagnoses of glaucoma from 2017 to 2020 were analyzed and subjected to statistical analysis and subjected to a Spearman's correlation coefficient analysis. **Results:** Twenty-two reports were selected: 14 from unilateral enucleated dogs, 6 from bilateral enucleated dogs, and 2 from unilateral enucleated cats, totalizing 28 enucleated eyes. Of the dogs analyzed, 70% (14/20) were 7 years old or older, 20% (4/20) were mixed-breed, and the Shih Tzu, Poodle, and Lhasa Apso breeds corresponded to 10% (2/20) each. Secondary glaucoma was diagnosed in 70% (14/20) of the dogs, and it was caused by uveitis (79%, 11/14), lens luxation (14%, 2/14), or neoplasia (7%, 1/14). Both eyes were affected in 20% (4/14) of the secondary glaucoma cases. Primary glaucoma was diagnosed in 30% (6/20) of the dogs, all aged 7 years or older; 1 dog was a mixed-breed, 2 Shih Tzus, 1 French Bulldog, 1 Poodle, and 1 Maltese. Primary glaucoma affecting both eyes accounted for 67% (4/6). Among the cats, one was diagnosed with primary open-angle glaucoma and the other with glaucoma secondary to neoplasia. There was no correlation between breed, age, classification of glaucoma and laterality of glaucoma manifestation ($p > 0,05$). **Conclusions:** Although glaucoma secondary to uveitis was the main type, primary glaucoma had a considerable incidence. Histopathological evaluation is an important predictor of bilateral involvement in cases of primary glaucoma. **Key Words:** Glaucoma, ocular pathology, primary glaucoma, secondary glaucoma, dogs.

HOMEOPATHY FOR THE TREATMENT OF MEIBOMITIS IN DOG: CASE REPORT

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ABSTRACT: Purpose: The aim of this report is to demonstrate the successful use of homeopathy for the treatment of meibomitis in dog, whose treatment is commonly based on the application of warm compresses, antibiotics and topical and/or systemic corticosteroids. **Case report:** A 9-year-old female dog, mixed breed, with a history of a nodule in the nasal third of the right upper eyelid measuring 5 mm in diameter for two months. The animal was treated by a colleague for 15 days, with chloramphenicol-based ointment topically, at 6-hour intervals, for 7 days and meloxicam 0.1 mg/kg, VO, every 24 hours for 3 days and warm compresses, with mild improvement, accompanied by progression, itching and self-mutilation. On ophthalmic examination, the bitch presented tearing, meibomitis and mild upper and lower chemosis, with an alopecic nodule in the upper nasal corner of the right eyelid measuring approximately 4 mm and other small spots distributed along the upper and lower eyelids of the same eye. Warm compresses were prescribed twice a day, followed by cleaning with saline solution and, orally, Staphysagria 6CH and Apis mellifera 6CH, 5 drops directly in the mouth, 4 times a day and use of a protective collar. **Results:** Two days after starting the treatment, the owner reported no itching and a progressive decrease in the volume of nodules, and at 20 days the signs had completely resolved. **Conclusion:** Homeopathy, whose cure is based on the “law of similar”, has been shown to be effective in the treatment of meibomite, dispensing with the use of commonly indicated corticosteroids and antibiotics.

Key Words: meibomitis, homeopathy, dog.

IDENTIFICATION OF BACTERIA SPECIES IN SPIDER'S WEBS PRESENT IN HORSE STABLES BY USING NEXT GENERATION SEQUENCING – NGS

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ABSTRACT: Purpose: Horse conjunctivitis is a frequent condition seen in horses and affects animal work performance. It is associated with allergies, contamination, trauma, dryness, among other. Symptoms vary from eye discomfort, redness and discharge. This paper aims an DNA sequencing analyzes – Next Generation Sequencing -NGS – of possible bacteria microbiota found in spider webs, normally present in horses stalls, and can be involved in horses eye infection. **Method:** For DNA sequencing analyzes, spider web samples (n=11) from eleven stalls of two different stables, were collected by swab, and sent to laboratory in a cell lysis buffer solution for NGS analysis, looking for possible bacteria present and identification of gender and species. **Results:** DNA sequencing analysis and bioinformatics revealed a total of 67 different bacterial species in the spider web samples, with highest prevalence of *Brevibacterium epidermidis* (5,9%), *Streptococcus lutetiensis* (5,13%), *Janibacter limosus* (5,1%), *Dietzia maris*. (5.1%), *Brachibacterium sacelli* (3.7%). In other way, four different species of *Acinetobacter* were identified in 4 samples. Three species of *Corinebacterium* were found in 6 samples. Six species of *Pseudomonas* were identified in 7 samples. Five species of *Sphingomonas* were found in 11 samples. Four different species of Staphilococcus were found in 4 samples and two species of *Streptococcus* were found in 10 samples. **Conclusion:** The NGS enabled the identification of genera and species of different bacteria in the analyzed webs, including some of them, considered multi resistant. Such evidence suggests that spider webs can be a potential source of contamination for the eyes of horses in stalls.

Key Words: Bacteria, DNA, NGS, Eye, Ophthalmology, Spider web.

**IMPLANT OF POLYMER POLI (BUTYLENE ADIPATE-CO-TEREFTALATE)
(PBAT) IN THE TREATMENT OF ULCERATIVE KERATITIS IN DOGS**

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ABSTRACT: Purpose: To evaluate corneal healing after keratoplasty with the PBAT membrane, a biodegradable polymer still poorly studied in vivo, which was previously studied by us in rabbit corneas (through interlamellar grafting, and clinical and histopathological evaluation) to assess the biocompatibility of this polymer in the cornea, presenting minimal signs of corneal inflammation. **Methods:** Eighteen dogs of different breeds and sexes were used, presenting deep ulcerative keratitis, descemetocele, or corneal perforation. Nine dogs received a conjunctival graft (control group - CG) and the other nine received a PBAT membrane (treated group - TG). Ophthalmic evaluations were performed at baseline and at 3, 7, 15, 30, 60 and 90 postoperative days. **Results:** In all patients there was corneal healing and resolution of the clinical-surgical picture, and vision was preserved. In the TG, there was no incorporation of the polymer into the cornea during the evaluated period; when removing the stitches, the membrane was also removed. There was no extrusion of the PBAT implant. **Conclusions:** The PBAT membrane provides an excellent mechanical support for the corneal healing of complicated lesions in dogs and can be used in the surgical treatment of ulcerative keratitis in this and possibly other species.

Key Words: Synthetic membrane, corneal ulcer, keratoplasty.

Note: Approval of the Ethics Committee (CEUA)

**INTERFEROMETRY FOR EVALUATION OF THE LIPID LAYER IN DOGS WITH
QUALITATIVE DEFICIENCY OF THE TEAR FILM**

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ABSTRACT: Purpose: Interferometry is an established technique that allows the analysis of the kinetics of the tear's lipid layer and the measurement of its thickness that can aid in the qualitative KCS diagnosis. The objective of this study was to evaluate the thickness of the lipid layer of the tear film of dogs, presenting qualitative KCS, using the interferometric analysis method. **Methods:** 10 dogs with clinical signs of keratoconjunctivitis were evaluated, including mucous secretion, conjunctival hyperemia, opacity and corneal vascularization. No palpebral alterations were observed that justified inflammation of the ocular surface. The interferometric pattern of these animals was evaluated to classify the lipid meshwork kinetics of the tear film, using the ocular surface analyzer (OSA-VET®, SBM Sistemi, Turin, Italy). Through a scale, with the following pattern: faintly visible homogeneous meshwork ($\approx 15-30$ nm), compact meshwork with waves gray ($\approx 30-60$ nm) or meshwork with colored waves ($\approx 60-150$ nm). **Results:** Schirmer's tear test was normal (> 15 mm/min) and the non-contact break-up time values were less than 10 seconds, that suggesting the qualitative KCS diagnosis. All evaluated animals presented a compact or faintly visible meshwork pattern, characterizing a lipid layer thickness lower than 60 nm. Although there is no direct correlation between lipid layer thickness and qualitative KCS, it is observed that its thinning facilitates the evaporation and instability of the tear film. **Conclusion:** Qualitative KCS is a multifactorial disease, therefore all changes in mucosal and lipid composition must be correlated for correct diagnosis and adequate treatment.

Key-words: qualitative KCS, canine, ophthalmology, ocular surface analyzer.

INTRAOCULAR TERATOID MEDULLOEPITHELIOMA IN HORSE – CASE REPORT

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ABSTRACT: Purpose: Primary intraocular neoplasia is a rare disease in equine species. We aimed to describe an intraocular teratoid medulloepithelioma in a mare. **Case report:** The eight-year-old Mangalarga Marchador was presenting with tearing, slight blepharospasm and discomfort in the right eye. Ten days after the onset of clinical signs, a reddish intraocular mass was identified. The mass doubled in size within seven days. The ophthalmic examination revealed a deficit in menace reaction, reddish-brown mass in the medial region of anterior chamber, pinkish mass in the anterior central vitreous chamber, slight serous secretion and reduced pain sensitivity to manipulation. Despite the systemic (flunixin meglumine, for three days) and local (prednisolone, gatifloxacin, for seven days) treatments, improvement was not observed. Ocular ultrasonography showed a hyperechoic mass from anterior chamber to medial anterior vitreous chamber and loss of definition of intraocular structures. Enucleation was performed. **Results:** Histopathological examination revealed intraocular teratoid medulloepithelioma affecting ciliary body and iris, with myxomatous matrix, forming cell cords and numerous rosettes with multiple layers and distinct lumens. Neoplastic cells presented a round nucleus with eosinophilic cytoplasm. Hyaline cartilage islands were observed. **Conclusion:** Surgical removal of the eye is often curative. Although classified as malignant, this tumor usually grows slowly with low metastatic potential (but do not exclude metastasis). After diagnosis, it is suggested to investigate this tumor in related off-spring as described in previous study. Initial nonspecific ocular signs in horses may indicate a serious tumor. Therefore, a rapid diagnostic accompanied by an effective treatment are essential for clinical success.

Key-words: Equine, neoplasia, teratoid medulloepithelioma intraocular.

**KERATOCONJUNCTIVITIS SICCA IN DOGS TREATED WITH CYCLOSPORINE
ASSOCIATED WITH ORAL MUCOSA TRANSPLANT**

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ABSTRACT: Purpose: To evaluate and compare tear production and osmolarity in dogs with keratoconjunctivitis sicca (KCS) treated with 1% cyclosporine associated or not with oral mucosa transplant (OMT). **Methods:** Schirmer Tear Test (STT-1) and Tear Film Osmolarity (TFO) were measured in both eyes in 30 adult dogs before and 20 adult dogs 45 days after treatment. The animals were divided into three groups, (10 dogs for group): control (normal dogs), group I (GI, treated with 1% cyclosporine alone), and group II (GII, treated with 1% cyclosporine associated with oral mucosa transplant). A fragment of labial mucosa was obtained from the inner side of the upper and lower lip at 0.5 cm from the labial commissure. An elliptical cut of 1.0 cm x 0.5 cm was performed and implanted in the upper bulbar conjunctiva. The ANOVA following Turkey test was used to compare the right and left eyes within each group and comparison between groups. $p < 0.05$ was considered statistically significant. **Results:** There were no significant differences between the right and left eyes and the mean STT-1 values between groups ($p = 0.3464$). There was a decreased osmolarity in both groups after treatment. Mean osmolarity in GII (322.60 ± 16.56 mOsm/L) was significantly lower than GI (336.40 ± 5.66 mOsm/L) ($p < 0.0001$). **Conclusion:** The OMT associated with cyclosporine 1% improved the osmolarity of the tear film in dogs with KCS with a seeming synergism between the clinical and surgical treatments. The procedure proved to be feasible and easy to perform in clinical routine.

Key-words: dry eye, osmolarity, tear film, dog, I-PEN[®] VET, Schirmer tear test.

**LAMELLAR KERATECTOMY ASSOCIATED WITH CRYOTHERAPY AND
MITOMYCIN C IN THE TREATMENT OF SQUAMOUS CELL CARCINOMA IN THE
CORNEA OF A PUG DOG - CASE REPORT**

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ABSTRACT: Purpose: To describe the ocular changes, histopathology and treatment in a case of corneal squamous cell carcinoma in a dog. **Case Report:** A 11-year-old Pug dog with a history of progressive corneal neof ormation, with evolution of six months in the right eye. **Results:** At biomicroscopy, nasal corner entropion, moderate conjunctival hyperemia, vascularization and corneal pigmentation were observed and in the central region of the cornea, presence of proliferative and irregular mass of pinkish color. Because of the corneal neof ormation, the patient underwent lamellar keratectomy to excise the mass, followed by cryotherapy using the Pointts® commercial freezing system (two cycles of 40 seconds, with an interval of one minute between cycles). Postoperatively, atropine 1% BID, tobramycin QID and chondroitin sulfate 3% for 15 days were used. After this period the treatment was replaced with prednisolone 1% and mitomycin C 0.03%, both one drop QID for 28 days, two cycles with a seven-day interval between them. On histopathological examination the corneal stroma was intensely infiltrated by lymphocytes and plasma cells, edematous, neovascularized and with intense collagenolysis. Neoplastic cells were observed with intense anisocytosis, anisokaryosis, nuclei with loose chromatin and evident nucleoli, presence of germinative cells breaking the basement membrane and projecting into the corneal stroma, compatible with squamous cell carcinoma with moderate differentiation. After three months the patient did not present recurrence of the lesion. **Conclusion:** The association of cryotherapy, mitomycin C and keratectomy was efficient in the control of the carcinoma in this case.

Key-words: Cryotherapy, carcinoma, Pointts®, dog

**LIMBIC MELANOMA IN DOG TREATED BY SURGICAL RESECTION
ASSOCIATED WITH ELECTROCHEMOTHERAPY**

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ABSTRACT: Purpose: The aim was to report a case of limbic melanoma in a dog, treated by surgical resection associated with electrochemotherapy. **Case report:** A four years old Siberian Husky dog presented a 15 days history of a nodule in the right eye. The ophthalmic examination revealed a flat, pigmented limbic mass. The patient was comfortable, without changes in the other ocular evaluations. Imaging exams did not show any signs compatible with metastases. The mass resection was performed, bleomycin 15000UI/m² was managed intravenously and the surgical bed was exposed to electrochemotherapy at a 750V/cm³. Postoperative treatment consisted of tobramycin and nepafenac in the operated eye, firocoxib and dipyron orally. At fifth postoperative day, there was corneal edema adjacent to the keratectomy and mild conjunctival hyperemia. Histopathology revealed melanoma invading the sclera and damaging the surgical margins. Ninety days after surgery, ocular ultrasound biomicroscopy revealed scar tissue, with no apparent recurrence of neoplasia. At six months after surgery, a capsular cataract presence was observed. A subsequent recheck examination nine months later showed no evidence of tumor recurrence, neither capsular cataract advance, the patient was comfortable and visual. **Results:** The patient had no recurrence of limbic melanoma, neither had side effects from the use of electrochemotherapy. **Conclusion:** The use of electrochemotherapy proved to be efficient as a complementary treatment to surgical resection of limbic melanoma in a dog.

Key-words: limbic melanoma, dog, electrochemotherapy.

**MARSUPIALIZATION OF A CYST OF THE NICTITATING MEMBRANE IN DOG:
CASE REPORT**

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ABSTRACT: Purpose: Prolapse of the nictitating membrane gland (PNMG), is the most common primary disorder of the third eyelid. Development of cysts has been reported as a potential complication after surgical repositioning of PNMG using the conjunctival pocket technique. The purpose of this case report was to describe a surgical technique of marsupialization for lacrimal cyst of the nictitating membrane. **Case report:** A six-month-old male Beagle was presented with a history of a pink mass associated with the right nictitating membrane, occasioning moderate discomfort. The dog's ophthalmic history included previous surgery for PNMG. A conjunctival pocket technique was performed two months previously by the referring veterinarian. Differential diagnosis of this cystic lesion included lacrimal cyst, conjunctival cyst, mucocele, abscess and suture reaction. Cytological examination was compatible with a nonseptic lacrimal fluid. A presumptive diagnosis of lacrimal cyst of the nictitating membrane was made, and marsupialization of the cyst was recommended and planned. **Results:** Two weeks after surgery, moderate hyperemia and swelling of the left palpebral NM conjunctiva were present. Slit-lamp biomicroscopy was unremarkable. Schirmer tear test 1 readings (15 mm/min OD and 18 mm/min OS) were within normal limits. The conjunctival stoma remained patent. One month after surgery, there was no evidence of cyst recurrence, but the NM was still mildly protruding. The owner reported that eyes were comfortable with neither conjunctival redness nor mucous discharge. The stoma site was patent. **Conclusions:** Marsupialization was curative with preservation of the nictitating membrane function and good cosmetic result.

Key-words: Lacrimal cyst, Marsupialization, Nictitating membrane, Dog.

**MEASUREMENT OF INTRAOCULAR PRESSURE WITH REBOUND TONOMETER
IN MARMOSETS (*Callithrix jacchus* and *Callithrix penicillata*) OF DIFFERENT
AGES AND CIRCADIAN RHYTHM VARIATION**

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ABSTRACT: Purpose: Determine the intraocular pressure (IOP) in healthy eyes of black and white tupa marmosets at different ages and the circadian rhythm using rebound tonometry. **Methods:** Fourteen marmosets were evaluated. The division of the groups took into account their ages, GI (38-70 days), GII (224 to 236 days), GIII (three years) and GIV (over 12 years). Three intraocular pressure measurements were taken at the following times: 10 am, 3 pm and 8 pm on the same day. Rebound tonometry was performed in the center of the cornea, with a tonometer perpendicular to the animal, and in both eyes. Statistical analysis was performed using Nonparametric Tests such as Shapiro-Wilk Test and Kruskal-Wallis Test to compare the variation of intraocular pressure according to the period of the day and age group. Mann-Whitney was used to determine gender differences. The level of significance was 5% in all tests. **Results:** The mean IOP for groups were: GI, GII, GIII, and GIV, were 16.1±2.5mmHg, 16.50±3.82 mmHg, 21.2±3.62mmHg, and 15.7±2.82 mmHg, respectively. The values found for the period of the day were: morning 15.7mmHg, afternoon 16.5mmHg and night 18.3mmHg. There were no significant differences ($p>0.05$) in IOP across day periods when compared to the gender of the individuals, the species, or between eyes. There was significant difference in IOP in marmosets with respect to age ($p=0,001$) and circadian rhythm ($p=0,03$). **Conclusion:** The present research showed that rebound tonometry is a safe, reproducible, and well-tolerated method for IOP assessment in marmosets without sedation.

Key-words: marmosets, intraocular pressure, tonometry, TonoVet, Tono Pen Avia®.

**MICROPTHALMIA IN DOG WITH MERLE COAT AND HOMOZYGOSIS
PHENOTYPE: CASE REPORT.**

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Purpose: Merle coat is predictive for ocular malformations, called Merle Ocular Dysgenesis (MOD), in homozygosis it entails a greater chance of anomalies. We report the case of a dog with Merle coat presumed to be homozygous with bilateral microphthalmia. **Case Report:** A dog, Chihuahua, male, 2 years old, Merle coat with a predominance of white, was brought to the veterinary ophthalmology service due to visual difficulty, pupillary alteration, opacity, redness and ocular discharge. Tutor denied hearing impairment. On ophthalmic examination, dyschoric and mydriatic-resistant pupils, positive bilateral threat response and movement, glare reflex, positive consensual and direct pupillary light were observed in both eyes. In the ambulation test with scotopic obstacles, there was no difficulty. Intraocular pressure was 14 and 15mmHg in the right (OD) and left (OS) eyes, respectively. Posterior capsular cataract was seen in the OS. The retinal pigment epithelium was depigmented and without fundus changes. The ocular ultrasound examination, RE and OS, showed, respectively, axial length of the eye bulb of 15.9 and 15.5mm, anterior chamber 2.9 and 3.1mm and lens of 5.6 and 6.2mm. In OS, the presence of internal and topical echoes in the lens was observed. Abdominal echocardiogram and ultrasonography without alterations. **Results:** Although visual, nanophthalmia was ruled out due to dyschoria and cataract. Microphthalmia can occur secondary to MOD and homozygosity is indicated by the predominantly white coat phenotype. In these cases, there may also be hearing alterations, which was not observed in this case. **Conclusion:** Dogs with Merle pelage, especially homozygous ones, should undergo ophthalmic evaluation due to the risk of MOD.

Key-words: microphthalmia, merle coat, ocular dysgenesis.

MICROPULSE TRANSSCLERAL CYCLOPHOTOCOAGULATION IN THE TREATMENT OF CANINE GLAUCOMA

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ABSTRACT: Purpose: The purpose is to describe the clinical application and effect of micropulse transscleral cyclophotocoagulation (MP-TSCP) in dogs with glaucoma, showing the preliminary results in five eyes. **Methods:** Five eyes of four dogs with primary (two eyes) or secondary (three eyes) glaucoma, aged 5-13 years, were treated with Fox laser 810nm MP-TSCP. Laser duty cycle was set to 33,3% and laser power was 2800 mW. Lateral canthotomy was made in only one eye. Laser probe was applied to each hemisphere in a “sweeping motion” for 180 seconds, sparing the three and nine o’clock position. **Results:** Intraocular pressure (IOP) was controlled (< 25 mmHg) in 3/5 eyes (60%) after one procedure within one day post-operatively and remained controlled to the presente day (15-25 days after procedure). One eye (20%) showed loss of IOP control 10 days after procedure and underwent a second laser application, with IOP controlled to the presente day (10 days after second procedure). In unsuccessful eye (20%), laser probe was only applied in one hemisphere, due to difficult to achieve the transscleral site. Short-term complications were rubeosis iridis (60%), neurotrophic corneal ulcer (40%), hyphema 20% and burning at the application site (20%). **Conclusion:** MP-TSCP is a viable tool for managing canine refractory glaucoma, controlling IOP in the majority of patients in this study. Short surgery time and repeatable therapy are advantages, but longer follow-up evaluation and studies in more cases will provide further information in the usefulness of the micropulse laser in veterinary ophthalmology.

Key-words: diode laser, intraocular pressure, dog

NEXT GENERATION SEQUENCING HAS BEEN PROVEN TO BE A FAST AND EFFECTIVE TOOL FOR IDENTIFYING FUNGI IN SPIDER'S WEBS PRESENT IN HORSE STABLES

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Purpose: Ophthalmic diseases in horses affect work performance. Conjunctivitis and keratitis are of great importance and can lead to blindness. Fungal infections are highly prevalent and potentially involved, as previously proven through cultured from the ocular surface of healthy horses, fungi such as *Aspergillus*, *Penicillium*, *Cladosporium* and *Fusarium*, among others, mainly due to the surrounding environment. Next Generation Sequencing (NGS) is a technique that enables the sequencing of multiple genomes (DNA), identifying microorganisms with no need for culture, allowing focus in species. It is a fast and useful tool for the identification of unexpected microorganisms that can be present in eye infections, as well as in environment. This study aimed to evaluate, by using– NGS, the fungal microbiota present in spider webs that are naturally found in horse stables. **Methods:** Spider web samples (n=11) from eleven stalls of two different stables, were collected by swab and sent in cell lysis buffer solution for NGS analysis. **Results:** DNA sequencing analysis and bioinformatics revealed 23 different fungal species, with highest prevalence of *Aspergillus amstelodami* (14.7%), *Aspergillus ruber* (13.3%), *Aspergillus cibarius* (12%), *Fusarium sp.* (6.7%), *Penicillium citrinum* (6.7%) and *Cladosporium cladosporioides* (6.7%) in the spider web samples. **Conclusions:** The NGS enabled the identification of genera and species of fungi in the analyzed webs. Such genera are compatible with those identified in previous researches in the ocular conjunctiva of healthy horses, when using culture media. Such evidence suggests that spider webs can be a potential source of contamination for the eyes of stabled horses.

Key-words: Fungi, DNA, NGS, Eye, Ophthalmology, Spider web.

NODULAR KERATOCONJUNCTIVITIS ASSOCIATED WITH CANINE VISCERAL LEISHMANIASIS

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Introduction: Canine visceral leishmaniasis is an endemic anthroponosis in many regions of Brazil. Infected animals present several signs of infection, and ophthalmic alterations are considerably common. The objective of this study is to report on a nodular keratoconjunctivitis case caused by leishmaniasis. **Case Report:** A male, unneutered pug, aged one year and eight months old, presented bilateral conjunctival hyperemia for 30 days and ocular nodules for three days. The ophthalmic examination showed multiple granulomas, concentrated in the limbus, conjunctiva, and a smaller number in the cornea. We collected samples for laboratory tests. **Results:** The immunochromatographic assay, competitive direct enzyme-linked immunosorbent assay (ELISA), and indirect immunofluorescence (RIFI) tests were positive for leishmaniasis. Cytological examination of nodules detected neutrophilic inflammation, without any amastigotes, possibly due to the low parasitism of the collection location. Infectious nodules in the limbus and in the conjunctiva are described in the literature with a differential diagnosis of granulomatous inflammation, spinocellular carcinoma, and nodular granulomatous episcleritis. Based on physical and laboratory examinations, the patient was diagnosed with nodular keratoconjunctivitis caused by leishmaniasis in stage 2. We adopted anti-inflammatory steroid eye drops, miltefosine, domperidone, allopurinol, and immunotherapy with the three doses of visceral leishmaniasis vaccine, as the literature recommends for level 2 of this disease. In 56 days all the injuries disappeared. **Conclusion:** Treatment based on anti-inflammatory, leishmanicidal, leishmaniostatic, and immunomodulatory eye drops was effective for ophthalmic alterations remission.

Keywords: leishmaniasis, dog, nodular keratoconjunctivitis, corneal granuloma.

NUCLEAR STABILIZATION DURING PHACOEMULSIFICATION OF UNSTABLE LENSES IN DOGS

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ABSTRACT: Purpose: The golden standard method of treatment for cataract is surgery by phacoemulsification. It is not uncommon to have lens instability due to zonulopathies and this feature can cause major complications during the surgical procedure and the surgeon must have the right materials and training to help stabilizing the lenses, avoiding the necessity of bigger corneal incisions. **Methods:** Records of cataract surgeries by phacoemulsification of 105 animals using different methods of stabilization including capsular tension rings, lens levitation using cohesive ocular viscoelastic devices (OVDs), and lens capsular hooks were analyzed. **Results:** In 45 cases we had less than 200 degrees of zonulolysis, capsular tension rings were utilized with or without intraocular lens implantation. In total lens luxation (anterior 24 cases and posterior 36 cases) the lens was stabilized using OVDs, intravenous catheters and mainly lens capsular hooks. In all cases there was no need to increase the 3.2 mm clear corneal incision. In six cases lens retained fragments into the vitreous cavity were recovered by pars plana vitrectomy and phacofragmentation. In four cases glaucoma was identified four to six months after the surgery and visual acuity was compromised. In one case there was a focal retinal detachment due to a traction fibrous vitreous band affecting partially the vision. In most of the cases the eyes remained visual after the procedure (follow up of three years) with little intraocular inflammation and normal intraocular pressure. **Conclusions:** Phacoemulsification in unstable nucleus have a high success rate when the proper technique is employed.

Key-words: Cataract, phacoemulsification, unstable lens, dog.

**OCULAR AND PERIOCCULAR ALTERATIONS IN A DOG NATURALLY INFECTED
BY *Leishmania (Leishmania) chagasi***

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Purpose: Canine visceral leishmaniasis (CVL) is considered a public health problem due to its zoonotic potential. The disease can manifest multiple clinical signals, but in some dogs, abnormalities involving the eyes are the very firsts to be noticed by the owners. This study aims to show how the disease can cause the complete involvement of the ocular globe, causing loss of visual function. **Case Report:** A five year old male french bulldog, coming from Campo Grande city, in Mato Grosso do Sul state, was referred to the Veterinary Ophthalmology Service. The owner complained about bilateral eye problems such as vision loss in the left eye and abundant secretion and hyperemia in both eyes. **Results:** Patient underwent complete ophthalmic examination and was observed with severe conjunctival hyperemia in the left eye, corneal edema, diffuse neovascularization, corneal granuloma, chemosis, mucopurulent secretion and blepharitis. Menace response was absent, but the patient had normal dazzle reflex. Despite the treatment, there was no improvement and the patient came back with glaucoma and episcleritis in the left eye. The eye was exentered and histopathological analysis showed histiolymphoplasmocytic proliferative keratitis with abundant structures morphologically compatible with *Leishmania sp.* in the amastigote form. Descemet's membrane was ruptured and there was mild chronic uveitis, anterior synechia, true retinal detachment, and glaucoma with optic nerve cupping. **Conclusions:** Leishmaniasis is an important cause of ocular lesions. For this reason, CVL should be considered in the differential diagnosis of ocular inflammatory lesions in endemic regions, or when animals come from these regions.

Key words: Canine visceral leishmaniasis, ocular and periocular manifestations.

**OCULAR CONDITIONS OF THE BARED-FACED CURASSOW (*Crax fasciolata*)
IN CAPTIVITY AT THE BELA VISTA DE ITAIPU BIOLOGICAL REFUGE IN FOZ
DO IGUAÇU – PR, BRAZIL**

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ABSTRACT: Purpose: To report the biometric and microbiological characteristics, Schirmer's tear Test (STT-1) values, and intraocular pressure (IOP) in bared-faced curassow (*Crax fasciolata*) from the Bela Vista Biological Refuge in Itaipu-PR. **Methods:** We used 16 adult male (n=10) and female (n=6) specimens. All animals were submitted to ophthalmic examination. Analysis of the conjunctival bacterial flora were collected by urethral sterile swabs. The samples were transported in Stuart's medium unto inoculation onto blood agar, chocolate and Macconkey's medium. STT-1; rebound tonometry and measurement of palpebral fissure length (PFL) and corneal diameter were performed. Student-T test with 95% significance level was used for data analysis. **Results:** The most frequent bacterial agent identified was *Enterococcus* sp, in 23.33% of the samples. The STT-1 presented mean values of 4.86 ± 0.86 mm/min. In the IOP evaluation, the mean value was 12.6 ± 1.35 mmHg. As for biometry, the mean PFL was 12.28 ± 0.42 mm and cornea diameter was 10.81 ± 0.41 mm. However, the mean female PFL (11.97 ± 0.35 mm) was significantly smaller ($P=0.0418$) compared to the males PFL (12.45 ± 0.41 mm). **Conclusion:** The parameters obtained provide values of ocular variables that can be used as reference, making the ocular examination in this species more accurate.

Key-words: Galliform, wild bird, Schirmer's tear Test, Intraocular pressure

OCULAR HETEROTOPIC BONE FORMATION IN A GUINEA PIG - A CASE REPORT WITH 24- MONTHS FOLLOW UP

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ABSTRACT: Purpose: Heterotopic bone formation (HBF) is the abnormal growth of the bone in soft tissue. Ocular HBF is frequently reported in guinea pigs (*Cavia porcellus*); however, the affected eyes usually remain healthy without causing discomfort or major ocular consequences to the patient. The objective is to report an unusual case of ocular HBF that progressed to glaucoma and cataract formation in a guinea pig over a 24-month period. **Case report:** A two-year-old male guinea pig was presented with ocular opacities. During ophthalmic examination, white masses were observed in the iris bilaterally. The intraocular pressure (IOP) was normal and there were no other visible abnormalities. According to the clinical findings, the diagnosis of HBF was given. Nine months after the first presentation, the masses were larger; both eyes presented increased IOP, lenticular opacities and excavated optic nerve heads. Ten months later the masses occupied the entire iris and the animal presented corneal opacity, neovascularization and decreased visual acuity. Ultrasound biomicroscopy (UBM) showed: Thickening of both iris with diffuse hyperechogenicity extending to the periphery of the posterior wall. In the anterior chamber, an echogenic collection obliterating the iridocorneal angle, and topical echoes within the anterior capsule and cortex of the lens were present. Clinical and UBM changes were compatible with HBF associated with secondary glaucoma and cataract formation. **Conclusions:** Given the significant progression observed in this case, and a possible link between HBF and secondary ocular diseases, it is advisable to establish regular ocular examinations of affected animals.

Key-words: Heterotopic bone formation, osseous metaplasia, osseous choristoma, guinea pig, *cavia porcellus*.

OCULAR MANIFESTATION AS THE MAIN CLINICAL SIGN OF LYMPHOMA IN CATS

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ABSTRACT: Purpose: Lymphomas are the most diagnosed neoplasm in cats, and correspond to 15% of all feline intraocular tumors. In lymphomas, uveitis can precede systemic involvement or indicate an exclusively ocular condition. The objective of this study is to report an ocular lymphoma in a cat, presenting anterior uveitis as its first clinical sign, which reinforces its importance for the differential diagnosis of the primary cause. **Case report:** An eight-year-old domestic cat, with short fur, positive for FeLV, presented abnormalities in its left pupil. The examination of the anterior eye revealed an aqueous flare, fibrin, and rubeosis iridis. The main differential diagnoses included: infectious, immune mediated, or neoplastic diseases. Screening examinations showed a heterogeneous spleen in the ultrasound and positive serology results for mycoplasmosis. Ocular ultrasound detected homogeneous and diffuse iris thickening in the three o'clock region. Therapies to treat uveitis and mycoplasmosis were adopted. However, iris thickness, ocular hypertension, vision loss, and contralateral iris thickness were aggravated. Left enucleation was performed due to the suspicion of lymphoma. **Results:** Histopathological and immunohistochemical profiles results suggest the diagnosis of large B-cell ocular lymphoma. **Conclusions:** Uveitis can be the first sign of systemic or ocular lymphoma. The initial lymphoma diagnosis can occur after the eye disease is apparent, even if most of the times, the process is considered a systemic disease. We may infer that intraocular lymphomas can precede systemic manifestations more frequently in cats.

Key-words: Ocular lymphoma, uveitis, cat.

OCULAR MELANOMA IN DOGS AND CATS: EPIDEMIOLOGICAL SURVEY IN PORTUGAL

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ABSTRACT: Purpose: The epidemiology of ocular melanoma in dogs and cats in Portugal was assessed. **Methods:** Data collection was carried out through the distribution of an online questionnaire for veterinarians in Portugal. The survey covered the year 2018 and was made available for responses from 2019-2020. **Results:** 47 responses were obtained, representing 5.7% of the return to the survey. A total of 32.61% of the professionals who responded to the survey were located in Lisbon and Vale do Tejo. In canine and feline species, eyelid was the most affected site (62.50%) by general neoplasms, followed by intraocular structures (22.50%). Melanoma occurred more frequently in the intraocular structures. The mean age of dogs and cats affected by melanoma was 9.0 and 9.5 years, respectively. Predominance of breed was non-defined for dogs (37.50%) and all cats were common European (mixed breed, 100%). The diagnosis was made through clinical evaluation and histological examination. Enucleation was the predominant treatment. Metastases reported occurred in the lung, lymph nodes, liver and brain. **Conclusions:** As far as we know this was the first attempt to perform an epidemiological study of the ocular melanomas in dogs and cats. Collaboration of veterinarians was limited, thus, a small number of responses was achieved. Due to the number of participations and responses to the survey, additional studies are essential.

Key-words: epidemiology, questionnaire, ocular neoplasms, ocular melanoma.

OCULAR PARTICULARITIES OF THE BACURAU SPECIES (*NYCTIDROMUS ALBICOLLIS*): BY LIGHT MICROSCOPY AND SCANNING ELECTRON MICROSCOPY

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ABSTRACT: Purpose: To describe the ocular structure of the Bacurau (*Nyctidromus albicollis*) by light microscopy and the corneal endothelium by scanning electron microscopy. **Methods:** Eye samples were collected from three birds of the Bacurau species (*Nyctidromus albicollis*) by postmortem enucleation. These birds were received by the Department of Wild Animals of the Faculdade de Agronomia e Medicina Veterinária/Universidade de Brasília (FAV - UnB), and died for reasons unrelated to this research. A corneal-scleral disc was collected through sections of the perilimbal sclera, fixed for 24 hours in a solution of 2% paraformaldehyde and 2% glutaraldehyde in 0.1 M sodium cacodylate buffer, pH 7.2, for 24 h at room temperature (28°). After washing with 0.1 M sodium cacodylate buffer pH 7.2, it was routinely processed for evaluation by scanning electron microscopy (SEM). Two samples were processed for histopathological analysis, embedded in paraffin and stained with hematoxylin/eosin (HE). **Results:** By SEM we observed the cellular pattern of the corneal endothelium, distribution and characteristics of the cells that compose it. Light microscopy was used to visualize the particular morphological distribution of ocular tissues, such as the structural organization of the cornea, arrangement of the uveal tissues, the pecten, lens positioning and diameter, scleral ossicles and retinal architecture. Artifacts inherent to sample preparation prevented a clear evaluation of the lens capsules. **Conclusion:** Anatomical particularities of the Bacurau cornea were visualized, and the analysis of the corneal endothelium by SEM allows a more precise study of such structure, as well as fostering information about this species.

Key-words: ocular endothelium, bird, bacurau, electron microscopy.

**OPHTHALMIC PARAMETERS AND SCHIASCOPIC IN STAFFORDSHIRE BULL
TERRIER DOGS**

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ABSTRACT: Purpose: This study aimed to standardize ophthalmic parameters and schiascopy (retinoscopy) in Staffordshire bull terrier dogs. **Methods:** Twenty Staffordshire bull terrier eyes were used without distinction of sex and age. The assessed parameters were the quantitative evaluation of the tear film (Schirmer test) and qualitative (tear film breakup time), corneal sensitivity threshold (Cochet Bonnet esthesiometry) and intraocular pressure (applanation and rebound tonometry). In addition, schiascopy and fundscopy were performed. In schiascopy, mydriasis was not performed. **Results:** Fundscopy showed a predominance of 58.34% of optical discs in the tapetal region. There was a statistical difference ($p < 0.001$) between the rebound tonometry (27.95 ± 1.95 mmHg) and applanation (17.80 ± 4.77 mmHg); the mean of the esthesiometry was 1 ± 0.38 cm; the mean of the Schirmer test was 18.25 ± 3.99 ; the average tear film breakup time was 13 ± 1.43 seconds. In schiascopy, the eyes varied between emmetropia and mild hyperopia (0.25 ± 0.25). **Conclusions:** It was concluded that Staffordshire bull terrier dogs varied between emmetropia and discrete physiological hyperopia, the ophthalmic parameters found were not different from those reported for other breeds, except for the time of rupture of the low tear film and the reduced corneal sensitivity.

Key-words: Brachycephalic dogs, lacrimal meniscus, retinoscopy, tonometry.

Note: Approval of the Ethics Committee (CEUA)

ORBITARY EPITHELIAL CYST - CASE REPORT

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Purpose: Secondary surgical complications to enucleations are described in the literature, the main ones are postoperative hemorrhage, medial canthal fistula and zygomatic gland mucocele. Orbital epithelial cysts are described as complications, but they are considered rare and rarely reported. **Case report:** The formation of orbital epithelial cysts is reported after transconjunctival enucleation in two female dogs, one of them German Spitz and the other of mixed breed. Patients were treated due to complaints of increased volume in the region, with no sign of postoperative pain. Ultrasound examinations were performed, followed by liquid collection, cytological analysis, and bacterial culture. The liquid collection of both cases recurred, and the patients underwent surgery, and the presence of a cystic structure was observed. In the histopathological analysis, the material revealed structures that presented a stratified, non-keratinized squamous epithelium, with or without goblet cells. **Results:** The mechanisms of development of these cysts are described as being rare and of uncertain origin, with the possibility of a free fragment of conjunctival tissue to be implanted during the enucleation surgery and later coated as a cyst. Transconjunctival enucleation is a surgical technique in which conjunctival tissues can be incompletely removed. **Conclusion:** Orbital epithelial cysts are rare and as documented in the literature, conjunctival tissues can be incompletely removed and may lead to the development of epithelial cysts.

Key words: epithelial cyst, enucleation, dogs, surgical complications.

OSCAR FISH ELECTRORETINOGRAPHIC ANALYSIS

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ABSTRACT: Purpose: The Oscar fish, *Astronotus ocellatus*, is a cichlid that lives in shallow water, clear and calm environments with a great diversity of colors in conformity with its complex visual structure. Electroretinography is a reliable and non-invasive method that uses electrodes to capture the electrical activity of the retina after light stimulation. The present study demonstrates a simple and rapid protocol for obtaining retinal responses in anesthetized *Astronotus ocellatus*, with complete recovery of all animals after the examinations. **Methods:** 16 fishes, ranging from 3-5 months old, were submitted to general anesthesia with induction and maintenance containing lidocaine 10% (5µg/ml) and propofol 1% (50 µg/ml). One eye of each animal received photopic recordings with intensity of 3 cd.s/m² at 2Hz and 30Hz frequency. Four fishes (one eye) were selected for multi-frequency evaluation, stimuli wavelengths ranging from ultraviolet to infrared. The Nihon Kohdem, Neuropack 2 MEB-7102 A/k equipment was used for recording and stimulation. **Results:** It was possible to record responses in all animals, with "a" (baseline-peak) and "b" (peak-peak) wave amplitude, 8.54±3.89µV and 31.75±12.67 µV for the 2Hz and 11.70±4.9ms for the 30Hz stimuli, and implicit time of "a" and "b" 18.6±5.75ms and 71.72±13.06ms for 2Hz and 33.69±0.74ms for 30Hz stimuli. Multifrequency responses showed higher variation to ultraviolet, and no recordings were obtained when using infrared stimulus. All fishes completely recovered from anesthesia and no death was observed after the procedure. **Conclusion:** The species and protocol studied support the use of the *Astronotus ocellatus* as experimental model in ophthalmology-related research and for ophthalmic clinical assessment of this specie.

Key words: electroretinography, veterinary ophthalmology, visual electrophysiology.

Note: Approval of the Ethics Committee (CEUA)

PHACOEMULSIFICATION IN FELINE WITH POSTERIOR LENTICONUS: CASE REPORT

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ABSTRACT: Purpose: Posterior lenticonus is a congenital anomaly in the shape of the lens with a posterior protrusion of the lens in conical contours. The deformity occurs in late fetal development following normal formation of the lens nucleus. **Case report:** A seven-month-old, male British Shorthair feline was referred to the Visãovet Clinic for evaluation and treatment of a immature cataract in the right eye (OD). Historically, the referring veterinarian had diagnosed incipient bilateral cataract and uveitis OD approximately three months previously. Vaccinations had been performed. The FIV and FeLV testing was negative. Ocular ultrasonographic examination OD revealed a hyperechoic, funnel-cone shape with cortex hyperechogenicity in the lens and incipient nuclear cataract in the left eye. Axial lens thickness was 0,73cm (OE) and 0,87cm (OD). Phacoemulsification was performed OD by stop-and-chop techniques, and the mean ultrasound time was one minute. **Results:** The right eye was diagnosed as having a posterior lenticonus with congenital cataract and there were no complications during phacoemulsification. The patient remained visual during the six months of follow-up. **Conclusion:** Abnormally shaped lens capsule such as lenticonus have all been reported, but this is the first case report of phacoemulsification in feline with posterior lenticonus.

Key-words: Congenital cataract, cat, surgery

PHACOEMULSIFICATON IN A RABBIT: CASE REPORT

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ABSTRACT: Purpose: The aim of this paper is to report a case of unilateral phacoemulsification in a rabbit. **Case report:** A female, seven yo rabbit, Fusy Loop presented mature cataract in the right eye, diagnosed by slip lamp biomicroscopy, rapid evolution was reported by owners. Rebound tonometry in OD was 8mmHg and OS 11mmHg. Electroretinography showed maximal response (OD: 291.39 μ V and 36.50ms; OS: 205.42 μ V and 30ms) with appropriate photoreceptor response. Ocular ultrasonography determined lens thickness of 8.8mm in OD and 7.5mm in OS. Phacoemulsification (AMODiplomax - ALLERGAN, EUA) was performed by stop and chop technique. Three-plane phaco incision of 2.75mm was made followed by trypan blue stain and anterior capsulohrexia of 6-7mm. Then phaco fragmentation was performed and so irrigation and aspiration of cortical material. Intraocular lens was not implanted. At the end of the surgery, anterior chamber was filled with 0.3ml of tPA (25 μ g/0.1ml) and subconjunctival injection of metilprednisolone and gentamicin sulfate was made. The post-operative protocol was made with topical antibiotic, antiinflammatory, antiglaucomatous and tropicamide eye drops. Orally, meloxicam and enrofloxacin was made for five days. **Results:** On the first day of post-operative, the IOP was 10mmHg and a large amount of fibrin and moderate inflammatory reaction in anterior chamber was observed, that in 72hs was resolved significantly. At the eight months follow-up, the rabbit was visual with dazzle reflex, presenting some posterior synechias and minimal posterior capsule opacification. **Conclusion:** Phacoemulsification performed by stop and chop technique showed up a successful method for rabbits cataract extraction.

Key-words: cataract surgery, stop and chop technique, lagomorphs.

PIGMENTARY DISPERSION SYNDROME IN A DOG

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ABSTRACT: Purpose: Pigmentary dispersion syndrome (PDS) is a rare ophthalmopathy that causes melanin deposits in various ocular structures, such as the iris, anterior lens capsule, corneal endothelium and trabecular meshwork, obstructing the drainage of aqueous humor causing glaucoma. **Case report:** An 11-year-old male Shih-Tzu dog presented with bilateral blindness and blepharospasm in the right eye. After ophthalmic evaluation, glaucoma was found in the right eye with buphthalmia and an IOP of 80mmHg. Phthisis bulbi was diagnosed in the left eye. **Results:** The histopathological examination of the right eye revealed absence of intraocular inflammatory process, open iridocorneal angle without change in the diameter of the ciliary cleft, showing melanin granules covering the corneal endothelium (retrocorneal pigmentation), in the pectinate ligament, ciliary cleft, trabecular meshwork, and collecting ducts. Due to the absence of other alterations, a diagnosis of pigment dispersion syndrome as the cause of glaucoma was established. **Conclusion:** This syndrome is well described in humans but rare in dogs and must be differentiated from other changes also called as pigmentary glaucoma such as uveal melanosis and Golden Retriever pigmentary uveitis. It was not possible to determine the cause or if it is a bilateral condition once the contralateral eye was in phthisis bulbi prior the ophthalmic examination.

Key-words: pigmentary dispersion syndrome, pigmentary glaucoma, dog, uveal melanosis, golden retriever pigmentary uveitis

**PIGMENTARY UVEITIS ASSOCIATED WITH IRIDOCILIARY CYSTS IN GOLDEN
RETRIVIER: CASE REPORT**

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ABSTRACT: Purpose: Pigmentary uveitis usually affects Golden Retriever dogs. It is bilateral, no sexual predisposition, frequently presents uveal cysts, resulting in secondary glaucoma. **Case report:** The present report describes a case of pigmentary uveitis with iridociliary cysts, in a Golden Retriever, male, 10 years old. The patient presented IOP of 14 mmHg, conjunctival hyperemia, cataract, dyscoria, negative fluorescein test and pain in the left eye (OS). The ocular ultrasound presented retinal detachment, iridociliary and subretinal cysts, posterior synechia and bulging iris. There was also uveal cyst in the right eye (OD) with no clinical sign. It was initially prescribed prednisolone 1% eye drops QID. After 17 days, the patient presented buphthalmia, which worsened the eye pain, bulging iris, and IOP of 55 mmHg (measured using Tonovet Plus). Then, was prescribed dorzolamide 2% TID, latanoprost 0,005% TID and kept prednisolone 1% QID. Twenty-five days later the IOP increased to 62 mmHg in the OS. Besides that, the patient had other health problems and the owners decided to euthanize. **Results:** The post-mortem OS histopathological examination showed a large cyst structure located in the anterior chamber, causing anterior iris displacement and iridocorneal angle reduction. **Conclusion:** In this case the patient presented secondary glaucoma associated to the cysts in the anterior chamber, causing iridocorneal angle obstruction, main finding of the pigmentary uveitis. The clinical therapy was not effective, and enucleation was vital to confirm the diagnosis.

Key-words: Cyst, glaucoma, buphthalmia, dog, uveitis.

PRESENCE OF *LEISHMANIA* spp. ON A DOG'S CORNEA: CASE REPORT

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ABSTRACT: Purpose: Leishmaniasis is a systemic parasitic disease potentially associated with ophthalmic manifestations. This study reports the presence of *Leishmania* spp. on a dog's cornea. **Case report:** A female 16-year-old dog with a history of leishmaniasis, treated with established protocols for the condition, presented with visual difficulty and the presence of exuberant tissue in the cornea of both eyes. The animal was in good general condition, but exhibited reddish proliferation throughout both corneas and tearing. An ocular cytology imprint was performed and the presence of active chronic inflammation was diagnosed as an amastigote form of *Leishmania* spp. **Results:** A single subconjunctival application of 0.3 mL methylprednisolone acetate and topical 1% prednisolone solution four times a day in both eyes was performed. On the tenth day of treatment, the animal exhibited no visual difficulties, with a significant reduction in the exuberant tissue present in the cornea. The animal was referred to the clinic for follow-up and initiation of systemic treatment. **Conclusion:** Animals can develop ophthalmic manifestations from leishmaniasis, without any other apparent systemic signs, and cytology is an extremely important test for their accurate diagnosis and the initiation of systemic treatment. The adopted therapy exhibited efficacy, allowing a return of visual acuity and quality of life to the animal.

Key-words: ocular cytology, ophthalmic manifestations, ocular parasite.

PRESUMED INHERITED CATARACT IN A 5-MONTH-OLD RAGDOLL CAT: CASE REPORT

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ABSTRACT: Purpose: To report a rare case of juvenile cataract in a Ragdoll cat, which is presumed to be inherited. **Case report:** A five-month-old neutered female Ragdoll cat was presented with leukocoria in right eye (OD) since it was acquired 10 days before evaluation from a cattery. Ophthalmic examination revealed lenticular opacity in the anterior capsule OD and lenticular opacity in the anterior and posterior cortex of the left eye (OS). Menace response was negative OD and positive OS. Both eyes had positive dazzle reflexes. Tropicamide 1% eye drop was used to induce mydriasis before examination. Ocular ultrasound showed bilateral internal and topical echoes within the lens; the right lens had axial and equatorial length of 7.7 mm and 10.7 mm, respectively. The left lens axial length was 6.1mm. Clinical and ultrasonographic changes were compatible with intumescent mature cataract OD and immature cataract OS. The patient returned after 45 days with hypermature cataract with peripheral cortical resorption OD; OS was unchanged. Follow-up ultrasonographic evaluation demonstrated reduced axial length of 4.3 mm and posterior capsule flattening of the right lens; the left lens had irrelevant changes. Based on the tests results, location of the opacities, age at diagnosis and progression of the disease, a diagnosis of presumed hereditary cataract was made. Because it may undergo significant reabsorption, without causing uveitis, treatment with phacoemulsification surgery is controversial. **Conclusions:** Juvenile cataract in this young cat may be an inherited disease. Genetic testing, which is currently unavailable, is still needed to confirm the hereditary nature.

Key-words: inherited cataract, lens, Ragdoll, cat.

PRIMARY OPEN ANGLE GLAUCOMA IN A CAT - CASE REPORT

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Purpose: Describe a rare case of primary open angle glaucoma in a cat. **Case report:** A 12-year-old, neutered, mixed-breed, male cat was attended for complaining of conjunctival hyperemia and ocular secretion in the right eye (OD). Congestion of the episcleral vessels, mydriasis, epiphora, absence of direct and consensual pupillary reflex, absence of response to threat and cupping of the optic disc were detected. Intraocular pressure (IOP) values was 29 and 19 mmHg in the OD and left eye, respectively. Topical treatment was instituted with prednisolone acetate 1% BID and brinzolamide 1% TID. After 15 days, the IOP of the OD was 24mmHg. The owner did not follow up and returned after 8 months with OD showing corneal perforation. The OD was enucleated and performed histopathological evaluation, and primary open-angle glaucoma was diagnosed. An open drainage angle was revealed, with no changes in the ciliary cleft/trabecular meshwork and with changes in the collagen adjacent to the vessel walls of the intrascleral venous plexus. The retina showed a decreased concentration of ganglion cells. There was no uveal inflammatory process or lenticular alterations. **Results:** The histopathological findings corroborate the characteristic presence of myxomatous tissue surrounding the venous plexus, with an open iridocorneal angle and, therefore, without changes at gonioscopy, making accurate diagnosis before histopathology impracticable. **Conclusions:** Although rare, primary open angle glaucoma should be considered a differential diagnosis of glaucoma in cats. As it is a post-trabecular alteration, gonioscopy does not provide the diagnosis and histopathology is an important tool for accurate diagnosis.

Key-words: drainage angle, cat, funduscopy, ocular histopathology.

RETROBULBAR HEMANGIOSARCOMA IN A DOG

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ABSTRACT: Purpose: The purpose of this study is to describe a rare case of retrobulbar hemangiosarcoma. **Case Report:** A nine-year-old Cocker Spaniel male dog was presented for evaluation with a progressive exophthalmos of the right eye for ten days. The clinical examination revealed mild pain, exophthalmia, strabismus and resistance to retropulsion. Ultrasonography revealed the presence of a hypoechoic retrobulbar neof ormation, and fine-needle aspirate and cytological evaluation was inconclusive. CT scan indicated an extensive orbital neof ormation and invasion of retrobulbar space leading to exophthalmia of the right eye. Orbital exenterating was performed and the material was sent to anatomopathological examination. **Results:** The histopathological exam revealed neoplastic epithelioid cells forming innum erous irregular blood vessels compatible with orbital hemangiosarcoma. **Conclusion:** Primary retrobulbar hemangiosarcoma is a rare neoplasia and should be considered as differential based on the clinical findings, median age, and sex distribution. CT scan was more useful in determining tumor extent compared to ocular ultrasound. Surgical procedure with a safety tissue margin has shown adequate treatment with no recurrence to date.

Key-words: case report, hemangiosarcoma, retrobulbar neoplasia, dog

SUBRETINAL TRANSPLANTATION OF HUMAN EMBRYONIC STEM CELL-DERIVED RETINAL TISSUE IN A FELINE LARGE ANIMAL MODEL

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ABSTRACT: Purpose: Retinal degenerative (RD) conditions associated with photoreceptor loss such as age-related macular degeneration (AMD), retinitis pigmentosa (RP) and Leber Congenital Amaurosis (LCA) cause progressive and debilitating vision loss. There is an unmet need for therapies that can restore vision once photoreceptors have been lost. Transplantation of human pluripotent stem cell (hPSC)-derived retinal tissue (organoids) into the subretinal space of an eye with advanced RD brings retinal tissue sheets with thousands of healthy mutation-free photoreceptors and has a potential to treat most/all blinding diseases associated with photoreceptor degeneration. **Methods:** Presented here is a surgical technique of transplanting hPSC-derived retinal tissue into the subretinal space of a large animal model allowing assessment of this promising approach for further development of such investigational therapy toward clinical applications to treat RD conditions. Large eye inherited retinal degeneration (IRD) animal models are valuable for developing vision restoration therapies utilizing advanced surgical approaches to transplant retinal cells/tissue into the subretinal space due to the similarities in globe size, and photoreceptor distribution and availability of IRD models closely recapitulating human IRD would facilitate rapid translation of a promising therapy to the clinic. **Results:** The described procedure enables the successful and reproducible implantation of hPSC-derived retinal organoids in the subretinal space of a large eye animal model (wild-type and *Crx^{Rdy/+}* cats). **Conclusion:** This technique establishes feasibility of developing and improving vision restoration strategies focused on ameliorating vision loss in cases of advanced/terminal blindness using hPSC-3D retinal tissue transplants.

Key- words: subretinal, transplantation, stem cell, photoreceptor, cats.

Note: Approval of the Ethics Committee (MSU/IACUC - USA)

SURGICAL EXCISION ASSOCIATED WITH CHEMICAL ABLATION WITH TRICHLOROACETIC ACID TO TREAT MULTIPLE AND BILATERAL EYELID APOCRINE HIDROCYSTOMAS IN A PERSIAN CAT: CASE REPORT

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ABSTRACT: Purpose: Apocrine eyelid hidrocystomas are benign cysts. The presence of clinical signs will depend on the location, size and number of cysts. Surgical excision has high recurrence rates, and chemical ablation with trichloroacetic acid is an alternative to reduce the recidive. We aimed to report a case of a feline with multiple eyelid hidrocystomas in which the two treatment techniques were associated. **Case report:** A 10-year-old female Persian cat was referred to the Visãovet clinic (Porto Alegre, RS, Brazil) with multiple eyelid cysts and a corneal ulcer in the right eye. Therapy with antimicrobial eye drops and ocular lubricant was instituted in both eyes. After performing pre-surgical exams, the patient was referred for the procedure. Under general anesthesia, the hidrocystomas were surgically resected. The material was sent for histopathological analysis. A swab soaked with 20% trichloroacetic acid was applied over the surgical wound for four seconds. In two large remaining cysts the content was aspirated and, afterwards, the acid was injected, then removed after one minute. Surgical wounds were approximated with simple interrupted suture. Nonsteroidal anti-inflammatory eye drops and antibiotic ophthalmic ointment were prescribed. **Results:** Histopathologic analysis confirmed the diagnosis. The suture was removed 10 days after the procedure. The wound edges were well coapted, the animal remained visual and had no ocular injuries. **Conclusion:** Surgical excision associated with the application of swab soaked with 20% trichloroacetic acid did not affect wound healing and may be associated in cases of multiple cysts.

Key-words: apocrine hidrocystoma, eyelid, feline, trichloroacetic acid.

**THE DEVELOPMENT OF THE NORMAL SCHIRMER TEAR TEST RESULTS
ALONG THE DOG'S FIRST YEAR OF AGE**

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ABSTRACT: Purpose: This study aims to evaluate and establish canine reference values for the Schirmer Tear Test 1 during the first year of life, specifically from 3 to 12 months of age, using a homogeneous group of healthy beagle dogs. **Methods:** Schirmer tear test I (STT I) was performed on both eyes of 16 clinically healthy Beagle dogs (eight males and eight females) from 3 to 12 months of age every two weeks (14 days), totaling 19 weeks. For the statistical analyses, the most adjusted model was quadratic polynomial regression and three equations were estimated for the variations: (1) for the whole period (19 observations), (2) for the first four observations and (3) for the fifth observation onwards. **Results:** In general, with each day of life, lacrimal production increased 0.08 times or 8%. In the first four observations, however, lacrimal production fell 1.1 times with each day of life. From the fifth observation onwards, production increased by 0.02 or 2% each day of life. **Conclusions:** Age significantly affected tear production in dogs. STT I decreased at approximately four months of age and increased thereafter, which is a normal feature that every veterinary ophthalmologist should be aware about during ophthalmic examination.

Key-words: age, dog, keratoconjunctivitis sicca, schirmer, tear production.

THIRD EYELID'S LYMPHOMA GUINEA PIG

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ABSTRACT: Purpose: To describe a case of lymphoma in the third eyelid of a guinea pig (*Cavia porcellus*). **Case report:** A one-year and ten-month-old male patient with corneal opacity, mucopurulent discharge and incipient cataract in both eyes. In the left eye, protrusion of the third eyelid gland, hyperemia and chemosis of the nictitating membrane. Treatment with topical tromethamine ketorolac, twice a day, was started in both eyes and surgery to reposition the gland was indicated. Pre-anesthetic laboratory tests revealed increased total protein and radiography revealed decreased gastrointestinal motility and hepatomegaly. **Result:** Owing to the decrease in chemosis and conjunctival hyperemia, an irregular tumoral formation was noted on the dorsal surface of the third eyelid gland. It was chosen for excision of the gland and sending it to histopathology. The patient died before the lymphoma report, compatible with the alterations found in the complementary exams previously performed. **Conclusion:** Despite the growing number of guinea pigs as pets, in addition to being used in laboratories, there is little knowledge and studies in ophthalmology, requiring further research in this species. Histopathology was a fundamental resource for diagnosis.

**TILAPIA (*Oreochromis niloticus*) SKIN GRAFT IN DOG CORNEAL ULCER
REPAIR: CASE REPORT**

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ABSTRACT: Purpose: Corneal ulcer is one of the most prevalent eye diseases in veterinary ophthalmology in dogs, often leading to loss of vision. The following report consists of a surgical intervention on the cornea with the application of a tilapia skin-based biotechnological graft. The graft used in this clinical case comes from research in humans, which has been shown to be efficient in the repair of burn injuries. Tilapia skin has an epidermis covered by a stratified pavement epithelium, followed by extensive layers of collagen. **Case Report:** During surgery, a graft of this biomaterial was used as a substitute for the pedicled conjunctival flap technique in an adult animal of the canine species, to assess the parameters for restoring eye health. The tilapia skin graft was sutured with 8.0 nylon thread in separate simple stitches, being accommodated on the cornea and providing good apposition to the underlying cornea. The graft was associated with a third eyelid flap technique to protect and promote pressure between graft and cornea. **Results:** The report suggests that the healing of tilapia skin grafts in canine corneas proved to be advantageous, achieving greater transparency, absence of melanosis, low vascularization and good lubrication. The material proved to be capable of promoting corneal healing and repair, preserving transparency and maintaining vision. **Conclusions:** The research is unprecedented in veterinary ophthalmology and the result obtained signals a new grafting option for corneal keratoplasties in dogs and in other species.

Keywords: corneal ulcer; graft; tilapia skin.

**TRANS-SURGICAL ANALYSIS OF EYELID AND NICTITATING MEMBRANE
NEOPLASMS: THREE CASES REPORT**

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ABSTRACT: Purpose: Eyelid tumors are common findings in dogs, being mostly benign, but they can, even if rarely, metastasize. This abstract aims to analyze the trans-surgical pathologic evaluation during the removal of eyelid tumors from three dogs. **Methods:** Three dogs of different breeds (Great Dane, Rottweiler and mixed breed) with eyelid tumors that were admitted at the small animal hospital of the Federal Rural University of Pernambuco for clinical and ophthalmological examination, all of which were indicated for surgical removal of tumors with intraoperative histopathological analysis using the cut-freeze method. **Results:** Upon trans-surgical microscopic visualization of the rottweiler's eyelid tumor, areas with multifocal to coalescent pigmentation were identified, with well-differentiated cells and few mitotic figures, classifying it as melanocytoma. The surgical procedure performed was v-plasty. In the intraoperative evaluation of Mixed and Great Dane tumors, well-circumscribed areas composed of varied vascular spaces joined by a single layer of endothelial cells, with few or no mitosis figures were observed, classifying them as hemangiomas. The surgical procedure performed was a partial removal of the nictitating membrane. All analysis had neoplasia-free margins and the trans-surgical diagnosis were confirmed with laboratory histopathological results. **Conclusions:** Trans-surgical histopathological cut-freeze method is an efficient, quick and important tool to analyze neoplasia-free margin of palpebral tumors in dogs.

Key-words: pathologic evaluation, eyelid tumors, free margins

Note: Approval of the Ethics Committee (CEUA)

TREATMENT WITH HETEROLOGOUS SERUM AND AMNIOTIC MEMBRANE OF KERATOMALACIA AFTER PHACOEMULSIFICATION IN FELINE: CASE REPORT

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Purpose: Melting corneal ulcers, also known as keratomalacia, are caused by the progressive dissolution of the corneal stroma. Corneal melting occurs due to the high proteolytic activity caused by secondary bacteria, mainly *Pseudomonas aeruginosa*. In the treatment, the use of proteinase inhibitors is essential in order to reduce the lesion progression and healing time. The report objective was to describe the case of a feline with keratomalacia after phacoemulsification, treated with heterologous serum and amniotic membrane. **Case report:** A feline, male, British Shorthair breed, 4 months old, FIV/Felv negative, was brought to VisãoVet clinic with a complaint of a “red eye”. During examination, incipient bilateral cataract and uveitis in the right eye were found. After 3 months of treatment, the right eye cataract evolved to mature stage, whereas the left eye presented the disease at an immature stage. The patient was referred to phacoemulsification in the right eye. At the second postoperative day, the patient developed keratomalacia. Then, a third eyelid flap was performed and treatment with heterologous canine serum was prescribed. After 7 days, although the condition was stable, an amniotic membrane was used. **Results:** Fifty days after the surgery, the patient have recovered its eyesight, having now only corneal leukoma. **Conclusion:** Keratomalacia isn't a frequent phacoemulsification complication, but it can be devastating for corneal transparency or eyeball integrity. Serum and amniotic membrane were considered an excellent alternative for keratomalacia management, because its properties favor the healing process, infection control and corneal transparency maintenance.

Key-words: keratomalacia, heterologous serum, felino, amniotic membrane.

**USE OF CRYOTHERAPY IN THE TREATMENT OF DISTICHIASIS IN SHIH-TZUS
DOGS: PRELIMINARY STUDY**

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ABSTRACT: Purpose: The aim of this study was to evaluate the efficacy and adverse effects of treating distichiasis using cryotherapy. **Methods:** Eleven dogs (18 eyes) of the Shih-Tzu breed were used. The animals were maintained under general inhalation anesthesia. An anesthetic eye drops containing 1% tetracaine hydrochloride and 0.1% phenylephrine hydrochloride were applied to the palpebral conjunctiva. With the aid of callazium forceps we proceeded to eversion of the upper palpebral margin and exposure of the palpebral conjunctiva. A cryocautery, bottle model, supplied with liquid medical nitrogen at a temperature of -196°C and a 2.4mm conical contact tip was used. Two cycles were performed. The cycle used was 15 seconds for tip freezing, contact with the meibomian gland through the palpebral conjunctival surface for 45 seconds and one minute for unfreezing. In the postoperative period, corticoid and antibiotics ointment were administered every 12 hours for 10 days. The animals were evaluated 48 hours, 10 days and 30 days. **Results:** In seven dogs the procedure was performed in both eyes and in four unilateral. The most important adverse event was depigmentation of the palpebral tarsus that lasted the 30 days in 83.33% (15/18) of the dogs evaluated. No recurrence was observed until 30 days in any of the dogs, i.e., in 100% of the cases the treatment was effective. **Conclusion:** The use of cryotherapy with medicinal liquid nitrogen showed to be a simple technique, of easy excursion and efficient in the treatment of distichiasis, without causing important macroscopic damage to the eyelids.

Key-words: cryosurgery, eyelid, canine, efficacy, adverse effects

**USE OF GS-441524 NUCLEOSIDE ANALOG IN THE TREATMENT OF FELINE
INFECTIOUS PERITONITIS: CASE REPORT**

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ABSTRACT: Purpose: Feline Infectious Peritonitis (FIP) is an infectious contagious disease that affects felids. It is caused by a genetically mutated coronavirus from the feline enteric coronavirus (FECV). Despite being a systemic disease, it is not uncommon for its unique and/or initial manifestation to be with ocular signs, such as uveitis, which occurs after the breakage of the blood-aqueous barrier, increasing vascular permeability bringing susceptibility to chemical mediators of inflammation. The anterior uvea (iris and ciliary body) is extremely vascularized, and functions as a lymph node, which is why uveitis is frequent in cats with systemic diseases. The objective of the report is to present a case of FIP treated with a GS-441524 molecule, a nucleoside derived from remdesivir, with potential antiviral. **Case Reports:** A patient of the feline species, female, 10 months old, castrated, treated in Curitiba, presenting uveitis. Diagnosed with FIP after positive immunochromatography, added to changes in blood count and clinical signs, and treated with daily subcutaneous injections of GS-441524 for 12 weeks, 1.0% topical ocular prednisolone for 60 days, and oral spiramycin and metronidazole for seven days. Oral gabapentin has been prescribed to lessen the stress of invasive treatment. **Results and Conclusion:** The ocular signs have remitted and so far have not relapsed. GS-441524 as a treatment for FIP is still in the phase of efficacy studies around the world, however based on the report, it is possible to believe that FIP, a disease that until then was considered practically a death sentence, has a treatment possible and effective.

Key-words: Feline Infectious Peritonitis, uveitis, GS-441524, feline.

USE OF MODIFIED AXIAL ORIS ANGULARIS RETAIL: CASE REPORT

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ABSTRACT: Purpose: Blepharopathies have a variable degree of involvement, which will determine the best treatment to be instituted, which are, in most cases, surgical procedures. Oncotic cytology indicated an inflammatory process, but there was no reduction in the volume of the eyelid mass with the use of meloxicam (0.1mg/kg/SID). The objective was to describe the use of the modified surgical technique of the axial oris angularis flap in eyelid defects, as the graft was rotated and not slid. **Case report:** The base of the pedicle was centered on the buccal commissure, two parallel incisions were made; having as ventral limit the ventral edge of the horizontal mandibular ramus, and dorsally the ventral aspect of the zygomatic arch, the lines were extended caudally one centimeter after the end of the induced eyelid defect. The dissection was performed underlying the cutaneous platysma muscle, preserving the integrity of the oris angularis, superior and inferior labial arteries in the buccal commissure. After removal, the skin was carefully divulged and rotated to fill the surgical margin. **Results:** Histopathological examination revealed a pyogranulomatous inflammatory process. In the first 36 hours, there was drainage of seroma. At no time was there bad blood perfusion. There was good adhesion and tissue healing, but there was a slight scar retraction in the margin proximal to the eye. On the tenth day, the suture stitches were removed. **Conclusions:** This technique used proved to be an option for reconstructive surgery, as it ensured complete removal of the lesion and an acceptable cosmetic appearance for the tutor.

Key-words: Eyelid, axial flap, surgery, ophthalmology, dog

USE OF PORCINE SMALL INTESTINAL SUBMUCOSA MEMBRANE IN FULL AND PARTIAL THICKNESS CORNEAL LESIONS IN DOGS.

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Purpose: To evaluate the use of porcine small intestinal submucosa (SIS) graft for ocular surface repair in dogs. **Case report:** Thirty dogs with deep corneal lesions or perforation were referred for surgery for membrane implantation. After antiseptics of the ocular surface, with binocular microscope, the adjacent area of lesion was debrided. The SIS graft was measured, rehydrated and sutured into corneal defect with a simple interrupted suture pattern with 9/0 nylon. Next, a third eyelid flap; 360° flap or a temporary partial tarsorrhaphy was used to protect the membrane and the ocular surface, being removed after 3 weeks. **Results:** It was observed that 30% of dogs had descemetocoele (n=9); 26.6% perforation with prolapsed iris (n=8); 20% perforation (n=6) and 23.4% descemetocoele and melting (n=7) before surgery. 93.33% of the patients were brachycephalic, 70% was Shih-tzu (21/30), followed by 10% of French Bulldog (3/30). 63.3% were adults (between 2 and 6 years); 26.6% senior (>7 years) and 10% puppy (<1 year); 56.66% were females (n=17); 70% of the eyes affected were the right; 83.3% remained visual (25/30); 30% of the corneas resulted in transparency (9/30), 26.6% in light opacity (8/30), 30% in moderate and 13.3% in severe opacity (4/30). **Conclusion:** SIS corneal graft is an easy-to-handle biomaterial and proved to be effective for repairing partial and full thickness corneal lesions in dogs, with the high majority of cases remaining visual with corneal transparency or mild opacity.

Key-Words: Canine, Corneal graft, Descemetocoele, Perforation, Porcine small intestinal submucosa membrane.

VIRAL PAPILOMA IN THE BULBAR CONJUNCTIVA OF A DOG - CASE REPORT

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ABSTRACT: Purpose: Papillomas are proliferative lesions that arise in the cutaneous epithelium, mucocutaneous junctions and conjunctival epithelium and are characterized as benign tissue proliferations, consisting of layers of squamous, stratified and non-keratinized epithelium. The aim of this report was to elucidate the usual characteristics of viral papilloma in the bulbar conjunctiva of a young dog. **Case report:** A female French Bulldog, one year old, was referred to the Ophthalmology Service of the Veterinary Hospital Animaniac's in São Paulo, due to ocular discomfort after mechanical trauma. The ophthalmic examination revealed a segmented, round, exophytic, grayish-colored neof ormation, measuring approximately 10mm, of firm consistency in the bulbar conjunctiva (perilimbic region) of the left eye. An excisional biopsy of the formation was performed and the fragment was sent for histopathological analysis, which proved to be a viral papilloma. **Results:** Conjunctival papillomas have three classifications in dogs: viral papilloma, squamous papilloma and reactive papilloma. Microscopically, viral papillomas are morphologically identified based on the presence of cytopathic effects on superficial epithelial cells, hyperplasia of the stratum granulosum and basophilic intranuclear viral inclusions. Diagnosis is based on clinical findings and confirmed with histopathology, which may be associated with polymerase chain reaction and immunohistochemistry. In medicine, there are non-invasive techniques to assist in the management of lesions on the ocular surface, such as anterior segment optical coherence tomography and ultrasonic biomicroscopy. Conjunctival and eyelid papillomas must have squamous cell carcinoma as a differential diagnosis. **Conclusions:** Thus, definitive diagnosis must be obtained by histopathological analysis and it is necessary to standardize less invasive diagnostic methods.

Key-words: papilloma, dog, viral, histopathology.