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<p>High-throughput sequencing (HTS) techniques have revolutionized the way we understand microbial communities in both research and clinical settings and are bringing new insights into what constitutes a healthy ocular surface (and a diseased one). As more diagnostic laboratories incorporate HTS into their technique repertoire, practitioners can expect this technology to become increasingly accessible for clinical practice, potentially becoming the new standard. However, particularly regarding ophthalmic microbiota, considerable research remains to render HTS accessible and applicable.</p>	
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<p>Normative standards for healthy animal structures have been established by optical coherence tomography (OCT). OCT has been used in animal studies to characterize more precisely ocular lesions, identify the origin of the affected layer, and eventually provide a curative treatment. To acquire a high image resolution, several challenges must be overcome when performing an OCT scan on animals. Sedation or general anesthesia is usually necessary in OCT image acquisition to alleviate motion during image acquisition. Mydriasis, eye position and movements, head position, and corneal hydration must also be managed during the OCT analysis.</p>	
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<p>The transparency of the cornea is critical to its role in transmitting light. Loss of corneal transparency results in visual impairment. Corneal pigmentation results from melanin accumulation in the epithelial cells of the cornea. Differential diagnosis for corneal pigmentation include corneal sequestrum, corneal foreign body, limbal melanocytoma, iris prolapse, and dermoid. These conditions must be excluded to reach a diagnosis of corneal pigmentation. A myriad of ocular surface conditions are associated with corneal pigmentation, including qualitative and quantitative</p>	

tear film deficiency, adnexal disease, corneal ulceration, and breed-related corneal pigmentation syndromes. Accurate etiologic diagnosis is critical to determining effective treatment.

Eosinophilic Keratoconjunctivitis in Cats

353

Amber Labelle and Philippe Labelle

Eosinophilic keratitis is a disease of the feline ocular surface. It is characterized by conjunctivitis, white to pink raised plaques on the corneal and conjunctival surfaces, corneal vascularization, and variable ocular pain. Cytology is the diagnostic test of choice. Identification of eosinophils in a corneal cytology sample usually confirms the diagnosis, although lymphocytes, mast cells, and neutrophils are often present concurrently. Immunosuppressives are the mainstay of therapy, topically or systemically. The role of feline herpesvirus-1 in the pathogenesis of eosinophilic keratoconjunctivitis (EK) remains unclear. Eosinophilic conjunctivitis is a less common manifestation of EK and presents as severe conjunctivitis without corneal involvement.

Feline Glaucoma

367

Bruce Grahn

Feline glaucoma is best categorized as either secondary, congenital and anterior segment dysgenesis associated, or primary. More than 90% of all feline glaucoma develops secondary to uveitis or intraocular neoplasia. The uveitis is usually idiopathic and assumed to be immune-mediated, whereas lymphosarcoma and diffuse iridal melanoma account for many of the intraocular neoplastic-induced glaucoma in cats. Several topical and systemic therapies are useful in the control of the inflammation and elevated intraocular pressures associated with feline glaucoma. Enucleation remains the recommended therapy for blind glaucomatous feline eyes. Enucleated globes from cats with chronic glaucoma should be submitted to an appropriate laboratory for histologic confirmation of the type of glaucoma.

The Clinical Approach to Canine Glaucoma

389

Lynne Sandmeyer

This article provides a simplified approach to diagnosis and clinical decision making in cases of canine glaucoma for the general practitioner. An overview of the anatomy, physiology, and pathophysiology related to canine glaucoma is provided as a foundation. Classifications of glaucoma based on cause are described as congenital, primary, and secondary, and a discussion of key clinical examination findings is provided to guide appropriate therapy and prognostication. Finally, a discussion of emergency and maintenance therapy is provided.

Glaucoma Associated with Anterior Segment Dysgenesis in Dogs and Cats

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Marina L. Leis and Bruce Grahn

Reports of glaucoma associated with anterior segment dysgenesis in dogs and cats are rare. Anterior segment dysgenesis is a sporadic, congenital syndrome with a range of anterior segment anomalies that may or may

not result in congenital or developmental glaucoma within the first years of life. Specifically, the anterior segment anomalies that put the neonatal or juvenile dog or cat at high risk for the development of glaucoma are filtration angle and anterior uveal hypoplasia, elongated ciliary processes, and microphakia.

A Review of Canine Episclerokeratitis and Scleritis

439

Bruce Grahn

Episcleritis is synonymous with episclerokeratitis although the latter is most appropriate as the cornea is often affected as well as the episclera. Episcleritis is a superficial ocular disease characterized by inflammation of the episclera and conjunctiva. It responds most commonly to topical anti-inflammatory medications. In contrast scleritis is a granulomatous fulminant panophthalmitis that will progress rapidly and induce significant intraocular disease including glaucoma and exudative retinal detachments without systemic immune suppressive therapy.

Blepharitis and Neoplasms of the Canine Eyelid Margin and Skin

455

Bruce Grahn

Canine eyelid masses (tumors) should include the differential clinical diagnoses of neoplasia and blepharitis. They have many common clinical signs including tumor, alopecia, and hyperemia. Biopsy and histologic examination remains the most effective diagnostic test to establish a confirmed diagnosis and appropriate treatment. Neoplasms are typically benign (tarsal gland adenomas, melanocytomas, and so forth) with the exception of lymphosarcoma. Blepharitis is noted in 2 age groups including dogs aged less than 1.5 years and middle aged to older dogs. Most blepharitis cases will respond to specific therapy once an accurate diagnosis is established.

Topical Ocular Therapeutics in Small Animals

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Elizabeth M. James-Jenks and Chantale L. Pinard

This article reviews the administration of common topical ophthalmic medications, in relation to factors influencing absorption including composition of topical ophthalmic preparations, and potential systemic effects. Commonly prescribed, commercially available topical ophthalmic medications are discussed with respect to pharmacology, their indications for use, and adverse effects. Knowledge of topical ocular pharmacokinetics is essential for the management of veterinary ophthalmic disease.