

Ocular Manifestations of Systemic Disease Part 1.



Tiffany Blocker, DVM, DACVO
Eye Care for Animals

Examination of a patient's eye should always be systematic and complete. Historical information from the client can help allude to possible underlying causes for an eye problem. But what if they eye condition is part of a more complex problem involving other organ systems within the body? Similarly, when performing a general physical examination, careful evaluation of the eye may reveal abnormalities that warrant further investigation into the rest of the body. This and the forthcoming article will discuss some common systemic conditions that can be manifested by ocular abnormalities. Keep in mind that sometimes more than one systemic condition exists, leading to multiple ocular changes. Careful attention to this detail will help facilitate appropriate treatment for the eye without compromising the patient's health status because an

underlying systemic condition was overlooked. Collaboration between general practitioner, ophthalmologist, and other specialists is often necessary in order to provide optimum care for these patients.

Ocular manifestations of cardiovascular disease:

Blindness may be the single presenting complaint for a patient with cardiovascular disease. These patients are often referred to the ophthalmologist due to lack of comfort or experience examining the posterior segment of the eye by the general practitioner. In contrast, careful fundic evaluation during routine examination



Hyphema in the eye of a hypertensive cat

may reveal changes suggestive of hypertensive retinopathy, the most common ocular manifestation of cardiovascular disease. Classic intraocular features include varying degrees of hemorrhage within, or overlying the retina with or without retinal detachment. Occasionally, bullous retinal detachment is present without obvious hemorrhage. Hyphema or inflammation in the anterior chamber can impede

visualization of the vitreous and retina making it more difficult to diagnose this condition. Ocular ultrasound can be helpful in these cases. Thorough physical examination, blood pressure analysis, and blood and urine analysis are essential in determining if systemic hypertension is present and whether it may be primary or secondary to another underlying condition (renal, adrenal, diabetic, or cardiac). Therapy should not exclude treating the concurrent ocular condition and should not compromise the patient's overall health.

Ocular manifestations of metabolic disease:

Diabetes mellitus is commonly known to cause cataracts in the canine patient and rarely in the feline patient. Not only do these cataracts progress to blindness, they can incite quite severe lens-induced uveitis or more insidious phacoclastic uveitis if the lens capsule ruptures. Therefore, treatment for diabetic cataracts should not be delayed and initial treatment in non-complicated cases is with topical non-steroidal anti-inflammatories.

(continued on page 2)

INSIDET HISI SSUE:

Scientific Article.....	Pg 1-3
CE & Congrats.....	Pg 4
CERF Corner.....	Pg 5
Memo to Managers.....	Pg 6

Occasionally a patient is referred to the ophthalmologist for cataract evaluation and, subsequently, diabetes is diagnosed. Good diabetic control prior to cataract extraction is ideal, however some patients will succumb to the devastation of diabetic cataracts (uveitis and secondary glaucoma) if surgery is delayed for too long. Careful monitoring of these patients and communication between the practitioner regulating the diabetes and ophthalmologist will contribute to a more favorable outcome.



Diabetic cataract

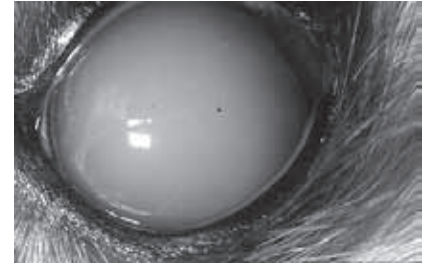
A less obvious manifestation of diabetes mellitus is ocular surface disease caused by decreased tear production (primary or secondary to decreased corneal sensitivity.) It is not uncommon for these patients to have mildly low Schirmer Tear Test 1 values. Patients with consistently low tear production or concurrent tear film quality abnormalities may benefit from lacrimostimulants.

Occasionally, intra-retinal hemorrhage or edema may be noted on fundic examination, consistent with diabetic retinopathy. Blood pressures should always be evaluated to rule out secondary

hypertension. Diabetic retinopathy is often an overlooked condition in our patients until cataract extraction restores a clear visual axis.

Hyperlipidemia, whether primary or secondary to diseases such as diabetes mellitus, hyperadrenocorticism, hypothyroidism, pancreatitis, can manifest as aqueous lipidosis and/or lipemia retinalis, of which the former is more commonly recognized clinically. There is often a history of a fat-laden meal or morsel being fed to the patient prior to the onset of ocular signs. Patients that have had a history of intraocular surgery or prior uveitis may be at more of a risk. Aqueous lipidosis has a classic appearance of a “white milky opacity” of the anterior chamber. Posterior segment evaluation is often not possible due to the intense opacity. Less commonly a milky appearance to the retinal vasculature can be seen and is called lipemia retinalis. Serum will appear lipemic. Blood and urine analysis will determine whether underlying metabolic disease is present. A follow up fasting blood sample can determine whether hypertriglyceridemia is a chronic issue. Resolution is often rapid with the initiation of ocular treatment (anti-inflammatory) and when the inciting cause is eliminated or managed whether it be dietary indiscretion and/or metabolic disease. Intraocular pressures should always be monitored in these patients with expected

low IOPs that normalize once aqueous lipidosis and associated inflammation resolve. Pay careful attention to the patient's IOP as secondary glaucoma is possible.



Aqueous lipidosis

Lipid keratopathy can also result from altered lipid metabolism, whether primary or secondary to metabolic diseases like those mentioned in the previous paragraph. Classic features include a peri-limbal, circumferential, lipid infiltrate with associated vascularization, however other corneal patterns can occur as well. Axial crystalline sub-epithelial deposits can also be indicative of lipid infiltrate. Treatment is aimed at the underlying systemic condition causing the keratopathy, although in many cases only partial or no resolution may occur. The author recalls one patient with untreated severe hypothyroidism and a severe lipid keratopathy that resulted in blindness due to complete corneal opacification. This patient had improvement in vision following a lamellar keratectomy but this would be considered an extreme case.

Ocular manifestations of infectious disease:

Many viral, fungal, bacterial, parasitic, protozoal, and rickettsial organisms that cause systemic disease have also been shown to cause ocular disease. The most common offenders will depend on species as well as geographic location. Careful attention to history can often allude to risk of exposure in the patient. Patients with underlying immunosuppression may be at greater risk. The most common ocular manifestation of infectious

Editor's box

Ocular Outlook

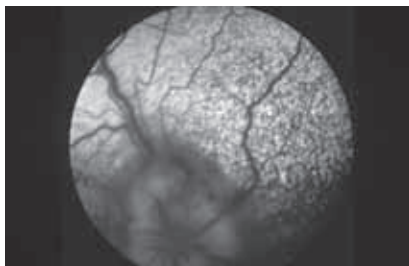
Editor: Sara Calvarese, DVM, DACVO
Managing Editor: Julie Gamarano

Eye Care for Animals welcomes your comments on the Ocular Outlook.
Please e-mail your feedback to jgamarano@eyecareforanimals.com
or call Julie at (480) 424-3947 extension 6911.
For electronic subscription please visit www.eyecareforanimals.com

disease is uveitis. Although anterior uveitis is relatively easy to diagnosis, posterior uveitis or chorioretinitis may be more of a challenge for the inexperienced observer to diagnose or if corneal edema, aqueous flare or fibrin are present. Active chorioretinal lesions appear as fuzzy, grey foci of varying degrees and sizes. Concurrently, sub-retinal edema and varying degrees of detachment may be evident. Hyalitis, or cells in the vitreous, may be present. Varying degrees of hemorrhage can also be present. Uveitis may be unilateral or bilateral and may be asymmetric in severity. The development of secondary glaucoma is always a concern. Ocular treatment is always aimed at reducing the inflammation and controlling/preventing secondary glaucoma regardless of the infectious cause. Although systemic steroidal anti-inflammatories are preferred for posterior segment inflammation they should be used with caution or even avoided if serious infectious disease is present. Systemic non-steroidal anti-inflammatories are an alternative. Non-invasive diagnostics include a blood profile and screening for the most likely infectious diseases. Further diagnostics may be warranted in patients with non-responsive uveitis. These tests include thoracic, abdominal or other imaging. Cytologic analysis of ocular fluids (aqueous, vitreal, subretinal) obtained by centesis may provide a diagnosis but should only be performed by experienced individuals. Thorough systemic evaluation and monitoring for improvement in the patient's general health is essential but monitoring of the eyes is also warranted to reduce morbidity associated with ocular pain as well as blindness that can result due to secondary glaucoma or failure to control the uveitis.

Optic neuritis is another manifestation of infectious disease.

Araised, swollen, and/or hyperemic optic nerve head may be the only abnormality or it may coexist with varying degrees of posterior and anterior uveitis. Because the optic nerve ascends to the CNS, these cases have the potential for CNS involvement. Imaging and CSF analysis may be warranted particularly if less invasive diagnostics are inconclusive.



Optic neuritis

Blepharitis, conjunctivitis, and KCS can occur with diseases such as canine Distemper, fungal disease, and Leishmaniasis. Diagnostic aides may include conjunctival cytology or biopsy. Treatment is symptomatic with therapy aimed at supportive care and treating the underlying disease.

Ocular manifestation of neoplastic disease:

The eye and/or its adnexa can be a site for metastatic disease or a secondary site for systemic neoplasia. Lymphoma is probably the most common systemic neoplasia affecting the eye in both canine and feline patients. Ocular abnormalities can include conjunctivitis, conjunctival infiltrate, uveitis, uveal infiltrate, uveal mass effect, chorioretinal infiltrate, and retinal detachment. History may suggest prior neoplasia and systemic signs of illness such as weight loss or anorexia. Clients may make light of subtle signs because the patient is "older", hence a thorough and complete history is important. Thorough systemic evaluation is warranted in these patients beyond routine blood and urine analysis. Lymph

node aspirate or oculo-centesis can provide a means of obtaining a diagnosis of lymphoma but doesn't preclude the importance of systemic workup.

Systemic histiocytosis is another disease that can manifest as nodular blepharoconjunctivitis and/or uveitis. Diagnosis is made by cytology or histopathology from appropriate samples of tissue. Ocular treatment is aimed at controlling uveitis and preventing/controlling secondary glaucoma. Occasionally, metastatic disease manifests as a mass or infiltrate involving the anterior or posterior uvea. Melanoma, carcinoma and sarcoma all have the potential for intraocular metastasis. Additionally, the eye can also be a source of paraneoplastic disease in certain types of cancer, with hyphema due to thrombocytopenia and immune-mediated uveitis being the most likely manifestations.

In summary, although the above discussion covered a myriad of conditions manifesting as ocular disease, conventional treatment for the eye consisting of anti-inflammatories, cycloplegics, and anti-glaucoma therapy (mostly carbonic anhydrase inhibitors in uveitic cases) is still warranted in order to maximize the chance for a good visual outcome and decrease morbidity associated with painful uveitis or secondary glaucoma. Of course, treatment for the systemic condition is also of paramount importance. Never overlook the possibility of an undiagnosed systemic condition particularly when uveitis is poorly controlled with conventional therapies. These are cases that may need further diagnostics and less conventional therapies.

Making ocular examination (particularly funduscopy) part of your routine general examination will improve your proficiency and increase the likelihood of identifying underlying abnormalities that are early indicators of systemic disease.

UPCOMING EYE CARE FOR ANIMALS CONTINUING EDUCATION LECTURES

Orange County, CA
May 1 & 2, 2010

2nd Annual Weekend with the Specialists

Location: TBD

Albuquerque, New Mexico
August 21 & 22, 2010

Tempe, Arizona
June 26 & November 13, 2010

4th Annual Weekend with the Specialists

A Day with the Specialists

Embassy Suites Hotel & Spa
1000 Woodward Place North East
Albuquerque, New Mexico 87102

Fiesta Resort Conference Center
2100 South Priest Drive
Tempe, AZ 85282

Please contact Julie Gamarano for
further information at 480-682-6911
jgamarano@eyecareforanimals.com

WHAT'S NEW AT EYE CARE FOR ANIMALS?

Congratulations!



Joanna Norman, DVM, DACVO
Phoenix, AZ

for attaining diplomate status in the American College of Veterinary Ophthalmologists.

CERF CORNER

Pigmentary Keratitis

Pigmentary keratitis develops secondary to chronic inflammation of the cornea and may occur at any age. Inflammation may be caused by anatomical abnormalities of the eyelids including distichia,



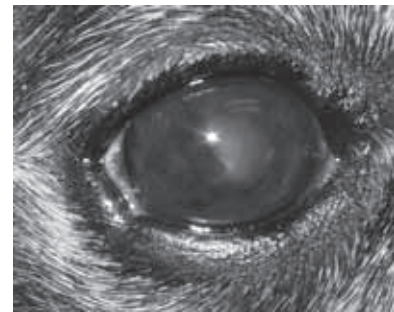
ectopic cilia or trichiasis that physically irritate the cornea or disrupt the pre-corneal

tear film. Entropion, even when mild at the lower nasal canthus or nasal fold trichiasis, as commonly seen in the Pug and Pekingese, can also lead to chronic inflammation. Ectropion or elongated palpebral fissures may lead to exposure keratitis and secondary pigmentation. Normal eyelid and third eyelid conformation and mobility are important to spread the tear film and protect the corneal surface. Untreated quantitative or qualitative tear film abnormalities are also sources of chronic keratitis.

The severity of pigmentation can vary and may progress to a degree that interferes with vision. Vascularization of the cornea in addition to pigmentation is not uncommon. Treatment must focus on the source of inflammation; therefore, large nasal folds may need to be reduced in size or completely excised to eliminate nasal fold trichiasis. Entropion, ectropion and elongated palpebral fissures should be surgically corrected. Ectopic cilia, distichia or trichiasis should be permanently removed without disrupting the contour of the eyelid. Tear film abnormalities and pigmentary keratitis are medically treated with cyclosporine, tacrolimus, anti-inflammatories or a combination of these medications. Corrective blepharoplasties combined with medical therapy are often required to gain control over the pigmentation. Even when the inciting cause of inflammation is treated, medical therapy may be needed long-term. Surgical removal of the pigmentation has not been found to be successful as the cornea will often scar and pigmentation will recur.



Rebecca Burwell
DVM, DACVO
Eye Care for Animals



Check us out at www.eyecareforanimals.com

MEMO TO MANAGERS

The Art of Managing Time

Do you find yourself saying things like, *“there’s never enough time in the day”* or *“next month I’ll find time to get it done”* or *“so and so really wastes my time”*?!

When we stop and think about time it truly can be thought of as an equalizer. Time is about the only thing there is that we all have in equal proportion each and every day of our lives. Everyone uses time differently with their own style for managing time. There is not really a right or wrong use of time as it’s probably all relative to the individual task at hand. The trick is actually knowing how to better manage time and how to be successful at it.

Some experts feel the art of managing time starts with creating a “to do” list, prioritizing or color coding the list based upon the importance of those action items, and then assigning a percentage of time you will need to focus on those projects needing to be completed. Going through this process of applying percentages relevant to your “to do” list can easily identify why there might not be enough of you to go around! Documenting your “to do” list and action items can certainly help with managing and sorting out goals and projects. Consistent daily planning can help leverage your time and increase your focus on the tasks at hand. Consider using experts when they can save you both time and money. If you multi-task well, assess whether you can work on any two or more projects simultaneously—or determine whether any of the projects on your “to do” list can be combined. Keep visual notes in all the primary places where you spend the majority of your time whether at work or at home. And, for those who enjoy reading for relaxation pick up some books on managing time and tap into recommendations on what the experts are saying about the art of managing time. Mastering time management is a work in progress!



Karen Webster, MBA
Chief Operations Officer
Eye Care for Animals

Six Eye Care for Animals

Avondale, Arizona • Gilbert, Arizona • Phoenix, Arizona • Scottsdale, Arizona • Tucson, Arizona • Chula Vista, California • Corte Madera, California
Culver City, California • Palm Desert, California • Pasadena, California • San Diego, California • Santa Rosa, California • Tustin, California
Upland, California • Chicago, Illinois • St. Charles, Illinois • Wheeling, Illinois • Overland Park, Kansas • Annapolis, Maryland
Las Vegas, Nevada • Albuquerque, New Mexico • Santa Fe, New Mexico • Santa Teresa, New Mexico • Akron, Ohio • Austin, Texas
El Paso, Texas • Houston, Texas • Salt Lake City, Utah • Sunset, Utah • Leesburg, Virginia • Pewaukee, Wisconsin

Seeing life through your pet's eyes

FOR ANIMALS
Eye Care



PERMIT #2069
FT WORTH TX
PAID
US POSTAGE
STANDARD
PRESORTED