

# OCULAR Outlook

A QUARTERLY PUBLICATION FOR THE VETERINARY COMMUNITY FROM EYE CARE FOR ANIMALS

## AMAUROSIS



**Emily Moeller, DVM, DACVO**  
Eye Care for Animals

A dog comes into your clinic with an owner complaint of acute onset blindness. As always, you are systematic. You start with a thorough history. Over what period of time has vision been lost? How long has the patient been blind? Has there been any recent polyuria, polydipsia or polyphagia? Has there been any exposure to medications (especially ivermectin) or toxins in the home? Has there been any recent trauma? Have there been any other signs of possible CNS disease (ie seizures)? Next, you confirm that the dog does appear blind by allowing him/her to navigate the exam room in bright and dim lighting conditions. The dog is unable to avoid stationary obstacles

and visual placing reactions are absent, consistent with blindness. You evaluate the patient's mentation and watch for concurrent signs of neurologic disease (ie circling or inappropriate mentation). You start your neuro-ophthalmic exam with a menace response in a brightly lit room. Then, with the lights off, you use a bright light source to evaluate the dazzle reflex and pupillary light reflexes in each eye. Finally, you begin your ophthalmic exam. Surprisingly, the anterior segment structures are clear. The retina and optic nerve head are visualized and appear normal. You're looking at a seemingly normal eye in a blind dog. You're dealing with amaurosis.

Amaurosis is defined as vision loss with no apparent lesions on ophthalmic exam. The most common causes of amaurosis in veterinary medicine include sudden acquired retinal degeneration syndrome, optic neuritis and intracranial disease. While an electroretinogram may be required to definitively differentiate these diseases, a thorough clinical history and neuro-ophthalmic exam may assist in determining a tentative diagnosis.

Sudden acquired retinal degeneration syndrome (SARDs) remains a poorly understood syndrome characterized by bilateral blindness of relatively acute onset (days to weeks). Histologically the syndrome is characterized by apoptosis of the retinal photoreceptors. The average



**Patient undergoing Electroretinogram**

SARDs patient is middle-aged to geriatric. Although some breeds such as the Miniature Schnauzer, Dachshund and American Cocker Spaniel appear over-represented, the syndrome can occur in any breed of dog, including mixed breeds. A recent history of polyuria/polydipsia and polyphagia is common. The underlying cause of SARDs remains unknown and studies investigating the presence of retinal autoantibodies have produced equivocal and contradictory results. Surprisingly,

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## OCULAR *Outlook*

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Eye Care for Animals welcomes your comments on the Ocular Outlook.

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For electronic subscription please visit [www.eyecareforanimals.com](http://www.eyecareforanimals.com)

Eye Care for Animals

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## AMAUROSIS

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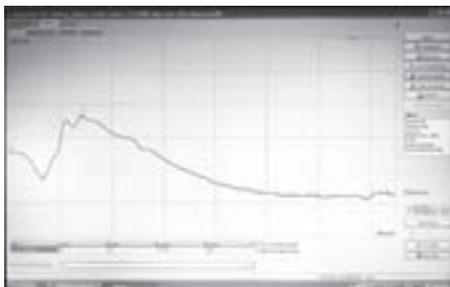
dogs with SARDs often retain a pupillary light reflex and dazzle reflex in white light. Recent investigations have revealed that the pupillary light reflex in dogs with SARDs is maintained by a special population of light sensitive retinal ganglion cells known as melanopsin containing retinal ganglion cells. These cells are only sensitive to short wavelength (ie blue) light and the short wavelength spectrum contained in white light. Because melanopsin-containing retinal ganglion cells are spared in SARDs these dogs will maintain a PLR and dazzle reflex in white and blue light but will not respond to stimulation with long wavelength (ie red) light. An electroretinogram (ERG) will reveal extinguished retinal function. Recent research from the University of Iowa has suggested that SARDs may in fact represent a complex of retinal diseases rather than a single entity. A second syndrome in this complex, coined immune-mediated retinitis (IMR), has been described. Dogs with IMR have a similar clinical presentation to dogs with SARDs but may retain some retinal function on ERG and are occasionally reported to respond to systemic immunomodulatory therapy (PO steroids and doxycycline) and/or intraocular or intravenous human immunoglobulin. The efficacy of these treatments remains questionable and no therapy has proven efficacious in the treatment of SARDs. The prognosis for vision is poor.

Optic neuritis is an inflammatory condition that affects neural transmission within the optic nerve. Underlying etiologies may include

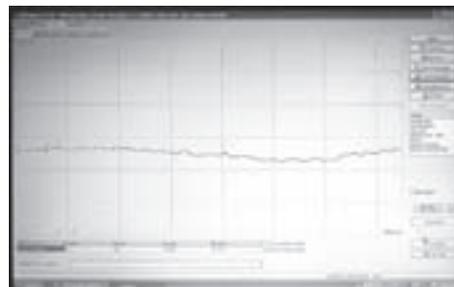
idiopathic, primary inflammatory, infectious or neoplastic conditions. Dogs with optic neuritis often present with a history of acute vision loss. Clinically these dogs present with dilated pupils that are often fixed or poorly responsive to light. Careful fundic exam may reveal an elevated optic nerve head, indistinct margins of the optic disc, hemorrhages within the optic disc, engorgement of the retinal vessels overlying the optic disc, or may appear within normal limits. A flash electroretinogram will reveal normal retinal function. Optic neuritis is considered a neurologic disease and work-up to identify an underlying cause including infectious disease screens, magnetic resonance imaging and cerebrospinal fluid aspiration and cytology are indicated. Specific therapy is based on the underlying cause (if determined) and often includes immuno-suppressive doses of steroids in the short term to reduce inflammation in the optic nerve. If treatment is initiated early and aggressively, vision may return. The long term prognosis for maintaining vision depends largely on the underlying cause but is generally guarded to poor. Idiopathic optic neuritis often requires long term to lifelong medical therapy to maintain vision.

Dogs with central nervous system disease may present with amaurosis with or without other clinical signs of CNS disease. A thorough history and general physical exam are extremely important here. A history of blindness with seizures is suggestive of cortical disease. Circling or nystagmus suggest

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Normal ERG



Extinguished ERG

## AMAUROSIS (CONTINUED FROM PAGE 2)

concurrent brainstem involvement. The PLR and dazzle reflex may remain intact if the cortex is preferentially affected, but may be absent if brainstem involvement is present. Blind dogs with intracranial disease will have normal retinal function based on flash electroretinogram and should be evaluated by a veterinary neurologist for further workup. Prognosis for vision, again, depends on the underlying cause.



MRI image of Optic Neuritis

Vision loss can be associated with a myriad of ophthalmic conditions and initial evaluation of blindness can be an intimidating prospect. If the ophthalmic exam is otherwise normal, the location of the problem is

likely the retina, optic nerve or brain. In many cases an electroretinogram is necessary to localize the source of blindness and establish a prognosis for maintenance of vision.

## Coming Soon



### Eye Care For Animals Free Mobile App for the Android and iPhone

## Upcoming EVENTS

March 20, 2012 - Louisville  
*Ophthalmology and Dermatology  
Demos*

April 29, 2012 - Newport Beach  
*Day With the Specialist*

August 17-19, 2012 - Albuquerque  
*Weekend With the Specialist*

## Special Thanks!

On behalf of the entire Eye Care for Animals family we thank team member Sara Calvarese, DVM, DACVO for serving as Editor of Ocular Outlook these past few years. Great job Dr. Calvarese!

For more information please contact Julie Gamarano at [jgamarano@eyecareforanimals.com](mailto:jgamarano@eyecareforanimals.com)

## DIAGNOSTIC CHALLENGE



**Nicole MacLaren, DVM, DACVO**

**History:** An eleven year old neutered male Labrador Retriever was referred with a 2 week history of conjunctival hyperemia and chemosis OD. The referring veterinarian had removed oral porcupine quills one week prior to observation of ocular signs. Neomycin/Polymyxin B/ Dexamethasone topical solution was prescribed OD QID for two weeks prior to referral, however, the signs remained unchanged.

**Initial Clinical Findings:** Ophthalmic examination revealed third eyelid protrusion, moderate conjunctival hyperemia, and severe chemosis OD (Figure 1). Menace responses, dazzle and palpebral reflexes, as well as direct and consensual pupillary light reflexes were normal OU. Palpation of the periorbital region and



**Appearance of OD upon presentation**



**Dustin Dees, DVM**

retropulsion of the right globe evoked a pain response. No palpable bony abnormalities were noted. The STT were normal. Fluorescein staining was negative OU.

**Differential Considerations:** Differential diagnoses included orbital disease, episcleritis, and scleritis. History and clinical examination indicated that orbital cellulitis, abscessation, presence of foreign material, primary neoplasia, scleritis, episcleritis, and parasite migration were the most likely causes of this dog's unilateral ophthalmic clinical signs.

Transcorneal B-scan ocular ultrasonography revealed a linear double-walled structure that was horizontally oriented within the orbit ventrolateral to the optic nerve (Figure 2).

**Initial Treatment and Rationale:** A modified lateral orbitotomy with zygomatic arch resection approach was chosen to remove the orbital porcupine. A portion of the zygomatic arch was reflected dorsally and orbital tissues and extraocular muscles were bluntly dissected until the tip of a porcupine quill was identified ventral to the optic nerve and caudal to the globe. The quill was removed (Figure 3) and a culture swab inserted into

the tract. Intra-operative ocular ultrasound detected no additional quills. The zygomatic arch was replaced with circlage wire. A partial lateral temporary tarsorrhaphy was performed to minimize the risk of exposure keratitis.

Post-operative medications included Neomycin/Polymyxin B/Bacitracin ophthalmic ointment to provide corneal lubrication and antibacterial prophylaxis, Hydromorphone, Cephalexin, and Carprofen.

**Progress Report:** Eight days postoperatively, palpebral reflex was slightly diminished and menace response and dazzle reflex were absent OD. Conjunctival hyperemia and chemosis had markedly improved. Ocular motility was normal OU. Aerobic and anaerobic bacterial and fungal culture results were negative. One month postoperatively, palpebral reflex was normal OD and conjunctival hyperemia and chemosis had resolved. The patient was non-visual OD. Temporary tarsorrhaphy sutures were removed.(Figure 4).

**Summary:** Orbital foreign bodies are either organic or inorganic. Inorganic material, such as metal or glass, is typically well tolerated without causing infection or inflammation. Organic foreign materials, however, mandate prompt removal as they can lead to abscess and fistula formation, be directly irritating, and often are contaminated with bacteria and fungi.

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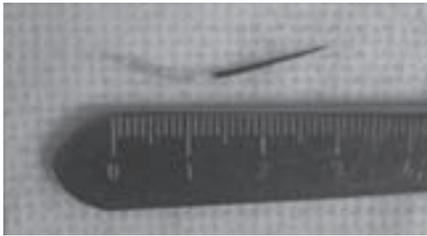
**B-scan Ultrasound OD**

## DIAGNOSTIC CHALLENGE

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Porcupine quills, similar to grass awns, are unique foreign bodies in that they have the ability to migrate through tissues to sites distant from initial penetration.

Investigation of suspected orbital lesions can be performed via radiography, ultrasonography, CT, or



Porcupine quill after excision

MRI. Radiography is less useful in cases of orbital disease, except those with bony destruction or highly dense foreign material. Ocular ultrasound provides detailed information on the location of orbital and ocular lesions and is less expensive than advanced imaging modalities. Porcupine quills have a distinctive sonographic appearance of two parallel, hyperechoic lines which represent the walls of the tubular quill. In this case, a modified lateral orbitotomy with zygomatic arch resection was chosen due to the location of the porcupine quill and the exposure needed to explore the orbit for additional quills.

Post-operative complications in this case were temporary enophthalmos and keratoconjunctivitis sicca (KCS), and vision loss. The ophthalmic clinical signs were fully resolved 4

months post-operatively, however, the patient remained non-visual OD. In endemic areas, migrating porcupine quills should be added to the differential diagnosis list for any animal presenting with signs of unilateral orbital disease.



Four months post-op



Best wishes  
in the coming  
New Year

From  
Your Friends at  
Eye Care For  
Animals

## ANALYZING THE QUALIFICATIONS OF JOB CANDIDATES

As we begin to see an upward trend from the economic slump, you may find yourself conducting a few more job interviews here lately. There are a variety of books, websites, and other resources that can provide you with ideas on how to best analyze the qualifications of job candidates as you match the applicant with the job responsibilities. Resumes tell us what applicants want us to know, not necessarily what we need to know. Many applicants are motivated to exaggerate their qualifications, salary and other information. So, as you analyze the qualifications of applicants use other tools in addition to the application and in-depth face to face interview. To narrow down candidates, consider conducting a phone screening process first. And, while some feel this may be controversial many interviewers are looking at candidates' facebook pages and other Internet related postings that pertain to the applicant. Utilizing other tools such

as personality assessments (i.e. Predictive Index) can help identify traits that fit well with the job type, predicts whether the candidate prefers interacting with others or not, and can provide an overall assessment of the applicant allowing you to see if he/she is a good fit for your company's core values and culture. Ask for school transcripts, review grade point averages, conduct background investigations and drug/alcohol testing, and complete reference checks. Create and utilize job specific testing, such as a typing/keyboard exercise, having the candidate prepare a communication piece constructing an email or writing a couple of paragraphs allowing you to assess grammar and sentence structure, create a mathematical/numbers test or any other type of reliable consistent test that can help you analyze the qualifications of the job candidate. Prepare in advance of the interview and know what skill set are looking



**Karen Webster, MBA**  
President & CEO, Eye Care for Animals

for! Carefully read the applicant's resume before interviewing the candidate. Put together the qualifications and description of your perfect candidate and use that to build your list of questions. Be prepared to discuss your company's history, goals and future plans, and culture and core values. Keep the following qualities in mind when interviewing—team player, results oriented, intelligent, leader, fit with position, chemistry, cultural fit, and enthusiasm. Take the time to “dig deep” as you analyze the qualifications of individuals applying for that important position you are trying to fill. Good luck!

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