
THE REPTILIAN EYE: CLINICAL CONSIDERATIONS

Douglas R. Mader, MS, DVM, Dipl ABVP

Marathon Veterinary Hospital, 11187 Overseas Hwy, Marathon, FL 33050 USA

ABSTRACT

It is imperative that practitioners familiarize themselves with the “normal” reptilian eye. The anatomic structure and function of the reptilian eye varies greatly amongst the greater than 9000 species in the class Reptilia. Knowing the normal will help recognize the abnormal. There are many clinical presentations of ophthalmic disease, from the simple “retained eyecaps” to trauma to intraocular pathology. Common conditions include dysecdysis and retained spectacle, intraspectacular dermatitis, pseudobuphthalmos, subspectacular abscesses (bacterial, fungal), corneal lesions (trauma), lens abnormalities (displacements, cataracts), anterior chamber disease (hyphema, hypopion), posterior segment lesions.

Keywords : Reptile, eye, ophthalmology, pathology, clinical

Common Ocular Conditions

There are congenital defects, developmental anomalies, metabolic and neoplastic ocular conditions. Parasites, viruses, bacteria and fungi have all been implicated in ophthalmic disease.

Cataracts are not uncommon and can result from many causes: Vitamin B deficiencies, hyperglycemia, osmotic imbalances, trauma and freezing injuries. Depending on the cause, these can be removed.

Neoplastic diseases have been documented both in and around the eye. Ocular sarcomas, squamous cell carcinomas and meibomian gland tumors have been seen.

Numerous species of bacteria and fungi have been cultured from the subspectacular space. Periorbital infections, appearing clinically like a buphthalmic globe, can lead to Bullous Spectaculopathy.

Several viruses have been found to be the cause of ocular pathology. Herpes virus has been demonstrated in viral papillomas of the cornea and globe in green turtles. In addition, herpes virus has been implicated in Lung Eye Trachea disease. IBD viral encephalitis has been shown to cause clinical blindness in boas.

Parasites, such as the snake mite, can cause serious pruritic, inflammatory dermatitis around the orbits. In addition, this can lead to dysecdysis and retained spectacles. Foleyella, the filarid nematode, has been shown to cause verminous emboli in the sinus behind the globe of

chameleons.

Ocular Examination

Due to the shape of the head and size of the boney orbit, the degree of ocular movement varies greatly among species. In general, lizards, chelonians and crocodilians have a wide range of movement of the globe. Snakes, for the most part, have limited movement of the globe. CN III, IV (Trochlear) and VI control the movements of the eyes.

Cranial nerve examination is possible in reptiles, and a valuable tool to assess ocular function. CN II (Ophthalmic) and CN III (Oculomotor) are used to assess the pupillary light response (note, reptiles do not have a consensual response). CNII and CN VII (Facial), in patients with a palpebrum, are tested to evaluate the Menace response. CN V (Trigeminal) and CN VII looks at the Palpebral (and Corneal) reflex, and CN V, CN VI (Abducens) and CN VII test the Retractor Oculi Reflex.

Tonometry has been performed and reported in reptiles without a spectacle. There is a paucity of normal values. 15 – 25 mm Hg have been reported.

Flourescein stain is useful for animals without a spectacle. However, it has value in assessing patency of the Hardarian ducts. Flourescein is dissolved in sterile saline, and using a 27g needle, is injected into the subspectacular space. If the ducts are patent, flourescein is seen entering the oral cavity through the rostral hard palate.

Direct, indirect and Slit-lamp biomicroscopy, in trained hands, have great value in evaluating the ocular surface and fundus. The difficulty here lies in the fact that in general reptiles have a small pupil size, thus making fundic examinations difficult. Since reptiles have striated iris muscles standard mydriatics such as atropine and tropicamide have no effect.

Mydriasis is accomplished using neuromuscular blocking agents such as Dturbocurarine (0.05-0.1ml). Topical analgesia is applied to the surface of the globe, then a 27 – 30 g needle is used to inject the agent intracamerally. General anesthesia should be used for this procedure.

In animals with a subspectaculopathy samples can be collected using a 27g needle for cytology and culture. While the needle is still in place, flourescein can be injected to evaluate patency of the Hardarian duct, and the practitioner can take advantage of opportunity and flush the region with saline or an antibiotic.

Under sedation, with the aid of topical analgesia, samples can be collected for conjunctival biopsy. If needed, a portion of the spectacle can be removed (spectaculostomy) to facilitate flushing and drainage of the area behind the spectacle.

Surgery

Ocular surgery in reptiles follows the same principles of ophthalmic surgery in mammals. One

anatomic difference to note is that reptiles have a large scleral ossicle in each eye. Especially in snakes with their complete boney orbit, it can be difficult but not impossible to exteriorize the globe during enucleation. It may be necessary to physically collapse the globe (crush the ossicle) prior to removal. In addition, in snakes, since there is very little redundant skin over the skull, it can be difficult to close the defect in the face after an enucleation. The author often leaves the surgical site open and allows the wound to heal by granulation.

Ocular Therapeutics

Topical medications are minimally effective in patients with a spectacle. In all other species, topicals can be used. Medications can be injected into the subspectacular space as needed. More importantly, ocular problems may be best treated with systemic medications, including but not limited to antimicrobials, NSAIDS and other.

LITERATURE CITED

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