Avian Ophthalmology

Basic Ophthalmological Techniques

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BASIC EQUIPMENT AND EXAMINATION TECHNIQUES

Focal Light Examination

This can be the most important method of eye examination. Focal light illumination can be provided by a auriscope light, a voroscope, or a transilluminator.

The focal light can be used to examine the anterior segment, e.g. the eyelids, conjunctiva, cornea, anterior chamber, iris and the anterior aspect of the lens. The focal light can also be used for oblique eye examination. This technique involves looking from the side of the eye in a dark room. Thickening of the cornea, or anterior chamber opacities can be detected.

Magnification is essential for anterior chamber examination. This can be provided with a Voroscope. This costs about $250.

Dilatation of the Pupil

All the avian species have skeletal muscle in their well developed irises. On most occasions it is not necessary to dilate the pupils for routine examination.

If pupillary dilatation is required, freshly prepared d-tubocurarine (3mg/ml with 0.25% benzalkonium chloride) is applied at one drop every 2 minutes for 5 minutes. The response is variable; pigeons, owls and rheas dilate well, whereas ducks respond poorly. I have also used fresh intraocular pancuronium to dilate ostrich pupils before cataract extraction.

Fundus Examination

Birds have an anangiotic (devoid of blood vessels) fundus. They have a large pecten, a vascular organ which seems to provide nutrition to the retina and optic nerve.

The fundus can be examined with direct or indirect ophthalmoscopy. The indirect technique would be proffered in birds. More of the fundus can be seen through the smaller pupil. It is a technique

that requires some practice.

In cage birds the most common cause for presentation is trauma, either from a collision or from shotgun trauma.

Congenital Anomalies

In birds these are rare. Microphthalmia (small eyes) have been described in raptors. There is no treatment, and the cause is not known.

Eyelids

Trauma is the most common cause of eyelid problems. Defects should be closed with fine monofilament sutures. This can usually be done with local anaesthetic and manual restraint.

Periocular eyelid lesions are largely due to pox virus infection particularly in raptors, psittacines, canaries, gallinaceous and passerines. Pox virus infections can occur in two forms;

a) a mild form - involving the proliferative lesions of the beak and eyelids; and

b) a more severe - generalised form.

Pox virus infection usually involves the eyelids first. Caseous material and swelling occurs beneath the eyelids, the cornea may then become ulcerated. After 1 to 2 weeks the scabs dry and eventually fall off, the clinical illness can last 1 to 2 months. In psittacines residual ocular problems are common.

Treatment is aimed at preventing secondary bacterial infection by using topical and systemic antibiotics. Vitamin A therapy may limit the disease if given early in the course of the disease. The eyes can be greatly bathed with a betadine antiseptic solution diluted 1 in 10.

In budgerigars the eyelids can become scaly and swollen with Knemidokoptes infection.
The third eyelid can be torn with trauma. Try to avoid removing the third eyelid as it is important in the distribution of the tear film. Grass seeds and parasites can also been seen behind the third eyelid.

Conjunctiva

The most common cause in Australia is *Chlamydia psittaci*. The disease may be limited to the eyes or may be systemic. Topical and systemic tetracyclines are indicated.
Other causes of conjunctivitis include rhinitis and sinusitis, dust, irritating fumes and possible vitamin A deficiency.

Cornea

Corneal ulcers can occur from trauma, eyelid disease or from extension of conjunctivitis. Topical antibiotics are indicated. The eyelids can be taped or sutured together. This provides protection and faster healing then occurs. A punctate keratitis has been described in Amazon parrots. The cornea becomes irregular, and eventually ulcerates over the whole the cornea. Eventually the lesions resolve without treatment.

Uveitis

Trauma is by far the most common cause. Hyphaema is a common finding, and it is possible that fractures of the scleral ossicles can occur. In many cases the eye can shrink because of the severe trauma. Retinal detachment is also a common finding.
Topical and systemic corticosteroids are indicated, The prognosis is always guarded, especially with traumatic uveitis.

Cataracts

Cataracts or lens opacities are a common finding in birds. I have seen a number of cataracts in ostriches. Surgery is the only therapy. A new technique has greatly improved the success of cataract extraction. This technique is called PHACOFRAGMENTATION, and is particularly suited to cataract extraction in birds.

Retina

The most common cause is trauma. Retinal detachment, and tearing, retinal and optic atrophy are common findings. The extremely vascular pecten is also suspect to haemorrhaging.

Eye Removal

There are a number of indications for eye removal e.g. severe ocular trauma. For cosmetic reasons every attempt should be made to preserve the eye.
The avian eye is quite large, and eye removal can be difficult, and profuse haemorrhage can result. A transaural approach has been described as is probably most suitable for use in owls. Alternately a globe collapsing technique can be used. In this technique the scleral ossicles can be severed, allowing the globe to be collapsed.

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