

POST POX OCULAR PROBLEMS IN BLUE FRONTED AMAZON AND BLUE HEADED PIONUS PARROTS

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Avian pox virus infections occur in a wide variety of species of birds. Newly imported psittacine birds from South and Central America are often infected with pox. In most cases the disease has run its course by the time it reaches the individual owner. However, many cases may result in scars or chronic opthalmic problems for which veterinary care may be requested.

Unilateral or bilateral eye lesions of pox are most often seen 10 to 14 days post infection and are usually the first lesions observed. The first signs are mild blepharitis and a serous ocular discharge. The lids swell and may seal closed. Caseous white material and fluids collect under the lids. The cornea becomes edematous and may ulcerate. These ulcers may deepen and perforate. At 12 to 18 days post infection, dry, crusty scabs form around the margins of the lids and may obliterate the eyelid

tissues: These scabs become leathery and subsequently dry and fall off. Clinical illness lasts 2 to 6 weeks. Affected birds also suffer from respiratory disease and oral lesions. In severe or untreated cases many birds succumb to secondary bacterial or fungal infections or wasting due to difficulty in feeding. Treatment is aimed at secondary bacterial and fungal infections and providing supportive care. Vitamin A has been clinically effective in decreasing the severity of infection if given in the early stages of the disease. Intramuscular administration of 10,000 to 25,000 IU of Vitamin A per 500 g body weight once weekly is recommended. Systemic antimicrobial therapy is often necessary. Eye lesions are washed daily with Johnson's Baby Shampoo, followed by rinsing with a solution composed of 1 ounce of 2% mercurochrome and 4 ounces of collyrium. Chloramphenicol ophthalmic ointment is applied to the cornea. Daily cleaning and opening of the lids in the early stages of the disease often decreases the formation of disfiguring scabs. After formation of the scab just enough to medicate the eye. Premature removal of the scabs the eye can be treated by gently lifting the lateral side of the scab just enough to drop off naturally. The most common secondary bacterial invaders are *E. coli*, *Pseudomonas*, and *Proteus*.

In 87 Blue-Fronted Amazon Parrots (*Amazona aestiva*) and 87 Blue-Headed Parrots (*Pionus menstruus*), the incidence of 14 characteristic post-pox ophthalmic disorders was documented. These were tabulated as: no visible lesions; lash loss; lid degeneration; lid deformity; epiphora; conjunctivitis/blepharitis; xanthophora; corneal ulcers; corneal vessels; corneal crystals; scars; uveitis; cataracts; altered globe size (phthisis/buphthalmia); and sunken globe. Birds were examined weekly in random order and assigned to treatment groups without reference to

Two flocks of imported petting birds had active pox virus infection two to four months prior to initiation of the study. During that time they were housed in a wholesale facility and were treated according to the above treatment recommendations.

MATERIALS AND METHODS

Despite good management, many birds will exhibit ocular abnormalities after the active infection has subsided. Eyelids may be distorted, degenerated, and exhibit filthiness lash loss. More severe damage may result in xanthophora and epiphora. Corneas may contain subepithelial crystals, neovascularization, or suffer recurrent corneal erosions. Intraocular structures may be distorted from uveitis or corneal perforation. Some globes will become phthisical, and others, buphthalmic.

and fungal invaders, *Candida* and *Aspergillus*.

previous examination records. Birds were treated once daily and were caged according to species and treatment groups. Treatment groups were topical antibiotics (chloramphenicol ophthalmic ointment), topical steroids with antibiotics (0.1% dexamethasone, polymixin B, and neomycin), and no treatment. (A) Maximum length of study was 14 weeks. Birds with clinically non-significant lesions were removed from the study. These included depigmentation, lash loss, minor lid defects, and inactive corneal crystals. The majority of the remaining birds were kept in the study because of chronic corneal problems, some associated with eyelid distortion or adhesions. Birds which responded were held in observation for two weeks and then were removed from the study.

eyelid-corneal adhesions and eyelid-eyelid adhesions were separated by careful dissection under good magnification.

Adhesions were crushed along the intended incision line with a hemostat to lessen hemorrhage. Post surgically, topical steroids were applied.

Mechanical debridement of corneal epithelium was accomplished with a dry, cotton tipped applicator after installation of a topical anesthetic. Temporary tarsorrhaphy was used in two cases of chronic corneal ulceration. One horizontal mattress suture creating the tarsorrhaphy was left in place for two weeks.

(A) Maxitrol ophthalmic ointment - Alcon Laboratories Inc., P.O. Box 1959, Fort Worth TX. 76134

RESULTS

There were distinct species differences in the two species of birds studied and the data were analyzed separately.

Of the 27 Blue Fronts studied, only 8 birds had no ocular lesions. Fifty-five percent had bilateral involvement. The most common disorders were lid deformities (35%) and lash loss (33%). Most of these were clinically not significant. The next most common lesions were corneal neovascularization (16%), and corneal crystals (15%). Those corneas in which vessels appeared reactive were treated. Figures #1 and #2

All birds with corneal ulcers were treated with topical antibiotics, with or without epithelial debridement. Of 16 ulcers, 8 were still present at the end of the study. Two of these ulcers did not heal even after temporary tarsorrhaphy. Fifty percent of debrided ulcers improved; 50% of non-debrided ulcers improved. Only two ulcers deepened and perforated.

Birds with active corneal neovascularization (16%), exposure keratitis, conjunctivitis (27%), epiphora (6%), and uveitis (2%) were treated with topical steroids. Of 57 eyes, 42% showed no change, 35% improved, and 23% regressed. Birds with either corneal neovascularization or uveitis eventually developed corneal crystals.

The clinically non-significant lesions were the most commonly found abnormalities. These included degeneration, minor lid deformities, lash loss, and inactive corneal crystals. These

DISCUSSION

fused lids resulted in corneal necrosis. Improved, and 27% regressed. In 2 cases, repeated separation of symblepharon dissection. Of 41 eyes, 41% showed no change, 32% conjunctivitis, active corneal neovascularization, uveitis, or had Eyes were treated with topical steroids if they had

therapy alone. Bids with corneal ulcers were treated with topical antibiotics with or without epithelial debridement. Two of four eyes improved with corneal debridement; four of six birds improved with antibiotic

(4%). Figures #1 and #3 Intraocular involvement presented as uveitis (4%) and cataracts with active conjunctivitis in 10% and symblepharon in 9%. (14%). Lid involvement, when present, was clinically significant disorders were corneal crystals (19%) and corneal neovascularization Twenty three percent had bilateral involvement. The most common Of the 87 Blue Heads studied, 19 birds had no ocular lesions.

Only one bird developed a cataract. In this study, 6 of 7 birds with epiphora improved with topical steroid treatment.

cosmetic alterations do not affect function but should alert the clinician to the possibility of previous box infection.

None serious lid defects were exhibited as symblepharon epiphora, or exposure keratitis. While dissection of symblepharon is recommended, the resultant necrosis of local tissue may be significant. Scars and lid distortions in the medial canthus may occlude the nasolacrimal puncta or put them in a position where they can not drain tears properly, resulting in epiphora. Epiphora is commonly unacceptable to most owners. Topical steroids will sometimes shrink surrounding tissues making narrowed ducts more patent. Daily therapy may need to be continued for several weeks.

Nonreactive subepithelial corneal crystals were considered the end result of previous corneal injury. Corneal "fuzziness" or neovascularization, or opacities may be the initiating factor. If (corneal) neovascularization was present, topical steroids were applied to reduce the painous reaction. In those birds which responded, blepharospasm was reduced and corneal clarity improved.

Chronic corneal erosions were the most recalcitrant of the post box lesions. The primary lesion was defective epithelium which sloughed easily. Treatment groups were topical antibiotics or debridement with topical antibiotics. Some refractory ulcers were debrided repeatedly. Healing was accomplished equally with or without debridement. Birds which re-epithelialized with neovascularization were placed on topical steroids to improve

REFERENCES

1. Clubb, S.L.; Avian Pox in Cage and Aviary Birds; In Zoo and Wild Animal Medicine, 2nd Edition, Murray Fowler Editor; In Press.
2. Karpinski, L. G., and S.L. Clubb, Clinical Aspects of Ophthalmology in Caged Birds; Proceedings of the Association of Avian Veterinarians, pp 216-227, (1983).

Corneal ulcers should be treated anticipating a 50% chance of accomplishing re-epithelialization. Corneal neovascularization, conjunctivitis, or epiphora can be reduced with topical steroids, thereby improving clinical appearance and relieving discomfort. Surgical intervention is seldom warranted in post pox ocular problems except in cases of symblepharon.

In summary, 184 birds which had recovered from pox virus infection were studied. Eighty five birds (46%) had lesions involving 132 eyes which required treatment. With treatment, 36% improved clinically, 21% regressed, and 43% were unchanged.

Some non-responding birds were placed on a succession of treatment modalities, including temporary tarsorrhaphy, with no improvement of clinical discomfort noted. Despite therapy of up to 14 weeks, half the affected eyes still had corneal erosions.

35%	Lid deformities
33%	lash loss
16%	Corneal neovascularization
15%	Corneal crystals
9%	Conjunctivitis
8%	Corneal ulcer
6%	Sunken globe
6%	Epiphora
5%	Phthiasis

n = 194 eyes

PREVALENCE OF LESIONS IN BLUE FRONTED AMAZONS

Figure #2

8%	No lesions
37%	Unilateral lesions
55%	Bilateral lesions

22%	
55%	
23%	

n = 97

n = 87

Blue Fronted Amazons

Blue Headed Pigeons

DISTRIBUTION OF POST POX OCULAR LESIONS

Figure #1

PREVALENCE OF LESIONS IN BLUE HEADED PINNUS

n = 174 eyes

Figure #3

Corneal crystals	19%
Corneal neovascularization	14%
Conjunctivitis	10%
Sympblepharon	9%
Uveitis	4%
Cataracts	4%

Full thickness, central corneal ulcers have been observed in three weanling Toco Toucans (Ramphastos toco). In each bird, one eye had a central white plaque, surrounding edema, and mild endothelial reaction in the affected area of the cornea. The plaque was debrided from the cornea, and smears of the material were

ANDIDA ULCERS IN YOUNG TOUCANS

In an effort to increase the body of knowledge concerning ocular problems in caged birds we have continued our investigations into previously reported diseases and have uncovered some new problems. Once again, etiology has not always been determined but disease course has been documented.

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OTHER INVESTIGATIONS INTO THE OCULAR PROBLEMS OF CAGED BIRDS

Hill Rd., Kenilworth, N.J., 07033.

C. Gentocin Ophthalmic Solution - Schering Corporation, Kenilworth, N.J., 07033.

Box 4000, Princeton N.J., 08540.

B. Fungizone Intravenous Solution - E.R. Squibb & Sons Inc., P.O. Box 4000, Princeton N.J., 08540.

American Hospital Supply, McGraw Park, IL 60085.

A. Diff Quick stain set - American Scientific Products, Division of American Hospital Supply, McGraw Park, IL 60085.

 anteroposterior cortical cataracts (2 of her siblings were clear).
 Years younger, had cataracts, and a daughter 25 years younger, had
 bilateral cataracts (2 other siblings have died). A half brother
 Macaws of known pedigree. Two full siblings were examined and had
 bilateral cataracts. This Macaw is a patriarch in a family of
 A 38 year old Scarlet Macaw (Ana macaw) was presented with

SUSPECTED FAMILIAL CATARACTS IN MACAWS

growth. Ulcers in the two birds healed with scarring.
 was isolated from the plaques and the third bird had no bacterial
 septicemia caused by the same organism. In the second bird E. coli
 bacillus was cultured. This bird died two days later of a
 bird. In the first bird, a yellow pigmented gram positive
 used. (C) Culture results showed a heavy growth of Candida in all
 twice daily. (B) Topical gentamicin ophthalmic solution was also
 Amphotericin B intravenous solution applied topically to the corn
 and budding yeast were found. Treatment was initiated with
 stained with Diff Quick and gram stain. (A) In each smear, bacte

Indianapolis, IN 46285

Tubocurarine chloride - Eli Lilly and Co., 307 E. McGraw

are required to close the incision.

small limbal incision using a bent needle as a hook. No sutures
 adherent to the lens. The worm was removed from the chamber through
 as moderate anterior chamber reaction and the iris was diffusely
 anterior chamber of a Blue and Gold Macaw (Ara ararauna). There
 A single nematode (species not identified) was found in the

chloride, (D). Three 10-0 nylon sutures closed the wound.
 the anterior chamber with a 1 mg/ml solution of tubocurarine
 limbal incision. Dilatation of the pupil was then achieved by washing
 successfully removed using an extracapsular technique through a
 One cataract from the above mentioned Scarlet Macaw was

OPREAL CHANGES FOLLOWING INTRAOCULAR SURGERY IN MACAWS

to an autosomal locus.
 that the syndrome was produced by a fully penetrant recessive allele
 excellent long term pedigrees were available. They hypothesized
 group of Yorkshire and Norwich Canaries (Serinus canarius) in which
 Hereditary cataracts were reported by Slater, in a breeding
 ataract development in these macaws. Figure #1
 not conclusive, this data suggests a familial tendency of

Birds from Central America tend to develop anterior uveitis (intraocular) Birds from Northern South America (Guyana) develop less intraocular

develop uveitis. No etiological agent has been determined. As the disease progresses, some birds will develop a deep corneal ulcer. Fewer than 5% of these birds will develop a synchiae may result. Anterior or posterior may be concomitant anterior uveitis. However, lesions may progress over the surface of the cornea. There are many cases, lesions resolve spontaneously within a week. The lesions appear first as a slight irregularity of the medial

imported from Central and South America. A mild transient punctate keratitis has been observed in Amazon

PUNCTATE KERATITIS IN AMAZONS

still visible with magnification 6 months post surgery. the avian cornea. With time, the opacities diminished, but were within the corneal layers was not possible due to the thickness of normal depth and appearance. Exact localization of the opacities The corneas were not wrinkled and the anterior chambers were of cornea aligned along the axis corresponding to the corneal incision. corneal striae. These appeared as serpiginous opacities in the with topical steroids. Within two weeks both corneas developed relatively traumatic and the eyes were treated post operatively In both this case and the cataract removal, surgery was

involvement but tend to develop more long term corneal defects. These differences may be due to species involved rather than country of origin.

Most cases with regess spontaneously within 1 to 2 weeks. In an earlier report of the Central American form, cases which did not regress were treated with a variety of topical antibacterial, and an antiviral agent. No treated group has shown a significant improvement over untreated controls.

A study of 20 Amazon parrots from Guyana was initiated to determine the appropriate treatment for non-resolving-purulent keratitis. Nine Orange Winged Amazons (*Amazona amazonica*) and 11 Yellow Crowned Amazons (*Amazona oriole*) were

studied. Similarly affected birds were separated into 2 treatment groups: 1, mechanical debridement; 2, mechanical debridement with topical 1% trifluridine applied once daily; and 3, no treatment. (B) Treatment groups consisted of both Orange Winged and Yellow Crowned housed together. With the exception of one eye, corneas were debrided only once using a dry cotton tipped applicator. Birds were examined weekly.

Dr. Winifred ophthalmic solution - Bunnings Wellcome Co., 8030 Cornwallis Road, Research Triangle Park, NC 27709

Ophthalmologists, 1982.

Thirteenth Annual Scientific Program of the College of Veterinary

Cullen; Hereditary Cataracts in Canaries, Transactions of the

2. Slater, D.H., J.S. Bradley, B. Vale, I.J. Constable, L.K.

Avian Veterinarians 1983, pp 216-227.

ophthalmology in caged birds; Proceedings of the Association of

1. Karpinski, L.G. and S.L. Clubb, Clinical aspects of

REFERENCES

debridement and trifluoridine yielded best results.

period. Despite small sample size, it appears that treatment with

of 30 eyes (23%), remained affected after the 5 week observation

3 regressed, and 1 remained unchanged. Regardless of treatment, 7

normal, and ten were affected. Of the ten affected eyes 6 improved,

2 remained unchanged. In the 7 birds of group 3, 4 eyes were

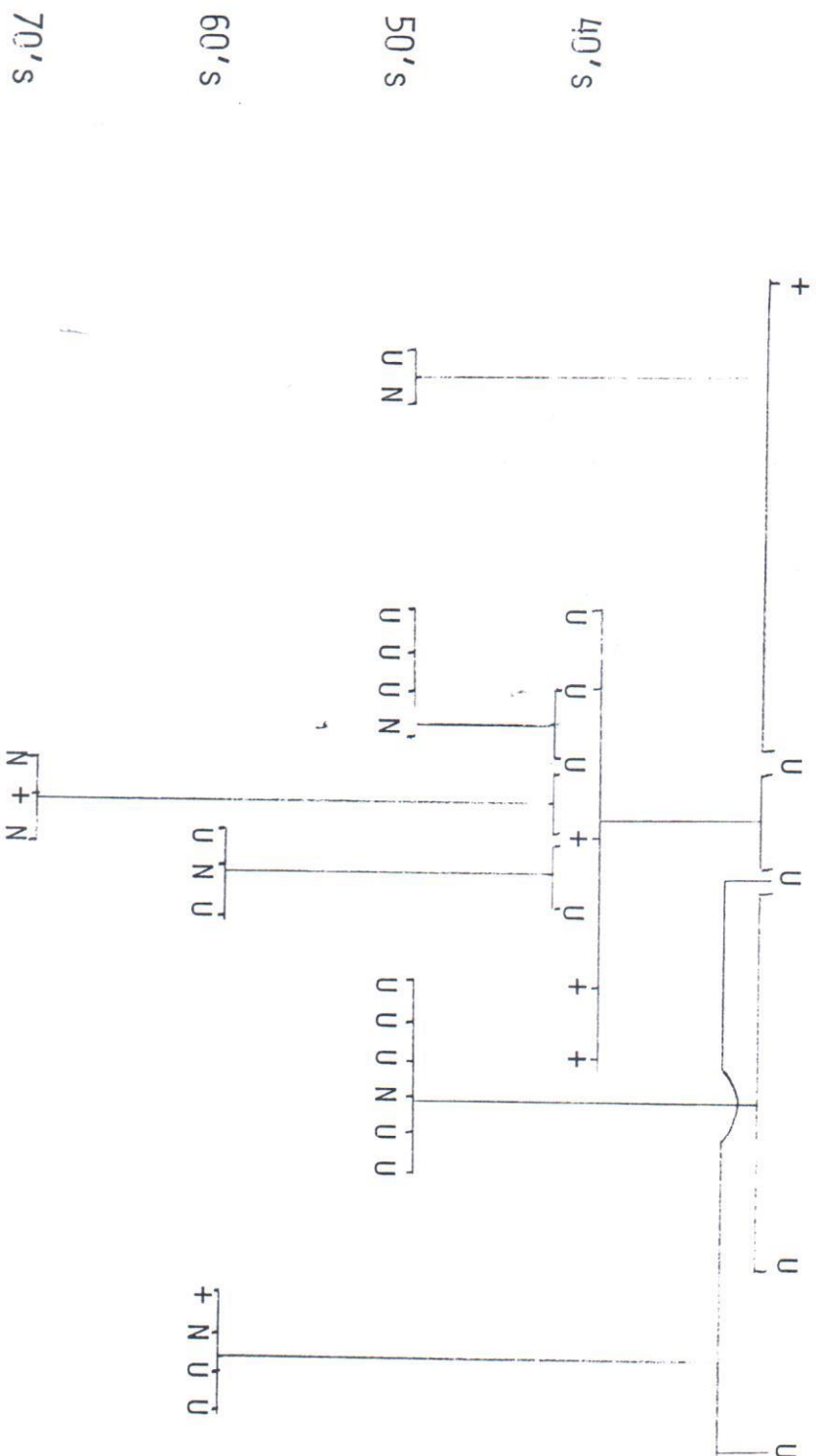
normal, and 7 were affected. Of the 7 affected eyes 5 improved, and

remained unchanged. In the four birds of group 2, 1 eye was

affected. Of the 13 affected eyes 6 improved, 3 regressed, and 4

In the nine birds of group 1, 5 eyes were normal and 13 were

PHILIPPE (OF SCARLE) MALAM'S



+ = CATARACT
 N = NORMAL
 U = UNAVAILABLE

Group 1: Debridement (n = 13 eyes)
 Group 2: Debridement and triflupridine (n = 7 eyes)
 Group 3: No treatment (n = 10 eyes)

	Improved	Regressed	No change
Group 1	46%	23%	31
Group 2	71%	0	29%
Group 3	60%	30%	10%

Comparison of treatment groups - Punctate Keratitis in Amazon

Figure #2