

Common Conditions and Surgical Techniques in the Avian Eye – an Interactive Review

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SUMMARY

Ocular lesions in birds are an expression of systemic disorders more frequent than in mammals and therefore represent an important diagnostic criterion. The ocular symptomatology frequently enables specific conclusions to be drawn on suspected disorders or it may even be pathognomonic for a certain disease. Thus, the avian eye may be seen - in a much larger extent than in mammals - as a “diagnostic window”.

INTRODUCTION

In many birds the eye is the most important sensory organ. The capacities of the avian eye which exceed those of the mammalian eye in part are an adaptation to the specific way of life and habitats as well as physical activities that are closely bound to perfectly functioning vision (e.g. flying). Even partial impairment of vision that can be caused by any one of many known eye diseases, always has far-reaching consequences because compensation by other senses (including olfactory and acoustic sensory perceptions) is usually insufficient, if possible at all. Hence ornitho-ophthalmology occupies an important position in avian medicine (Murphy, 1987; Korbelt, 2000; Kern, 2007; Korbelt and Bohnet, 2007; Korbelt et al., 2008).

OCULAR DISORDERS AND OPHTHALMOLOGICAL TECHNIQUES IN BIRDS

The ophthalmologist considers it logical to classify eye disorders according to the various ocular structures involved. Thus a complete review on avian ophthalmology disorders based on a morphological basis will be given within the presentation, for a review please refer to Table 1, for a literature review please refer to Murphy (1987), Korbelt (2000), Gelatt (2007), Kern (2007), and Korbelt et al. (2008).

Within a long period investigation on ocular disorders in birds (2) an overall incidence of 7.6 % of all the birds examined has been found. The highest incidence of eye disorders compared with other patient groups was generally found among wild birds (11.7 %), among which most eye disorders were seen in Accipitriformes (26.1 %), Strigiformes (20.0 %), and Falconiformes (19.7 %). In contrast, a lower incidence was found in falconry raptors with 7.3 %, but again Accipitriformes (6.3 %) were most frequently affected by eye disorders, followed by falcons (5.5 %) and owls (5.0 %). Among disorders of the posterior eye segment (*fundus oculi*) most often trauma related haemorrhages (most frequently arising from the pecten) may be diagnosed. In general chronic lesions caused by disorders located within the upper part of the fundus are resulting in a poor prognosis, as birds and especially raptors are orientating themselves primarily using the upper part of the fundus (with the central and

temporal fovea included). Ophthalmological examination as well as surgical techniques are based in principal on techniques used in human and mammal ophthalmology, however miniaturised.

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INFECTIOUS AETIOLOGY									
BACTERIAL INFECTIONS Gram negative rods <ul style="list-style-type: none"> • <i>Pseudomonas aeruginosa</i> • <i>Salmonella</i> spp. • <i>Escherichia coli</i> • <i>Proteus</i> spp. • <i>Aeromonas hydrophila</i> • <i>Pasteurella multocida</i> • <i>Haemophilus</i> spp. • <i>Actinobacillus</i> spp. • <i>Moraxella</i> spp. • <i>Bordetella</i> spp. Rickettsiales and Chlamydiales <ul style="list-style-type: none"> • <i>Chlamydia psittaci</i> Gram positive cocci <ul style="list-style-type: none"> • <i>Micrococcus</i> spp. • <i>Staphylococcus</i> spp. Gram positive rods <ul style="list-style-type: none"> • <i>Listeria monocytogenes</i> • <i>Erysipelothrix rhusiopathiae</i> Mycobacteria <ul style="list-style-type: none"> • <i>Mycobacterium avium</i> • <i>Mycobacterium tuberculosis</i> Other	MYCOTIC INFECTIONS Yeast and Yeast-like <ul style="list-style-type: none"> • <i>Candida albicans</i> • <i>Candida crusei</i> • <i>Cryptococcus neoformans</i> Mould fungus and hyphomycetes <ul style="list-style-type: none"> • <i>Aspergillus</i> spp. Other	PARASITIC INFECTIONS Protozoa <ul style="list-style-type: none"> • <i>Toxoplasma gondii</i> • <i>Trichomonas</i> spp. • <i>Cryptosporidium</i> spp. • <i>Sarcocystis</i> spp. • <i>Leucocytozoon</i> spp. • <i>Plasmodium</i> spp. • <i>Histoplasmodium</i> spp. Helminths <ul style="list-style-type: none"> • <i>Philophthalmus</i> spp. • <i>Oxyuris</i> spp. • <i>Thelazia</i> spp. • <i>Cyathostoma</i> spp. • <i>Filaria</i> spp. • <i>Trichobilharzia</i> spp. Arthropoda <ul style="list-style-type: none"> • <i>Cnemidocoptes/Mesocnemid</i> spp. • <i>Ixodes ricinus</i> 	VIRAL INFECTIONS Papovavirus infections <ul style="list-style-type: none"> • Papillomatosis Adenovirus infections <ul style="list-style-type: none"> • Adenovirus of budgerigars Herpesvirus infections <ul style="list-style-type: none"> • Marek's disease • Pacheco's disease • Infectious laryngotracheitis • Infectious Amazon tracheitis • Cytomegalovirus-like infections • Duck plague Avipoxvirus infections <ul style="list-style-type: none"> • Avian encephalomyelitis Picomavirus infections <ul style="list-style-type: none"> • Reovirus infection of psittacines • Infectious myocarditis of geese Orthomyxovirus infections <ul style="list-style-type: none"> • Influenza infection of quail • Influenza infection of waterfowl • Influenza A-tern virus infection Paramyxovirus infection <ul style="list-style-type: none"> • Newcastle disease • PMV-1 pigeon • PMV-2 (Yucaipa virus infection) • PMV-3 (Turkey, small psittacines) Pneumovirus infections <ul style="list-style-type: none"> • Turkey rhinotracheitis (TRT) • Swollen head syndrome 	INTOXICATION <ul style="list-style-type: none"> • Botulism • Lead intoxication • Aflatoxicosis • Photosensibility • Ammonia gas • Other 	HEREDITARY <ul style="list-style-type: none"> • Cataract • Retinopathy • Glaucoma • Coloboma • Microphthalmia • Macrophthalmia 	OTHER <ul style="list-style-type: none"> • Trauma • Developm D • Insect bites • Other 	NEOPLASM <ul style="list-style-type: none"> • Ocular • Adnexal • Cerebral • Other 	NONINFECTIOUS RESP. UNKNOWN AETIOLOGY <ul style="list-style-type: none"> • Agapornis-Mynah eye disease • Sunken eye syndrome • Owl keratitis • Cockatiel conjunctivitis • Budgerigar conjunctivitis • Keratoconjunctivitis of fowl • Keratoconjunctivitis of turkeys • Other 	METABOLIC DISORDERS <ul style="list-style-type: none"> • Hypovitaminosis A • Hypovitaminosis E • Pantothenic acid deficiency • Other

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NONINFECTIOUS RESP. UNKNOWN AETIOLOGY

Table 1. Aetiology of ocular disorders in birds - a review

