MYCOTIC INFECTIONS IN BIRDS II: CANDIDA, CRYPTOCOCCOSIS AND AVIAN GASTRIC YEAST (FKA MEGABACTERIA)

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CANDIDA

Description
Candidiasis in birds is most often in inflammatory and mildly exudative disease of the pharynx and crop. However it can affect the sinuses and lower respiratory tract and lower g.i. tract, especially in raptors. Among psittacines, candidiasis of the upper g.i. tract occurs most frequently in budgies, cockatiels, lovebirds, and cockatoos. It may affect sub-populations within an aviary or individual birds. It should be considered part of a differential diagnosis for conditions affecting these systems that are unresponsive to antibiotic treatment. Candida spp, especially C. albicans, are part of the normal flora of the g.i. tract of birds and they are also common inhabitant of the soil. Other species that may be encountered include C parapsilosis, C. krusei, and C tropicalis. While lacking the lethality and refractoriness to treatment exhibited by aspergillosis, Candidia derives importance in avian medicine as the most common mycotic infection encountered. Development of disease occurs from overgrowth of the organism brought on by: 1) stress-induced overgrowth of endogenous sources, 2) reduction in competition from the normal gastric flora by administration of antibiotics (typically > 10 days invites problems from Candida), and 3) introduction, perhaps of novel strains, from contaminated feeding utensils. Hand-fed neonates are particularly prone to infection from the latter source.

Clinical Signs
Clinical signs in typical cases include delayed crop and gastric emptying, anorexia and regurgitation. Overt lesions range from a slight reddening of oral mucosal to mucoid or catarrhal exudates accumulations. In some cases, raised white plaques resembling those of trichomoniasis or capillaria, or salivary duct abscesses may be seen. Chronic cases may develop a “Turkish towel” appearance particularly in the ingluvies that may be readily visualized via rigid endoscopy. In some cases, affected birds will have a “yeasty” odor about them and the presence of thick mucous will cause an audible “clicking” sound when they move their beak or tongue, giving an early clue that a problem exists.

Rarely, Candida can cause invasive systemic disease, and almost always in debilitated birds. Antemortem diagnosis of systemic disease is difficult and commercially available tests are not readily available. Diagnosis is typically made at post mortem.

Diagnosis
Diagnosis is accomplished by demonstrating the organism through stained wet mounts or culture. Direct visualization is useful, but some of the lesions strongly resemble those of other etiologic agents. The organism stained with a gram stain exhibits a strong gram positive character. Small rbc-nucleus sized, ovoid bodies, often with a small bud, may be seen microscopically. The presence of pseudohyphae – chains of yeast cells that cling together when new buds are formed – are taken as prima facie evidence of infection. The organism grows readily on Sabouraud’s dextrose agar, blood agar and variety of other media. Incubated at 37°C, shiny, opaque-white, rounded, raised colonies will be evident in 36-48h. Specific identification, if desired, can be obtained with the use of commercially available kits (API Candia, Bio-Merieux sa, Lyon, France). In raptors or other birds with vague signs of lower g.i. tract disease, the same procedures should be applied to fecal samples. In all cases, it is important to investigate whether Candida is primary or secondary to some other underlying process such as hypovitaminosis A or neoplasia. Among psittacines, proventriculitis from Candida and other sources should be differentiated from proventricular dilation disease (PDD), which may appear similar in terms of presenting signs and radiographically.

Treatment
Treatment can range from improvements in husbandry and acidification of the g.i. tract through addition of vinegar to the drinking water (15ml/L) or administration of orange juice in mild cases, to use of antifungal agents. Fluconazole, ketoconazole and nystatin are the most commonly used agents. Samour reports success using a miconazole gel designed for treating human oral and vaginal candidiasis (Daktarin Oral Gel, Janssen-Cilag Ltd. High Wycombe, Buckinghamshire, UK). Further information is summarized in the reference material. In our clinic, raptors with Candida are most often treated with nystatin. It is important to note that this agent is a topical treatment and must be “painted” over the surface of the pharynx and crop in order to be effective. Courses of treatment typically run 5 – 10 days and success is confirmed by negative cultures and absence of clinical signs.

AVIAN GASTRIC YEAST

Formerly known as ‘megabacteria’, the recent elucidation of this large, gram positive organism as a fungus has led to its renaming. Phalen has proposed the name Macrorhabdus ornithogaster. Isolated from the oral cavity and pharynx of small psittacines and caged birds, especially those in direct contact with soil, it is a cause of anorexia, ruffled feathers and weight loss. Diagnosis is made by collecting mucous from the oral cavity, mixing it with a small amount of saline on a slide, covering with a coverslip and examining under reduced lighting. The presence of large, elongated, tangled, cigar-shaped organisms is definitive. Treatment is a course of concentrated amphotericin B (100 mg/cc from a compounding pharmacy) given at the rate of 100 mg/kg for 5 – 10 days. Affected birds show notable improvement with 1 – 3 days of initiation of treatment.

CRYPTOCOCCUS

Though not a common infection of companion birds, this thermophobic, budding yeast is widespread in pigeons and occasionally reported as a cause of systemic disease of rhinitis in others. In humans, it is a cause of meningitis and contact with dried fecal material from infected birds (especially pigeons) may be a source of infection.

Clinical signs vary widely and are referable to the site of infection. There appears to be a predilection for upper respiratory infections, owing perhaps to the cooler temperatures there. While diagnosis is most often made at necropsy, the presence of gelatinous masses exuding or flushed from the sinuses of a bird with upper respiratory
disease may be suggestive of this etiology. Impression
smears from such material, stained with India ink, may reveal
the mucopolysaccharide capsule of this perfectly spherical 4–6 um dia. organism. Successful treatment of cryptococcal
infections is not described. However, it is suggested that
fluconazole may have the most likelihood of effectiveness¹.

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