Round Table Discussion

Diagnosis and Treatment Options for Megabacteria

In recent years, the syndrome “megabacteriosis” has been diagnosed with increasing frequency. Initially, characterization was difficult, as the organism possesses qualities attributed to both yeast and bacteria. Recently, Tomaszewski et al. have classified the organism as an ascomycetous yeast, and nomenclature has been changed accordingly. The organism is now known as Macrorhabdus ornithogaster. However, its diagnosis is still controversial, as is its role as a primary pathogen. Diagnosis is still challenging because the organism itself can vary in size and may be present in straight forms or occasionally branching. Plant matter or artifact may incorrectly be identified as M. ornithogaster. To further complicate diagnosis, some birds are infected and show clinical signs of disease but shed very few of the organisms in the feces or crop, and yet identification of the organism in an asymptomatic patient does not necessarily equate with disease or require therapy. Specialized testing, such as calcfluor white M2R, is becoming more available for these challenging cases (K. Snowden, oral communication, January 2004).

Recently, in my practice, a budgerigar (Melopsittacus undulatus) was diagnosed with M. ornithogaster after a 1-day history of regurgitation. Complete annual examination and fecal evaluation had been performed 1 month before presentation. At the time of presentation, only 1 organism was identified on evaluation of both a direct smear and a Gram’s stain of fecal samples. Despite treatment, the bird died within 24 hours of presentation. However, at necropsy, the proventriculus contained large numbers of the organism. We still lack a sensitive test for these patients, and interpretation of very small numbers of the organism continues to be challenging. Finally, treatment itself can be problematic. Amphotericin B is the treatment of choice but must be given by gavage. Recently, the injectable formulation of amphotericin B has been difficult to obtain in the United States, thereby further limiting treatment options.

This discussion is intended to present both clinical and academic perspectives on the diagnosis and management of M. ornithogaster and the associated disease in both an individual and an aviary setting. Images of the organism can be found at either www.vet.uga.edu or www.talltree.net. I have invited Brian Speer, DVM, Dipl ABVP (Avian), Dipl ECAMS, The Medical Center for Birds, Oakley, CA, USA; David Phalen, DVM, PhD, Dipl ABVP (Avian), College of Veterinary Medicine, Texas A&M University, College Station, TX, USA; Lauren V. Powers, DVM, Dipl ABVP (Avian), Carolina Veterinary Specialists, Huntersville, NC, USA; and Lucio John Filippich, BVSc, BSc, PhD, School of Veterinary Science, The University of Queensland, St Lucia, Australia, to share their experiences in this discussion. In this discussion, the terms megabacteria and M. ornithogaster will both be used to refer to the organism itself, and macrorhabdosis or megabacteriosis refer to the disease caused by the organism.

Natalie Antinoff, DVM, Dipl ABVP (Avian)
Associate Editor

Question: What is your preferred method for the diagnosis of megabacteria?

Dr. Filippich:

My preferred method of testing for Macrorhabdus in a clinically well bird is to collect droppings over 5 days and examine wet-mount fecal preparations of these under light microscopy. In a clinically unwell bird, examination of a single, freshly-passed fecal sample is sufficient to determine the presence of Macrorhabdus. A diagnosis of macrorhabdosis, however, is based on a combination of several factors: a history of intermittent regurgitation, neck stretching, or apparent polyphagia, often associated with stress (molting, breeding, overcrowding); clinical signs such as hypothermia, fluffed feathers, weight loss, lethargy, and soft, watery, bulky feces; and the presence of large numbers of Macrorhabdus in an unstained wet-mount fecal smear or vomitus preparation. Apparent polyphagia is when a bird is