Mortality in Parrot finches caused by a novel intracytoplasmic microorganism.

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Introduction

Mortalities that occurred in a small aviary flock of parrot finches was investigated by necropsy and histopathological examination. Two dead birds were examined and similar lesions were present in both. There was a pale thickening of the serosal surfaces of the gastrointestinal tract, pancreas and airsacs. Smears of the coelomic cavity were stained with Diff Quik and Gram's stain and demonstrated macrophages and few variably stained rods.

Histopathological findings

Formalin-fixed tissue was processed in paraffin for routine histological sectioning and staining with Haematoxylin and Eosin. This demonstrated a widespread granulomatous inflammation of the serosal surfaces of the gastrointestinal tract, peritoneum, peri-renal airsacs and connective tissue, bone marrow, dura and conjunctiva. This comprised foamy macrophages containing numerous refractile intracytoplasmic organisms measuring 1-2 μm in diameter. The organisms had a thick capsule and stained variably positive with Grams, Giemsa, PAS, Zhiel Neelson and Silver staining techniques. The brain spinal cord and retina appeared normal.

A diagnosis of severe disseminated granulomatous peritonitis, meningitis, osteomyelitis and conjunctivitis was made based on the histological findings.

Electronmicroscopic examination

Formalin fixed tissues were post-fixed in glutaraldehyde and osmium for resin embedding and electronmicroscopic examination. The organisms seen in Haematoxylin and Eosin stained histological sections were demonstrated as short blunt-ended rods 1.0-1.5 μm long and 1μm in diameter. They had a capsule with a thin outer electron-dense outer membrane

and a thick inner electron-lucent zone. The cell matrix was electron-dense and contained occasional membrane bound structures. No evidence of apical complexes characteristic of Apicomplexan parasites were seen.

The histological and ultrastructural features were consistent with an intracytoplasmic infection by a Eucaryotic organism that could be fungal or microsporidian.

Discussion

The large numbers of intracytoplasmic organisms present and associated with the histological features of widespread granulomatous inflammation in the two birds that were examined from this flock suggest that the mortalities reported by the owner may have been due to infection with a novel microorganism of unknown taxonomy. The microorganism shared similar ultrastructural characteristics with microsporidia due to its thin electron-dense outer surface and thick electron-lucent capsule (Norton & Prior1994) and an intracytoplasmic yeast-like organism that has been recognized as a cause of death in muscovy ducks throughout the world. Although the disease in ducks mainly involves the lungs and was first reported as a haemoproteus (Julian & Galt 1980) and then as an intracellular bacteria (Julian 1985; Groom et al 1986) before it was shown to be yeast-like by electron-microscopy.

References

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