Etiology of PDD

Researches take a look at possible causes of PDD

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The article "Chasing A Cure: Proventricular Dilation Disease" (July 2008 issue of BIRD TALK magazine) defined and gave tips to protect your bird from proventricular dilatation disease (PDD) from the Psittacine Disease Research Group at the University of Georgia's College of Veterinary Medicine.

Proventricular dilatation disease continues to cause morbidity and mortality among companion and aviary birds. Field observations suggest that the etiologic agent of PDD can be spread through horizontally and vertically. To evaluate issues related to the natural transmission of the PDD agent, breeding pairs of cockatiels in which at least one individual of each pair was histologically positive for PDD were placed in enclosures to facilitate breeding. Both the adults and their offspring were followed to determine the rate of transmission in the population.

Since its initial description in the late 1970s, multiple etiologies have been proposed for PDD; however, none have been proven to be the etiologic agent. Adenovirus-like particles were demonstrated within intranuclear inclusion bodies in one affected bird. Paramyxovirus-like viral particles were demonstrated within inclusion bodies located in the neural cells of the spinal cord and in visceral nerve ganglia of another bird. Similar inclusion bodies have been described in the nerves of pigeons with paramyxovirus infections.

Birds with PDD have been shown to lack detectable levels of antibodies to paramyxovirus, Pacheco's disease virus (an avian herpesvirus), avian polyomavirus and avian encephalitis virus.

An eastern equine encephalomyelitis (EEE) virus was recovered from neonates with abdominal distention from an aviary with a history of PDD. The disease in these neonates was termed "avian viral serositis." This finding was used to suggest that PDD may be caused by EEE virus, even though EEE virus occurs primarily in the eastern portion of the United States. PDD has been shown to occur throughout the United States, Canada and Europe. Experimental and epizootiologic findings suggest that EEE virus is not the cause of PDD.

A paramyxovirus related to Hitchner B1 was recovered from birds with PDD. Antibodies to this virus could be detected using a virus specific ELISA, however, antibodies were not detected using standard hemagglutination-inhibition assays available for paramyxoviruses. Experimentally infected African grey parrots either died soon after inoculation or seroconverted and shed virus with morphologic characteristics suggestive of paramyxovirus in their excrement.

Using electron microscopy, viruses with morphologic characteristics suggestive of paramyxovirus, enterovirus, coronavirus and reovirus have been detected in tissues, secretions or excretions from birds that have been either histologically positive for PDD or with gross distention of the proventriculus. None of these viruses have been consistently demonstrated in all birds with confirmed PDD.

There is no reference to spontaneous disease in free-ranging psittacine birds; however, they should be considered susceptible. Given the severe nature of PDD and its potential to affect a wide range of bird species, the importation of psittacine birds or their eggs into any region with indigenous Psittaciformes must be considered extremely risky.

For more information on diagnosing and prevention of PDD read "Chasing A Cure: Proventricular Dilation Disease" in the July 2008 issue of BIRD TALK magazine.