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Avian bornavirus: A common and emerging pathogen in North America

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In the 1970s a fatal disease emerged in captive parrots.Clinical signs included encephalitisand gut paralysis leading to proventricular impaction. Thus the disease was called proventricular dilatation disease (PDD). In 1991 PDDwas described in a small number of wild Canada geese. In 2008, avian bornaviruses (ABV) were isolated from symptomatic parrots. Bornaviruses are negative sense, unsegmented RNA viruses (Order *Mononegavirales*, Family *Bornaviridae*);the type-virus is Borna disease virus (BDV). Bornaviruses replicate in the nucleus, are noncytopathicand cause persistent infections. BDV causes sporadic outbreaksof neurologic disease among horses in Central Europe. At least seven distinct avian bornavirus genotypes infect captive parrots. Canaries and finches have distinct ABVs and we isolateda genotype from wild waterfowl in North America. Called ABV-Canada goose (ABV-CG) this virus is found in geese and swans.Some ABV-CG infected birds suffer from severedigestive and/or neurologic abnormalities.Histopathology reveals lymphocytic infiltrates and ABV antigens can be detected using immunohistochemistry.We recently isolated a newABV genotype from mallards. We found high levels of virus in the brain and retina of a hunter killed bird. It is not clear what impact ABV infection has on waterfowl populations although it is clearly associated with neurologic disease in some birds. In addition waterfowlstudies, we areactively studying ABV replication and pathogenesis incockatiel and duck models. This work focuses on elucidating the role of virus andautoimmunity in thepathogenesis of PDD, as based on prior studies on BDV, the disease is believed to have a significant autoimmune component.

Biography

Susan L Payne completed her Ph.D. at Louisiana State University. She did post-doctoral work in virology at LSU and has held faculty positions at Case Western Reserve University Medical School and the University of Texas at Arlington. She is currently a tenured associate professor at Texas A&M University. Dr.Payne has published over 45 peer reviewed publications and book chapters in the subject areas of retroviruses and bornaviruses. She carried out NIH funded studies on the replication and virulence determinants of equine infectious anemia virus (EIAV).She is currently studying bornaviruses in wild waterfowl and investigating the role of autoimmunity and pathogenesis in the outcome of avian bornavirus infections of cockatiels and ducks. She has mentored numerous students and currently teaches at the professional, graduate and undergraduate levels while continuing studies of Avian Bornaviruses.

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