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# The Zoological Society of San Diego

## Zoo and Wildlife Pathology Workshop, 2000 (case #41034)

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**Signalment:** 3 month old Andean condor chick

**History:** The chick had recently fledged and had appeared normal prior to being found dead in its enclosure. The parents of this chick have successfully raised other offspring.

**Gross Pathology:** The chick was presented for necropsy in good nutritional and post-mortem condition. Approximately 30 ml of cloudy tan fluid was present in the coelomic cavity. Many of the internal organs, including the heart, lungs, liver, kidney, small intestines, pancreas and spleen contained single to multiple, soft white nodules ranging in size from 0.2 - 0.8 cm in diameter. Multifocal to coalescing soft yellow and slightly raised plaques (0.2 - 0.4 cm in diameter) were present in the oral cavity, esophagus and crop and multiple areas of red discoloration were scattered throughout the bursa. The air sacs were diffusely opaque white.

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**Diagnosis:** Moderate multifocal to coalescing hepatitis with intrahistiocytic and biliary epithelial eosinophilic cytoplasmic inclusions (consistent with poxvirus)

#### Discussion:

Similar inflammation to that seen in the liver was present in most of the examined tissues and eosinophilic globular material suggestive of viral inclusions was found in histiocytes (heart, kidney, small intestines, pancreas, adrenal and thyroid glands, airsac and coelomic cavity), epithelial cells (oral cavity, pharynx, esophagus, crop, bursa of Fabricius, thymus, kidney) and reticuloendothelial cells (spleen). Epithelial hyperplasia, ulcers and the formation of thick serocellular plaques was associated with viral infection of the oral cavity, pharynx, esophagus, and crop. Confirmation of poxvirus particles in the spleen, liver, and oral mucosa was confirmed by electron microscopy and a poxvirus was isolated from splenic tissue by Dr. Deoki Tripathy of the University of Illinois. In addition to the above, histologic findings included necrotizing, transmural bursitis with intralesional bacilli and subsequent coelomitis, peracute fungal pneumonia (*Aspergillus* sp.) with secondary necrotizing vasculitis, and hypocellular bone marrow.

Avian poxviruses, which are large (up to 400 nm in diameter) DNA viruses, have been reported in numerous species of domestic and non-domestic birds. Though morphologically similar, poxviruses of birds exhibit varied host specificity and cause variable degrees of disease in infected animals. The more common forms of avian pox produce nodular cutaneous lesions or proliferative and necrotizing lesions of the upper alimentary tract that are associated with the formation of diptheritic membranes. Systemic disease has been reported but is less common.

This was an interesting and case in which death was attributed to systemic poxvirus infection with secondary peracute septicemia and aspergillosis. Unusual in this case was the systemic nature of the infection and presence of positively identified or putative cytoplasmic inclusions in organs other than the skin and/or upper digestive tract. Interestingly, no skin lesions or significant respiratory tract lesions, as are seen in many other cases of avian poxvirus infection, were associated with poxvirus infection in this case.

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