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## PATHOLOGY OF ADENOVIRUS INFECTION IN THE KIDNEY OF BUDGERIGARS

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Histopathological examinations of 293 budgerigars obtained from a pet bird dealer in March, 1986 and January, 1987 were carried out. Of these birds, 170 had intranuclear inclusion bodies in the epithelial cells of the renal tubules. In light microscopy, the inclusions showed two types of stainability, basophilic and eosinophilic. In electron microscopy, the basophilic inclusions consisted of virus particles, granular substances and filamentous materials. The virus particles were round or hexagonal, approximately 60 to 83 nm in diameter, and sometimes revealed crystalline arrays. The eosinophilic inclusions were composed of granular and filamentous materials without virus particles. From these findings, it was concluded that the inclusions were due to an adenoviral infection.

Intranuclear inclusions similar to those seen in the kidney were observed occasionally in the hepatocytes, epithelial cells of the large intestine, follicular cells of the thyroid gland, Kupffer's stellate cells and reticular cells of the intestine, thyroid gland and bone marrow. Although there were no lesions directly related to the inclusions in the cases examined here, the birds had many concurrent diseases in various organs. Therefore, it was thought that the adenoviral infection occurred opportunistically.

Of the 170 infected birds, five had intranuclear inclusion bodies in the epidermal cells and one had them in the reticular cells of the feather pulps. The morphology of these inclusions suggested a papovavirus-like infection, that is, a mixed infection with adenovirus- and papovavirus-like agents occurred in six such cases.