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compared with K-71 isolate.

4) Other cell cultures were made using pancreases from chicks which had been infected with UP strain or K-71 isolate. The virus titers of the cell-culture fluid of these viruses decreased for several days after cultivation and thereafter increased rapidly ($10^{3.7}$ EID₅₀/ml on the 14th day of cultivation in UP strain; $10^{2.8}$ EID₅₀/ml on the 10th day in K-71 isolate). The relatively high virus titers persisted till at least the 24th or the 35th day. On the other hand, the relatively high titers of the cell phase virus lasted from the beginning to the end of the cultivation ($10^{2.6}$ ~ $10^{3.4}$ EID₅₀/ml in UP strain; $10^{2.5}$ ~ $10^{2.9}$ EID₅₀/ml in K-71 isolate).

5) Neither a cytopathic effect nor an inclusion body was observed in the cell cultures infected with AEVs. No AEV-antigen-positive cell was detected by the direct fluorescent antibody technique.

PATHOLOGICAL OBSERVATIONS OF THE THYMUS IN MAREK'S DISEASE

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The morphologic changes occurring in the thymuses of chickens infected with Marek's disease virus (MDV-JM strain) were studied by light and electron microscopy. One hundred and four birds of 4 groups were examined: They consisted of 22 birds of an inoculated group (on the 1st to 56th day postinoculation), 22 birds of a contact exposure group (on the 1st to 163rd day postinoculation), 16 birds of a field group (103 to 186 days old) of Marek's disease (MD) and 44 birds of a normal control group (4 to 157 days old).

In the normal control group, the thymus grew gradually with age and the maximum size was attained between 92 to 127 days after hatching. Involution changes (physiologic involution) were first observed in female chickens on 157 days old after the beginning of egg-laying.

In the inoculated group, the thymus showed acute involution in the early stage of infection (on the 6~8th day postinoculation). The involuted thymuses were characterized by generalized depletion of lymphocytes, marked atrophy of the parenchyma, replacement by swollen reticulum cells, macrophages and multinucleate syncytia, coincided with herpesvirus particles and probably viral antigen (fluorescent antibody techniques). All birds of the inoculated group were negative for precipitating antibodies to MDV antigens and showed overwhelming infection.

Regenerative changes were found in some birds which showed no apparent involution. The other birds often showed severe involution in both the medulla and the cortex of the thymuses.

In the contact exposure group, precipitating antibodies to MD antigens were positive from the 52nd day postexposure. There were no remarkable changes in the thymuses until the 48th day postexposure, thereafter marked pathologic involution was seen from the 116th day postexposure. The cortex of these thymuses diminished their width or almost completely disappeared. Depletion of lymphocytes was also found in the medulla so that irregular epithelial cell groups and myoid cell, etc. appeared to increase in number and density. Viral antigens were positive in some cases, but no inclusion bodies and virus particles could be seen.

Thymic lesions in the field group of MD consisted of mainly involuted changes and the neoplastic proliferation of lymphoid cells.

Under electron microscopy, in the pathologic involution, the active proliferation of lipid-laden foamy cells (macrophages) was prominent and an irregular pattern of the basement membrane connected with epithelial reticulum cells was observed as the sequel to regeneration.

MORPHOLOGICAL STUDIES ON THE RETE MIRABILE EPIDURALE OF THE CALF

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The rete mirabile epidurale of 24 calves, less than 9 months old, was observed by means of the injection of resin and histological preparation.

1) The rete mirabile epidurale consists of a compact network of interwind, freely anastomosing arteries and is distinguished into two parts, a chief part and an anterior V-shaped extension. The chief part, lying in the cavernous sinus around the hypophysis, is composed of two lobes, anterior and posterior communicating rami. The anterior V-shaped extension, consisted of a small network of intertwined arteries, lies in the optic foramina.

2) The rete receives its blood supply from the maxillary artery via the proximal rete branch and the distal rete branches, from the basi-occipital arterial plexus, and from the internal carotid artery, which was poorly developed in the calves used. The arteries arisen from the rete are the cerebral carotid artery