



Title	HISTOPATHOLOGICAL STUDIES ON PARATUBERCULOSIS IN GOATS CENTERING AROUND THE FORMATION OF REMOTE LESIONS
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with guinea-pig antiserum. However, these characteristics were not altered by the use of hyperimmune sera, immune sera plus fresh normal guinea-pig serum, or selection of virus from persistent fraction. Using standard virus concentrations in the virus-antiserum mixture, the virus recovery increased as the pH of the mixture decreased. With higher concentrations of virus, however, recovery occurred even at high pH.

Virus surviving neutralization by rabbit antiserum resisted further neutralization by rabbit antiserum, but was sensitive to neutralization by guinea-pig antiserum, however, virus surviving neutralization by guinea-pig antiserum resisted further neutralization by both antisera.

These results suggest the possibility that two phenomena are in operation: dissociation of virus-antibody complexes and replacement with either blocking antibody which protects reneutralization by the homologous antisera, or with antibody which has the ability to alter the critical site on the virus in a manner which prevents further combination with neutralizing antibody specific for the same critical site regions.

## HISTOPATHOLOGICAL STUDIES ON PARATUBERCULOSIS IN GOATS CENTERING AROUND THE FORMATION OF REMOTE LESIONS\*

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Histopathological studies were carried out on 45 cases of naturally infected paratuberculosis of goats.

As the mode of development of the lesions, it was found that paratubercle bacilli invaded primarily in the intestinal mucosa and produced granulomatous proliferative inflammation and, subsequently, they reached the intestinal and mesenteric lymph nodes by way of the lymphatics. In this process, intimagranuloma, endolymphangitis and perilymphangitis in the lymph vessels were frequently observed. On the other hand, metastasis of the bacilli by way of the blood vessels was presumed. However, the author knew that it is insufficient to understand the pathology of the disease by only a interpretation of bacteremic events.

In regard to the remote lesions, very characteristic lesions were pointed out

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\* The original report of this work will appear in this journal in the near future.

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by the author: figures of glomerulonephritis; fibrinoid swelling or deposits of amyloids to amyloid-like substances in the capillary walls of the lymphatic nodules in the lymph nodes, in the connective tissues in the boundary of the cortex and the medulla of the adrenal gland and in the interstitial connective tissues of the udder; granulomata in the liver, spleen, thymus and hepatic lymph node.

In order to understand this disease, the glomerular lesions and the changes of the general blood vessels and mesenchymal tissues are considered as important, except the direct lesions due to paratubercle bacilli. The disease is characterized by phenomena of tissue reaction in the living body on the basis of allergic mechanism. In regard to the mechanism of the formation of the epithelioid granulomata as the remote lesions, it may also be postulated that the formation of the granuloma is not only due to the action of paratubercle bacilli themselves, but rather due to the remote reaction as a tissue reaction in the living body against the repeated infection of paratubercle bacilli in the intestinal tracts and that the formation of the granuloma is founded on the immunological tissue response due to allergic mechanism.

For that reason, it must be emphasized that the disease is formed by not only the direct reaction against paratubercle bacilli themselves, but also the immunopathological response related to the bacterial infection, which is noticed as a systemic phenomenon.

**HISTOLOGICAL AND HISTOCHEMICAL STUDIES ON  
THE POSTNATAL LYMPH NODES OF THE CAT: ABOUT  
STRUCTURAL VARIATION WITH RELATION TO  
DIFFERENTIATION, LOCATION AND AGE**

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