PATHOGENESIS AND PATHOLOGY OF EAST COAST FEVER IN CATTLE. Msc. Nairobi. 1971

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SUMMARY

East Coast Fever (Theileria parva infection) is an important killing disease of cattle in East and Central parts of Africa. The research on this disease has been recognised to be of great importance in various institutions with possible end result of finding a vaccine or a curable remedy.

Pathogenesis and Pathology.

"High-grade" steers 6-9 months old of various exotic breeds and bought from farms operating vigorous tick control were used for the study of pathogenesis and pathology of E.C.F. The parasite used for experimental infection of cattle was Theileria parva (Muguga) and also a local strain of parasite isolated from a field case of E.C.F. The pathogenesis and Pathology of the disease in the steers was evaluated on symptomatology, appearance of different stages of the parasite, haematology, changes in serum proteins and enzymes, gross pathology and histopathology.

There was slight decrease in haemoglobin and packed cell levels in protracted cases. Also changes were noted in the differential leukocyte counts and slight elevation of SGOT levels again in protracted cases. No changes were noted in serum proteins. Gross and microscopical lesions were observed in most of the organs. There was often enlargement of the lymph nodes more so in the early stages of the development of the disease. Other
gross lesions which were almost constantly encountered were lung oedema and abdominal ulcers. Significant microscopical changes were lymphocytic cell infiltration in the body organs. In the lymphoid tissues, there was often lymphocytic cell proliferation but in protracted cases there was depletion of the cells from the lymphoid tissues. Degenerative changes were also noted in some organs.

**Effects of Gamma radiation on Theileria parva.**

Adult *Boophilus annulatus* infected with *Theileria parva* were exposed to 0, 10, 20, 30, 50, and 70 kilorads of gamma radiation using 60Co source. The irradiated ticks were then used to infect susceptible steers. Dose levels between 20 and 30 kilorads reduced the virulence of *Theileria parva* while dose levels between 50 and 70 kilorads reduced the infectivity of the parasite and the cattle could not resist a 10-tick challenge. The 10 kilorad radiation had no effect on the parasite and the animals died with typical E.C.F. picture as the controls. The parasites when irradiated in vivo at dose levels between 20 and 30 kilorads and administered to cattle parenterally in form of infected tick tissues induced a protective effect against the 10 infected tick challenge.

**The morphology of Theileria parva in the bovine and tick tissues.**

Using electron microscope different forms of the parasite representing different stages of the developmental cycle of the organism were observed.
in both the tick and the bovine tissues. The mode of multiplication of erythrocytic parasites was by binary fission but those within lymphocytic cells multiplied by off-budding from the residual body and further they propagated by binary fission.