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## ELECTRON MICROSCOPIC STUDIES ON LYMPH NODES IN EQUINE INFECTIOUS ANEMIA

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(Summary of Doctor's thesis directed by Dr. S. YAMAGIWA)

Electron microscopic studies were made systematically on lymph nodes mainly in equine infectious anemia. Identification of various cells in the lymph nodes and a study of character of these cells were conducted. Especially, on so-called lymphoid cells which always appear in equine infectious anemia, the author clearly observed their fine structure and structural characteristics, consequently, the author is able to present a general account of such cells.

Investigated materials consisted of 30 samples of lymph nodes mainly from cases of equine infectious anemia (mainly lienal and hepatic lymph nodes, mandibular lymph nodes in some parts). They included one case of acute type, 8 cases of subacute type, 18 cases of chronic type, one case of relapsed type and 2 cases not of equine infectious anemia.

The results of the investigation may be summarized as follows:

1. According to their structural characteristics, various cells could be classified from lymph nodes, lymphocytic cells, reticulum cells, macrophages, sinus endothelial cells, vascular endothelial cells, adventitia cells, large-sized lymphoid cells and small-sized lymphoid cells.

2. Lymphocytic cells could be classified into 3 groups, namely mature lymphocytes, immature lymphocytes and juvenile lymphocytic cells according to their structural characteristics. The immature lymphocytes belong to an intermediate group between the mature lymphocytes and the juvenile lymphocytic cells. The lymphocytes had indispensable cytoplasmic organella, but the development of their components was poor as compared with that of the other cell types. The nucleoplasm was denser than reticulum cells in general and preserved in the form of very fine granules of uniform size with somewhat high electron density. These granules were distributed diffusely in the nucleus. These nucleoplasmic granules were arranged loosely in immature cells, whereas tightly in mature cells. The nucleoli of immature cells were larger than those of mature cells. Mitochondria were comparatively large in size and poor in number. Free RNA granules were scattered diffusely in the cytoplasm, densely in immature cells and less so in mature cells. Azurophile granules were rarely recognized

there being only one or two in the cytoplasm of the mature or immature lymphocytes. They were composed of a moderately dense, homogeneous core surrounded by a lucid zone.

3. Reticulum cells showed great complexity and variation according to their character and their structural characteristics. The author classified these cells into 3 groups, namely still type, functional type and proliferative type. Some parts of the still type and functional type had phagocytic function, but highly phagocytized cells were classified as macrophages (phagocytic type of reticulum cells). In reticulum cells, particularly in functional type, projection of outer nuclear membrane was remarkable, but in still type, projection could hardly be seen. The nucleoli in still type were small, but some parts of functional type and proliferative type nucleoli were strong and giant. Golgi bodies were in good development, those in proliferative type being particularly remarkable. Development of endoplasmic reticulum of reticulum cells was more marked than that of lymphocytes. In still type, vesicular smooth-surfaced endoplasmic reticulum was abundantly distributed throughout the cytoplasm and on the other hand, small amount of rough-surfaced endoplasmic reticulum in form of short rods, filamentous or string was present. In the functional type cells, long string-like rough-surfaced endoplasmic reticulum was developed and in some of this cell type, local lamellated or saccular dilated rough-surfaced endoplasmic reticulum was distributed throughout the cytoplasm. In the proliferative type cells, vesicular smooth-surfaced endoplasmic reticulum was abundant, while rough-surfaced occurrences in the form of short rods were observed in small number.

4. Sinus endothelial cells, vascular endothelial cells and adventitia cells which belong to the reticulo-endothelial cell group could easily be differentiated from reticulum cells by their structural characteristics. Situational relationship of these cells in lymph nodes was also clearly observed.

5. Large-sized lymphoid cells had two or three large nucleoli. The nucleus was comparatively bright. Outer nuclear membrane projected into cytoplasm in several parts and transition to flattened saccular rough-surfaced endoplasmic reticulum was often demonstrable. The figure of the cells was round and filamentous or string-like, long, rough-surfaced endoplasmic reticulum was distributed throughout the cytoplasm. This cells were considered to be transformed from reticulum cells. Transition from reticulum cells was often observable. Large-sized lymphoid cells differ from the small-sized lymphoid cells in reactive phase.

6. Small-sized lymphoid cells were characterized by the presence of a large number of intracytoplasmic sacs (rough-surfaced endoplasmic reticulum). They revealed vesicular, saccular, bead-like and lamellar structures. This cell type

had great variation in size from lymphocyte-sized cells to plasma-cell-like cells. Transition from reticulum cells was also observable in this cell type.

7. The author concluded that large- and small-sized lymphoid cells are both to be regarded as a cell group in some sort of developmental phase of reticulum cells. It was difficult by electron microscopic observation to find out the difference between plasma cells and some parts of small-sized lymphoid cells in the characteristic elementary structure.