A Case of Swine T-Cell Lymphoma with the Lennert’s Lesion

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In man, Lennert’s lymphoma is characterized by a high content of epithelioid histiocytes [11], which may occur in a variety of neoplastic and non-neoplastic lymphoid disorders [9]. Because of this, the term “Lennert’s lesion” was introduced by Tindle [15]. Most human lymphoid neoplasms may be categorized as of T- or B-cell origin and T lymphocyte neoplasms are classified into some subtypes [3]. The majority of non-Hodgkin’s lymphomas with multifocal histiocytic reaction are T-cell derived and a minority are of B-cell origin [9].

The multicentric and thymic forms have been reported in swine lymphomas [1] and the latter was demonstrated to be of T-cell (thymic T) origin by morphological and immunological methods [5]. In this paper I describe a case of swine lymphoma with morphological characteristics of T-cell which was accompanied with marked proliferation of epithelioid histiocytes.

A Hampshire boar was brought to an abattoir as an apparently healthy animal. At necropsy the mesenteric lymph nodes were extremely enlarged. Other neoplastic lesions were found in the abdominal lymph nodes, intestinal tract, peritoneum and diaphragm. Some lymph nodes, diaphragmatic tumour and spleen were collected for microscopy. The tissues were fixed in 10% formalin, processed by standard methods and embedded in paraffin. Sections were stained with haematoxylin and eosin (HE), periodic acid-Schiff (PAS) and Giemsa solution. Peroxidase antiperoxidase (PAP) immunoperoxidase staining for intracytoplasmic immunoglobulin (Clg) was applied to paraffin sections as described by Taylor [14]. For electron microscopy after washing with 0.1M phosphate buffer at pH 7.2, the formalin-fixed tissues were post-fixed in 1% osmium tetroxide and treated routinely.

There was a diffuse proliferation of neoplastic cells with peripheral fibrosis in the investigated lymph nodes, whose original structures were completely destroyed. The cells were large or very large in size and contained large nuclei with moderately prominent nucleoli and finely

Fig. 1. Note the pure growth of large lymphoid cells and the absence of an epithelioid histiocytic reaction. A giant cell with an irregular nucleus (arrow) is seen. HE. ×400.

Fig. 2. Small clusters of epithelioid cells and lymphoid cells of varied size are present. HE. ×250.
clumped chromatin (Fig. 1). Irregular nuclear profiles were often seen and binuclear cells were rare. The neoplastic cells had moderate to large amounts of pale cytoplasm without C1g. Mitoses were frequently observed. Similar cells were present in the diaphragmatic tumour, but not in

the spleen. Numerous clusters of epithelioid cells were admixed with the neoplastic lymphoid cells in one of the lymph nodes of unknown site (Lennert’s lesion) (Fig. 2). The epithelioid cells had lightly stained nuclei, small nucleoli and a broad eosinophilic cytoplasm. The neoplastic cells were of variable size in the lesion. The larger cells had more prominent nucleoli than in other lesions. The smaller ones showing frequent nuclear irregularity located especially around the epithelioid cells. A few eosinophils and plasma cells were scattered.

On electron microscopy, the neoplastic cells varied in size from 6 to 17 µm and displayed irregular nuclear contours with moderately to very conspicuous nucleoli and finely clumped chromatin. The nuclear irregularity varied from slight clefts to complex indentations (Fig. 3). The cytoplasmic organelles were poorly or slightly developed; some mitochondria and a few strands of rough surfaced endoplasmic reticulum (RER) were present. Ribosomal rosettes were diffusely distributed and clustered dense bodies were frequently seen (Fig. 4). Cytoplasmic microfilaments and nuclear pockets were rare.

The epithelioid cells found in the Lennert’s lesion had euchromatic nuclei with frequent binuclear or multinuclear profiles (Fig. 5). There were many mitochondria and slightly to moderately developed RER in the cytoplasm. Pri-
mary and secondary lysosomes were abundantly present and large phagosomes and microfilaments were sometimes detected. Cytoplasmic projections were rarely observed.

Human lymphomas of large cell type may be divided into some subtypes including follicular centre cell lymphomas, B-immunoblastic sarcoma and T-immunoblastic sarcoma, in which each neoplastic cell reveals considerable difference in appearance [12]. Swine follicular centre cell lymphomas and B-immunoblastic sarcomas were similar to human lymphomas in the morphological character. The immunoblastic cells had prominent nuclei, abundant, basophilic to amphiphilic cytoplasm, plasmacytoid features and contained Clg. The follicular centre cells had smaller nuclei, less cytoplasm which is less intensely stained, and rare Clg. The Human T-immunoblastic sarcoma cells exhibit a wide range of their sizes and prominent pale-staining cytoplasm [12], and were similar to those observed in the present case without Clg. The cytological features were thus suggestive of peripheral T-cell origin and this tumour is distinguishable from the thymic lymphoma characterized by relatively small neoplastic cells and mediastinal involvement [5].

In human pathology, nuclear irregularity and clustered dense bodies are useful ultrastructural indicators of T-cell properties, and abundance of RER, characteristically forming elongated strands, is most valuable cytoplasmic indicator of B-cell differentiation [4, 17]. A swine thymic lymphoma was characterized by nuclear convolution, clustered dense bodies and poorly developed organelles [15]. On the other hand, the neoplastic cells had round or cleaved nuclei, scattered dense bodies and slightly to well-developed organelles in swine follicular centre cell lymphomas [6], and well developed or dilated RER were observed in swine Ig-producing tumours [7, 8]. Irregular shaped nuclei in the present case were judged to be a T-cell type [13] and further ultrastructural features such as clustered dense bodies and badly developed RER are supportable findings to T-cell origin of this tumour.

Lennert’s lymphoma is a rare malignant lymphoma characterized by a high content of epithelioid histiocytes [10]. Such a pronounced infiltration of epithelioid histiocytes may occur in the other lymphoproliferative disorders and is designated “Lennert’s lesion” [9, 15]. The lymphoid population of Lennert’s lymphoma is often heterogeneous from small to large in size [2] and the lesion will be able to transform to a pure growth of large lymphoid cells with depletion of epithelioid cells [10, 16]. Because our case showed an extensive multifocal epithelioid histiocytic reaction accompanied by neither inflammatory nor necrotic changes in a single lymph node, the focus was designated a Lennert’s lesion. The other lesions consisted of a monotonous growth of large lymphoid cells and may be resulted from the Lennert’s lesions. Further investigations are needed in order to establish an entity of Lennert’s lymphoma in pigs.

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REFERENCES

要約

豚のLennert病変を伴うT細胞性リンパ腫の1例（短報）：門田耕一（農林水産省家畜衛生試験場）——ハンプシャー種の種豚の主として腹腔内リンパ節にリンパ腫が認められ、大型リンパ様細胞が一様に増殖していたが、一部リンパ節ではびまん性に類上皮細胞小集簇巣が散在していた。形態学的特徴から、腫瘍細胞はT細胞由来であることが示唆された。