BRIEF NOTE

**Two Cases of Localized Mastocytosis in Tracheobronchial
Lymph Nodes of the Beagle**

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Mastocytoma is a tumor occurring frequently in domestic animals such as dogs and cats, most of which have been observed in the cutaneous tissues, and some of which in the internal organs including hemopoietic system [7, 10, 14, 17]. Leukemic mast cells have been seen in the liver, spleen, bone marrow, and lymph nodes of cats, whereas they have been reported rarely in dogs [1, 4-6, 13, 16]. The term mastocytosis is used to describe non neoplastic and neoplastic systemic proliferation of mast cells [12].

Two autopsy cases bred in the beagle colony in our institute have been shown histologically to have localized mastocytosis in tracheobronchial lymph nodes without neoplastic growth in the skin and other internal organs, suggesting an interesting finding on histogenesis of mast cells. Both were female and 7.8-year-old dogs of the same litter, and the body weight was 8.2 kg and 8.6 kg each. They were used for inhalation study and had no particular clinical signs, sacrificed by exsanguination under anesthesia. At autopsy, both cases showed contracted kidneys and degenerative changes in the liver and adrenal glands. Anthracosis was seen in tracheobronchial lymph nodes, while other organs and tissues

had no detectable gross lesions and evidences of infections. Main organs were fixed in 10% phosphate buffered formalin and examined histologically.

In perifollicular zones, paracortex and medulla of the tracheobronchial lymph nodes were dispersed nodular clusters of round cells which had large spherical nuclei and pale cytoplasm. In cytoplasm of these cells, granules stained metachromatically with toluidine blue (pH 2.5, 4.1 and 7.0) and stained positively with PAS reagents were recognized. Then they were identified as mature type of mast cells (Figs. 1, 2) [14, 17]. Mitoses were not detected, but the karyorrhexis was seen and macrophages were observed to phagocytize these nuclear debris. Mast cells were also dispersed in capsules, connective tissues of trabeculae, peripheral and medullary sinuses. Prominent infiltration of eosinophils was seen in these sites and within clusters of mast cells (Fig. 3). Fine hyalinized collagen fibers were seen among mast cells. Arteriolar walls in medullary cords and trabeculae showed edematous rarefaction (Fig. 4). Some atrophic lymph follicles were replaced by nodules of mast cells. Phagocytosis of erythrocytes and carbon pigments by macrophages was seen in medullary sinuses. Mas-

tocytosis was not found in other lymph nodes (cervical, axillary, inguinal, popliteal and mesenteric), although these nodes showed plasmacytosis in medullary cords.

All organs except the tracheobronchial lymph nodes did not show the proliferation of mast cells. Vacuolar and fatty degeneration, and lipofuscin deposition were seen in hepatocytes, and fatty degeneration and nodular hyperplasia of adrenal cortical cells were seen. These lesions were considered as common findings in the aged dogs. In the kidney, fibrous scar tissue was extensive in cortical and medullary interstitium accompanied with infiltration of lymphocytes and plasma cells. Glomerular atrophy or hyalinization, and alubuminous casts in tubules were also seen. One case additionally showed chronic cystitis. In the lung, thickening of alveolar walls and granulomatous nodules consisting of eosinophils, lymphocytes, plasma cells, histiocytes and fibroblasts were observed.

In dogs, mastocytomas have been said to originate mostly from the skin, and rarely from internal organs [1, 4, 9, 15]. In contrast, leukemic mastocytomas in cats have been often reported, and suggested different origins of mast cells between dogs and cats [5, 6]. Transplantable canine mastocytomas have been observed experimentally in internal organs, suggested variable origins of mast cells [2, 11]. There has been a description on localized origin from tracheobronchial lymph nodes of the aged beagle [12], and the possibility of origin from tissues other than the skin of dogs could be suggested [3].

In our cases, vascular changes and hyalinization of collagens, which have been referred to the resemblance to human collagen disease [8], were also seen in tracheobronchial lymph nodes. Then relationship between pulmonary granulomatous lesions

and localized mastocytosis in lymph nodes was not clear. The significances of these changes in mastocytoma and mastocytosis will need to be studied furthermore.

References

- [1] Allan, G. S., Watson, A. D. J., Duff, B. C., and Howlett, C. R. (1974). *J. Am. Vet. Med. Assoc.* **165**, 346-349.
- [2] Bowles, C. A., Kerber, W. T., Rangan, S. R. S., Kwapien, R., Wood, W., and Jensen, E. M. (1972). *Cancer Res.* **32**, 1434-1441.
- [3] Emerson, J. L., and Cross, R. F. (1965). *Am. J. Vet. Res.* **26**, 1379-1382.
- [4] Fowler, E. H., Wilson, G. P., Roenigk, W. J., and Koestner, A. (1966). *J. Am. Vet. Med. Assoc.* **149**, 281-285.
- [5] Garner, F. M., and Lingeman, C. H. (1970). *Pathol. Vet.* **7**, 517-530.
- [6] Goto, N., Ozasa, M., Takahashi, R., Ishida, K., and Fujiwara, K. (1974). *Jpn. J. Vet. Sci.* **36**, 483-495.
- [7] Head, K. W. (1958). *Br. J. Dermatol.* **70**, 389-408.
- [8] Hottendorf, G. H., and Nielsen, S. W. (1966). *Am. J. Pathol.* **49**, 501-513.
- [9] Hottendorf, G. H., and Nielsen, S. W. (1968). *Pathol. Vet.* **5**, 102-121.
- [10] Howard, E. B., Sawa, T. R., Nielsen, S. W., and Kenyon, A. J. (1969). *Pathol. Vet.* **6**, 146-158.
- [11] Lombard, L. S., Moloney, J. B., and Rickard, C. G. (1963). *Ann. New York Acad. Sci.* **108**, 1086-1105.
- [12] Lund, J. E. and Park, J. F. (1978). *Vet. Pathol.* **15**, 64-67.
- [13] Moulton, J. E., and Dungworth, D. L. (1978). *In Tumors in Domestic Animals*, Moulton, J. E., editor, 2nd ed., University of California Press, Berkeley, Los Angeles, London, 150-204.
- [14] Nielsen, S. W. (1978). *In Pathology of Laboratory Animals*, Benirschke, K., Garner, F. M., and Jones, T. C., editors, Springer-Verlag, New York, Heidelberg, Berlin, 581-618.
- [15] Nielsen, S. W., and Cole, C. R. (1958). *Am. J. Vet. Res.* **19**, 417-432.
- [16] Squire, R. A., Goodman, D. G., Valerio, M. G., Fredrickson, T., Strandberg, J. D., Levitt, M. H., Lingeman, C. H., Harshbarger, J. C., and Dawe, C. J. (1978). *In Pathology of Laboratory Animals*, Benirschke, K., Garner, F. M., and Jones, T. C., editors, Springer-Verlag, New York, Heidelberg, Berlin, 1051-1283.

- [17] Stannard, A. A., and Pulley, L. T. (1978). *In* Tumors in Domestic Animals, Moulton, J. E., editor, 2nd. ed., University of California Press, Berkeley, Los Angeles, London, 16-74.

要 約

ビーグルの気管支リンパ節にみられた限局性肥満細胞症の2例（短報）：小木曾洋一・福田 俊・松岡 理（放射線医学総合研究所障害基礎研究部）——臨床的には著明な異常をみとめなかった2例のビーグルの気管支リンパ節に限局性の肥満細胞症が組織学的にみとめられた。細胞はトルイジン・ブルーでメタクロマジー陽性およびPAS 弱陽性の細胞質内顆粒を有し、成熟型の肥満細胞で、リンパ節内で結節状の増殖を呈していた。また好酸球の著明な浸潤と膠原線維の硝子化、細動脈壁の水腫様粗鬆化等の病変もみとめられた。そのほかの臓器およびリンパ節には肥満細胞の増加はみられなかった。

Explanation of Figures

Fig. 1. Tracheobronchial lymph node of the beagle. Nodular clusters of mast cells were dispersed in cortical and medullary zones. H-E stain.

Fig. 2. Tracheobronchial lymph node of the beagle. Metachromatic granules in cytoplasm of mast cells. Toluidine blue stain.

Fig. 3. Tracheobronchial lymph node of the be-

agle. Mast cells with pale cytoplasm and spherical nuclei, and infiltration of eosinophils (upper). H-E stain.

Fig. 4. Tracheobronchial lymph node of the beagle. Edematous rarefaction and hyalinization of collagen of arteriolar walls in medullary cord. PAS stain.

Each bar shows 50 μ m length.