Monocytic Leukemia in a Cat

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Although neoplastic diseases of the hematopoietic system are frequently encountered in cats, only a small number of cases of monocytic leukemia have been reported [2, 3, 7]. This note describes a case of monocytic leukemia occurring in a 4-year-old neutered female mongrel.

The case was presented to our clinic showing anorexia and weight loss of two weeks’ duration. It was slightly emaciated (3.8 kg) and lethargic with a rectal temperature of 39.1°C, having mild dehydration, pale mucous membranes, and marked splenomegaly (12x4x3 cm). Superficial lymphnodes were not enlarged. Hematologically were revealed mild anemia, marked leukocytosis with 92% large pleomorphic immature cells, and thrombocytopenia (Table 1). Serum lactate dehydrogenase (LDH) level was remarkably elevated, and serum glutamate oxaloacetate transaminase and blood urea nitrogen were also elevated. Serum and urinary lysozyme (muramidase) values measured by the lysoplate technique [6] were 530 µg/ml and 27 µg/ml, respectively.

The changes in hematological values during application of chemotherapy are shown in Fig. 1. Immediately after initiation of chemotherapy there were marked clinical improvement, lowering of serum LDH level and rapid decrease in splenomegaly and in number of leukemic cells in the peripheral blood. However, after application of the drugs was stopped on day 13 except for prednisolone, there were signs of relapse on day 30 to 40. On day 46, severe anemia, thrombocytopenia, and bleeding tendency appeared, and elevation of serum LDH level and splenomegaly again became remarkable. Leukocytosis was prominent with 86% immature cells. Further intensive therapy did not give any improvement, and death occurred on day 49.

The predominant cells in the peripheral blood were round or oval in shape and were variable in size (10 to 18 µm in diameter)
Approximately 30% of the leukemic cells showed phagocytic activity with India ink [1]. Cytochemical analysis disclosed that all of the leukemic cells in this case were negative for peroxidase [9] and Sudan black B [8]. They were positive for alpha naphthyl butyrate esterase [5] especially in the cytoplasmic area at the nuclear indentation (Fig. 4), and this reaction was almost abolished by adding sodium fluoride (0.04 mol/l). In the same cytoplasmic area they had fine positive granules in acid alpha naphthyl acetate esterase staining [4].

These morphological, cytofunctional, and cytochemical findings of the leukemic cells indicated that the type of the leukemia in this case was monocytic.

Indirect immunofluorescence using labelled antibody (Antibodies Inc.) and enzyme-linked immunosorbent assay (Pitman-Moore Inc.) for feline leukemia virus group specific antigen gave negative results.

At necropsy, the spleen was remarkably enlarged (9×2.5×1.5 cm, 9 g) with indistinct follicles and trabecular structures. The liver, kidney, and mesenteric lymphnodes were slightly enlarged. Multiple red-bean sized ulcers covered with coagulated blood were seen in the mucosa of the cardiac portion of the stomach and of the whole small intestine. Multiple petechiae were observed in the mucosa of the bladder containing red-brown urine. The both lungs were disseminated with red-bean or soybean-sized hemorrhagic foci. The femoral bone marrow was discolored and parenchymatous.

Histopathologically, diffuse infiltration of the leukemic cells with frequent mitosis and hemorrhage were evident in many organs. In the spleen, whole the red pulp was occupied by a number of leukemic cells, and the white pulp was atrophied or disappeared. In the mesenteric lymphnodes there existed many leukemic cells and
atrophied follicles. The femoral bone marrow was uniformly replaced by a number of leukemic cells.

The liver was congested having a few small necrotic foci with infiltration of leukemic cells in the acini and portal area (Fig. 5). The stomach and the small intestine showed ulcers with hemorrhages, erosions, and desquamation of villous epithelial cells with some lymphoid and plasma cell infiltration in the tunica propria. In the lung, many hemorrhagic foci were observed. Mesangial cells in renal glomeruli were increased in number, and the mucosa and tunica propria of the urinary bladder had multiple hemorrhages.

References


要 約

ネコにおける単球性白血病の1例（短報）：辻本 元・代田忠二*・林 俊彦*・長谷川嘉彦・友田勇・藤原公策* （東京大学農学部家畜内科学教室，*家畜病理学教室）——著明な末梢白血球増多，脾腫，貧血，および血小板減少を伴ったネコの単球性白血病の1例を経験した。白血病細胞の普通染色所見，超微細形態，食食核，および細胞化学的所見は，それらが単球系細胞由来であることを示唆していた。本例は cyclophosphamide, daunomycin などによる治療によく反応して一時症状の改善が見られたが，これら薬剤投与の中止後約1ヶ月で増悪死亡した。

Explanations of Figures

Fig. 2. Peripheral blood stained with May-Grünwald Giemsa showing three immature monocytic cells. ×1,300.

Fig. 3. Electron microscopy of a leukemic cell. ×8,000.

Fig. 4. Leukemic cells being positive for alpha naphthyl butyrate esterase in the cytoplasm at the nuclear indentation. ×1,300.

Fig. 5. Infiltration of leukemic cells in the liver parenchyma. ×300.