

# Malignant Histiocytosis in A Cat:A Case Report

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**Keywords:** Amputation, Cat, Histiocytic, Malignant histiocytosis, Neoplasia

## Introduction

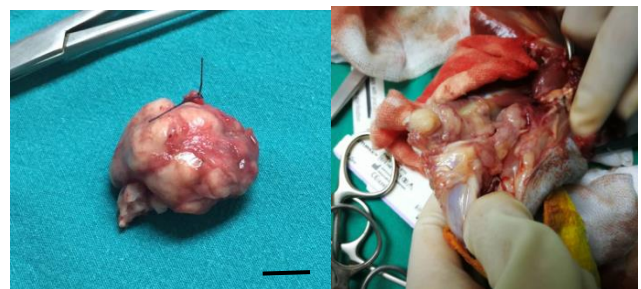
Malignant histiocytosis (MH) is a neoplastic proliferation of macrophages. The majority of this tumors in cats was disseminated and characterized by progressive and invasive multisystemic neoplastic proliferation of morphologically atypical histiocytes and its precursors(5). The affected organs include skin, liver, spleen, lymph nodes, and bone marrow. This tumor has been rarely reported in cats. It typically occurs in large-breed dogs especially Bernese Mountain dogs, Golden Retrievers, Rottweilers, and Flat-coated Retrievers. In cat, it can occur individually at any age without sex or breed predisposition. Marked lymphadenopathy, hepatomegaly, splenomegaly, anemia and jaundice are the most important clinical findings reported in cats(5). A diagnosis of MH is made on the basis of clinical signs, as well as clinicopathologic, histopathologic, immunohistochemical, and immunophenotypic findings. Markers for histiocytic cells are used to differentiate MH from epithelial and lymphoid neoplasms(2). Only one report showed a nine-year-old spayed female domestic shorthair cat presenting MH with a skin lesion of the left tarsus (4). The aim of this report was to describe diagnostic method, treatment outcome and complication of malignant histiocytosis in a cat.

## Materials and Methods

A six-year-old, 3.4 kg, male, Scottish fold breed cat had chronic health problem of polycystic kidney disease and degenerative joint disease of both elbow joints. A 2.5 cm firm non-pruritic mass was found at a medial aspect of left elbow joint with mild degree of pain score. Duration of tumor growth was unknown. The cat remained exclusively indoors and current complete on vaccinations in every year. Blood collection was performed to evaluate complete blood count, blood chemistry profiles, blood parasite and FIV/FeLV test. Blood profile are normal. Radiography of forelimb showed irregularity in shape of elbow joint and osteopenia at medial epicondyle indicating osteochondrodysplasia lesion with soft tissue swelling surrounding left elbow joint at distal humerus. Fine needle aspiration (FNA) showed inflammation and/or granulation tissue revealed red

blood cells, segmented neutrophil and foamy macrophage. Amoxicillin and clavulanate 15 mg/kg bid has been used to control secondary bacterial infection for 3 weeks. Prednisolone 1mg/kg/day was given for 7 days and then taper in order to anti-inflammation. The mass was smaller to 1.0 cm in diameter. However, the mass became bigger at 4 months later. Therefore, FNA was re-collected for cytology and the diagnosis was round cell tumor. Surgical excision and tissue sampling were done. The gross finding was multilobular firm mass 3x3.5 cm attach to articular area of left elbow joint with purulent exudate and invading nerve with a lot of blood supply (Fig.1A). The histopathologic diagnosis was soft tissue sarcoma. Thoracic radiographic examination and abdominal ultrasound monitoring showed no evidence of metastatic mass in thoracic and abdominal organs, respectively.

Left forelimb and scapular amputation was performed at 1 month later because of the mass rapid growth at around elbow joint. Mass involved left elbow joint with stalk attach to deep layer of the margin of synovial membrane (Fig.1B). Tissue samples of soft tissue mass and left axillary lymphnode were collected for histopathology.



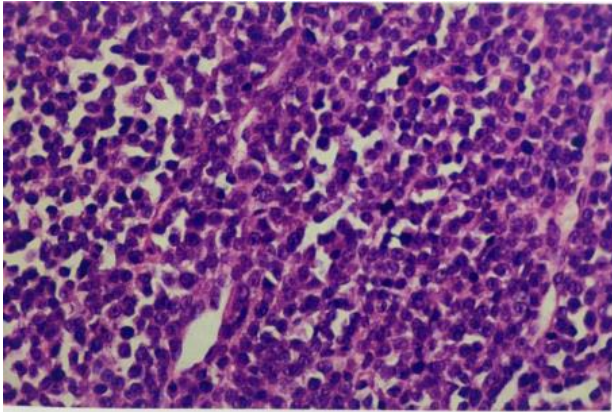
**Fig.1** Multilobular soft mass at left elbow.

(A) 2.5 cm white soft mass at medial aspect of left elbow joint of the 1<sup>st</sup> surgery, bar = 1 cm

(B) Infiltrative and adhesion of tumor mass at left elbow joint at the surgical amputation of left forelimb.

Histopathology showed non-encapsulated, infiltrative mass presenting in deep dermis. The tumor cells were round cells of histiocytic cells which had

characteristics of anisocytosis, anisokaryosis with moderate eosinophilic cytoplasm and pleomorphic spindle cells. Some cells were bi- and multi-nucleated cells. The tumor cells presented in row and solid sheet pattern. The histopathologic diagnosis was malignant histiocytosis (Fig. 2).



**Fig.2** Histopathology of mass at left elbow shows round histiocytic tumor cells in solid sheet pattern. (100X)

### Results and Discussion

Fluid therapy, pain and wound managements with intravenous antibiotic administration were given post-operatively after forelimb and scapular amputation. Closely monitoring of vital signs and blood checks were performed. At 3 days post-operatively, the cat had non-regenerative anemia (Hct 22%, TP 6.4, RPI 0.1%, saline auto agglutination: negative) with normal white blood cell count, pale to pink mucous membrane and patchy hemorrhage on skin. Urinalysis had no evidence of hemoglobinuria. A coagulation profile (PT, APTT) and D-dimer were normal. Severe anemia with 15 % hematocrit was detected in next 2 days; therefore, blood transfusion with fresh whole blood together with supportive treatment were given. DIC and secondary immune-mediated hemolytic anemia inducing from neoplasia was suspected. Clopidogrel was given as a anti-platelet drug. The cat was better in clinical sign after supportive and specific treatment and weekly monitor for blood checks and clinical sign has been considered during follow up period for 4 weeks post-operatively. Chemotherapy was not applied because of the owner's concern about complication, then supportive treatment was used in this cat. Many reports showed chemotherapy does not give success for treatment option (2). MH in domestic animals is a multi-systemic neoplasm that primarily proliferates in the spleen, lung or bone marrow. Secondary organs of neoplastic proliferation including lymph nodes, liver, and several other organs consequently affected. Nevertheless, the primary organ of this tumor cannot

be determined in most cases (5). Histology, immunohistochemistry, and gross lesion have to be applied for definitive diagnosis, for the distribution of the neoplastic cells and for prognosis. In the cat, MH needs to be differentiated from diffuse granulomatous disease, non Hodgkin's lymphoma and Hodgkin's like disease (1,2). Immunohistochemical markers can be used to differentiate this tumor from lymphoid neoplasm. However, immunohistochemistry is not always a reliable tool using in general practice and not yet been fully detailed of immunohistochemical marker in cat (5). Treatment for MH is based on chemotherapy protocols for lymphoma. However, satisfactory result has not been achieved. The prognosis of this neoplasm in cats appears to be more obscure than that in dogs (5). No report showed that cats responded well for HM treatment. Two previous reports showed that cats with HM received chemotherapy without any improvement. Chemotherapy has not been consistently successful in treatment of this disease in any species. Either doxorubicin or vincristine, cyclophosphamide, and prednisone protocol has been used in humans and in dogs giving improvement in survival time, but without remission of the disease (2). This is second report presenting treatment outcome of malignant histiocytosis with 7 weeks in survival time of the Scottish fold cat after amputation. In conclusion, this study should be continuously monitor because MH is rapidly progressive, and invariably fatal disease.

### Acknowledgements

Staffs of Thonglor Pet Hospital, Bangkok, Thailand

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