T-cell Rich B-cell Lymphoma in a Cat

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Introduction
Lymphoma is the most common neoplasm of cats. Greater than half of all feline hemolymphatic tumors are lymphomas (2). Lymphomas are classified based on anatomical sites, clinical stages, histochemical characteristics and immunophenotype criteria. The classification of lymphoma is a tool to understand the biology of the cancer, provide treatment and response and predict a prognosis of the patient. There are many attempts used to classify lymphoma such as the World Health Organization (WHO) classification, the National Cancer Institute working formulation, the Kiel classification and the updated Kiel classification. The purpose of this study is to characterize the immunophenotypical features of lymphoma in this case.

Materials and Methods
Intact female domestic short hair cat was presented at small animal teaching hospital, Faculty of Veterinary Science with stupor and, hematochezia, vomit. The cat had no history of vaccination. On clinical examination, the cat had 95.2°F rectal temperature, lateral recumbency, weak femoral pulse. Blood sample was collected for complete blood count blood chemistry and blood gas. The cat died after admission at Critical Care Unit. The routine necropsy was performed at Pathology Unit. The tissue samples were collected, fixed in 10% formalin and embedded in paraffin for histopathology. Briefly, the paraffin blocks were sectioned at 4 micron thickness, stained with hematoxylin and eosin (H&E) and immunohistochemistry (IHC) for CD3 and CD79alpha using polymer chain reaction (Envision™) method. All slides were studied under light microscope.

Results and Discussion
Blood profile and blood gas showed mild macrocytic hypochromic anemia, moderate thrombocytopenia, elevated SGPT, elevated ALP, azotemia, mild hypoproteinemia, compensatory metabolic acidosis respectively. Grossly, there were 20-ml pericardial effusion, mass at left auricle, diffuse hepatic nodules varied from 0.5-2 cm. in diameter (Fig 2A), bilateral renal infarction (Fig 2B). Fluid analysis of pericardial effusion revealed non septic exudate that was composed of mainly pleomorphic lymphoblastic cells and plasma cells (Fig.1). Histopathologically, there were dense solid pattern of pleomorphic round cells infiltration in the liver. The tumor cells had anisokaryotic basophilic round nuclei and basophilic round cytoplasm resembling to lymphoblasts.

![Figure 1](image1.png)
Figure 1 Cytology of pericardial effusion comprised pleomorphic lymphoblasts and plasma cells.

![Figure 2](image2.png)
Figure 2 Gross pathology of liver (A) and kidneys (B)

IHC of liver section against CD3 and CD79a was performed to characterize immunophenotypic features of T-cell lymphocyte lineage and B-cell lymphocyte lineage lymphoma, respectively.

![Figure 3](image3.png)
Figure 3 A. Histopathology of liver; tumor cells infiltration (10x, H&E), B. Histopathology of lymphoma in the liver (40x, H&E), C. IHC of liver immunolabelled CD3 (40x), D. IHC of liver immunelabelled CD79a (40x).

Based on gross pathology, histopathology and IHC, this case was finally diagnosed as Multicentric T-cell-rich B-cell lymphoma. T-cell-rich B-cell lymphoma, a category of lymphoma, characterized by a mixed population of small and large cells was termed diffuse mixed type in the Working
Formulation. In the classification of animals, this tumor has largely been included in the category of large B-cell lymphoma. The second entity in the diffuse mixed category recognized by the REAL classification consists of a predominant population of T lymphocytes. The histological classification and immunophenotyping according to the updated Kiel’s classification is centrocytic B-cell lymphoma (Low grade malignancy). T-cell-rich B-cell lymphoma are commonly seen in horse (35%) and cat (7%) (3).

References