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Canine lymphoma in a English mastiff breed dog: A case report

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Abstract

A 5- year old English Mastiff male dog weighing around 56 Kg was brought to the Madras Veterinary College Teaching Hospital with a history of hyperpigmentation in the ventral abdomen and pruritus. Clinical examination revealed generalized lymphadenopathy. Fine needle aspiration cytology (FNAC) was suggestive of lymphoma. Abdominal ultrasonography showed lymphadenopathy of the mesenteric, inguinal and colonic lymph nodes. Immunohistochemistry differentiated it as T cell lymphoma. PCR for antigen receptor rearrangement (PARR) assay evaluated it as of Ig G lineage confirmative for Tcell lymphoma. Still further confirmed by flow cytometry (FC) of FNAC and peripheral blood samples. The dog was treated with CHOP therapy protocol.

Keywords: lymphoma, bullmastiff, abdominal ultrasonography, flow cytometry

1. Introduction

Canine lymphoma is one of the most common neoplastic diseases recorded in dogs, with the incidence rate accounting to about 7% to 24% among canine tumours in general and around 83% of all hematopoietic tumours in dogs [1, 2]. Among the various forms of lymphoma, multicentric form is one of the most commonly occurring recorded in canine accompanied by other forms such as mediastinal, gastrointestinal, cutaneous and extranodal forms [3]. Generalized lymphadenopathy is one of the most common manifestation in dogs. The incidence of the disease may be due to the genetic factors or the immediate environment in which the animal is housed in [4]. The clinical signs of canine lymphoma usually reflect the anatomical site affected [5]. Though Fine needle aspiration cytology remains the gold standard in diagnosing lymphoma, many other diagnostic methods such PARR assay (PCR for antigen receptor rearrangement) and flow cytometry help in subclassification of the disease. PARR is helpful for the demonstration of clonal expansion of the lymphoid cells. Immunophenotyping by flow cytometry analysis using several types of antibodies it was concluded that CD45 were confirmative for of T cell immunophenotype [6].

2. Case Description

A 5- year old English mastiff male dog weighing around 56 Kg was brought to the Madras Veterinary College Teaching Hospital surgery outpatient unit for wound on the left shoulder. The wound was cleaned and dressed with povidone iodine ointment and the case was referred to dermatology unit for hyperpigmentation, alopecia and pruritus. Animal was treated with antifungal drugs viz., Tab K- pet, 200mgx6@3-0-0, tab wysolone (prednisone), 20mgx20 (2-0-0), micodem shampoo, syrup super coat (10ml-0-10ml). Clinical examination revealed enlarged peripheral lymph nodes. The case was then referred to oncology unit with a suspicion of lymphoma. All the peripheral lymph nodes were enlarged including submandibular, prescapular, inguinal and popliteal lymph nodes. Hind limb edema and scrotal edema was also recorded. However all the vitals were within normal range.

3. Diagnosis and Treatment

Radiography revealed sub lumbar lymphadenopathy, however cardiac silhouette was normal and lung field was clear. Ultrasonography of the abdomen revealed enlarged colonic lymph nodes and mesenteric and inguinal lymph nodes. The ratio of short axis to long axis (SA/LA) of the lymph nodes was >0.5, suggestive of lymphoma. The spleen was enlarged and the typical "Swiss cheese like or cattle reticulum pattern" was observed.

FNAC of the popliteal lymph node was suggestive of canine lymphoma. Histopathology of the inguinal lymph nodes was taken and sent to the department of pathology for further investigation. The lymph node section had effaced architecture with sheets of medium to large cells with moderate amount of eosinophilic cytoplasm. The nuclei showed prominent nucleoli and increased mitosis. The impression revealed lymphoproliferative disorder favouring lymphoma. The initial haematological investigation did not reveal any abnormality however serological values of ALT (302 U/L) and ALP (736 U/L) were found to be on the higher side. Immunohistochemistry and PARR assay investigation concluded the disease of T cell lineage further confirmed by flow cytometry (FC) analysis wherein both FNAC and peripheral blood samples were conclusive of T cell lymphoma.

The animal was treated with University of Wisconsin – Madison Lymphoma CHOP-25 Protocol. Chemotherapy was administered on a weekly basis and prior to every treatment the blood sample of the pet was sent for haematological and biochemical investigation. The animal was normal after 2 weeks of chemotherapy. Then the following week the owner informed that his pet was dull and unable to move. Clinical examination revealed facial edema and enlarged submandibular lymph nodes. Blood check showed increased

WBC count of 34,400 /cmm. The animal was treated with heavy dose of antibiotics and steroid. Animal recovered and after two weeks the CHOP protocol was resumed.

4. Discussion

Lymphosarcoma (lymphoma) is one of the most common malignancies found in both human and veterinary species. With the advancement in molecular diagnosis such as flow cytometry, immunohistochemistry and PARR assay have led to better classification and characterization of the disease [7]. As lymphoma is a systemic disease, chemotherapy treatment protocol is the only treatment of choice for multicentric lymphoma [8]. The locations of lymphoma are diverse and T cell lymphoma of “multicentric type” is one of the most common forms recorded in dogs [9]. Bull mastiff breed of dog has been identified as having a high incidence of lymphoma and cancer in general [8]. Here we report a typical case of T cell lymphoma in a Bull mastiff breed dog which was treated with 25 week University of Wisconsin – Madison CHOP therapy protocol. The animal is responding to the treatment. The external lymph nodes have comparatively reduced in size and its appetite has improved. Due to enlargement of the inguinal lymph node it had difficulty in voiding urine, but has constantly improved after treatment.



Fig 1: English Bullmastiff breed (MAX) at the Madras veterinary college hospital



Fig 2: English Bullmastiff breed (MAX) at the scan room

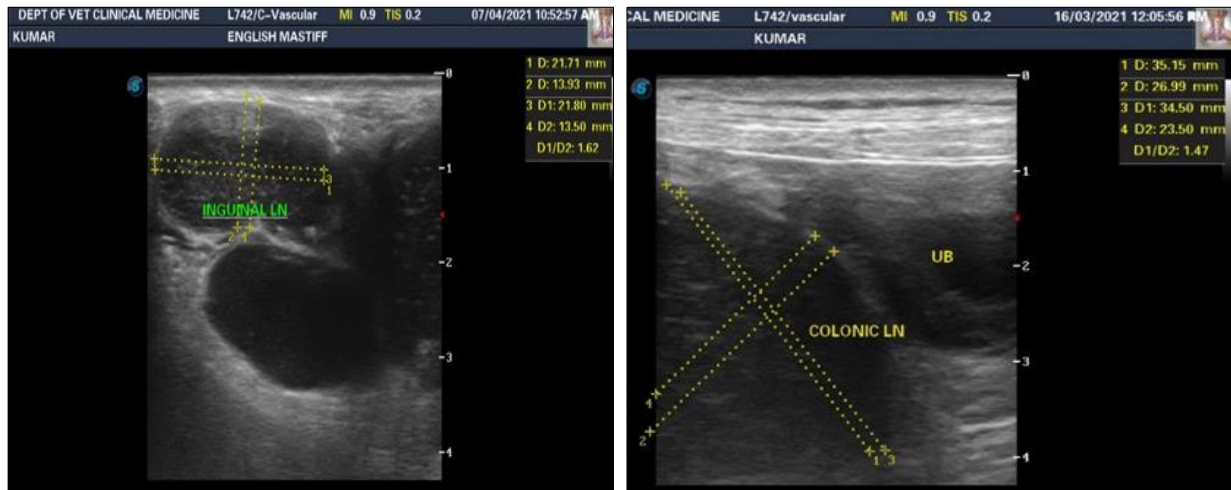


Fig 3: a. enlarged inguinal lymphnode and b. enlarged colonic lymphnode observed in ultrasonography, SA/LA ratio in both is >0.5

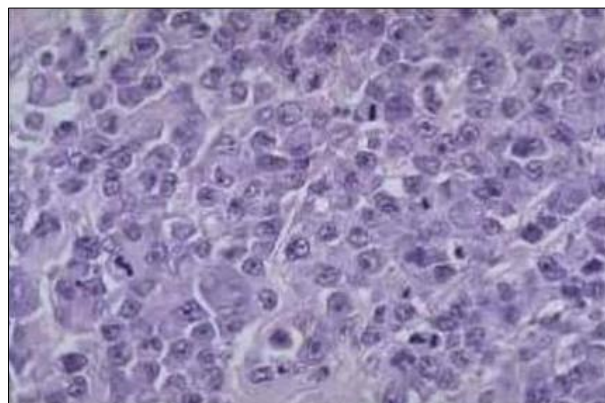


Fig 4: Section of lymphnode showing effaced architecture with sheets of medium to large cells with moderate amount of eosinophilic cytoplasm

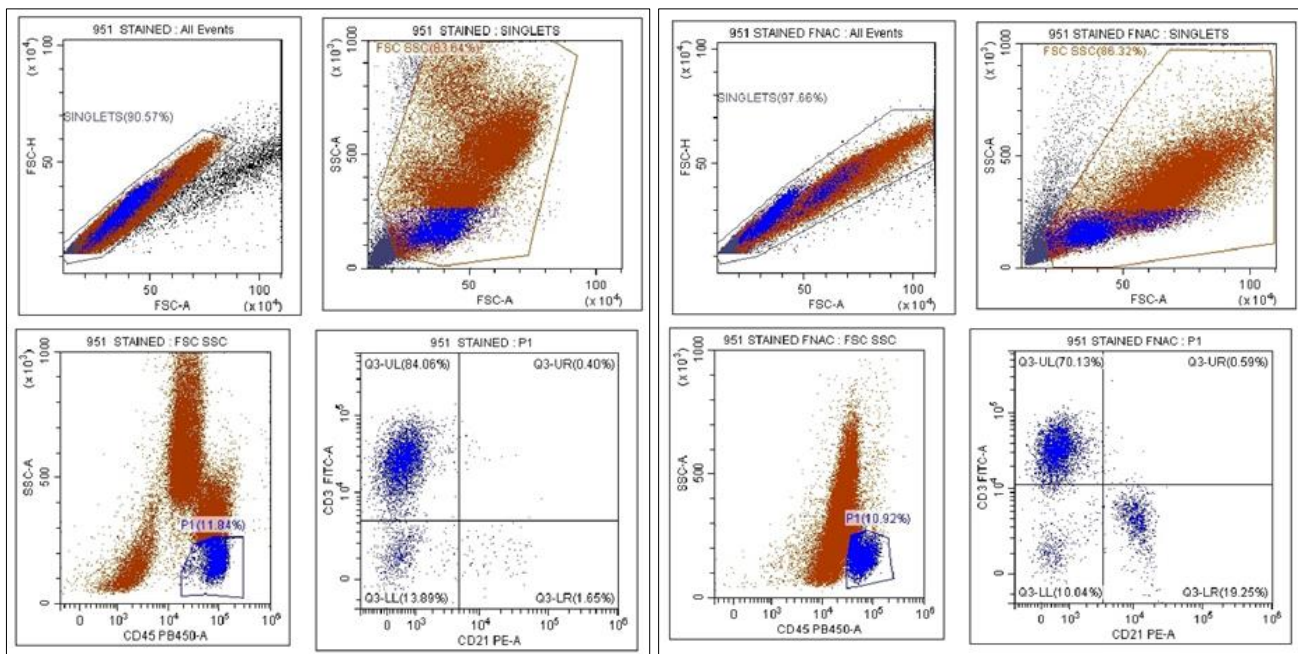


Fig 5: a. Flow cytometry scattergrams of blood sample and FNAC sample respectively depicting a CD45+ lymphoma patient. Lymphocytes and blasts can be distinguished on the basis of forward and side scatter characteristics

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