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Karthik I

Ph.D. Scholar, Division of
Veterinary Pathology, ICAR-
IVRI, Bareilly, Uttar Pradesh,
India

Verma Y

Professor and Head, Department
of Veterinary Pathology, CoVSc
Jabalpur, Madhya Pradesh,
India

Dubey A

Associate Professor, Department
of Veterinary Pathology, CoVSc
Jabalpur, Madhya Pradesh,
India

Swamy M

Professor, Department of
Veterinary Pathology, CoVSc
Jabalpur, Madhya Pradesh,
India

Rakesh S

MVSc, Department of
Veterinary Medicine, CoVSc,
Jabalpur, Madhya Pradesh,
India

Corresponding Author:

Karthik I

Ph.D. Scholar, Division of
Veterinary Pathology, ICAR-
IVRI, Bareilly, Uttar Pradesh,
India

Multicentric lymphoma in boxer: A case report

Karthik I, Verma Y, Dubey A, Swamy M and Rakesh S

Abstract

This report describes a case of multicentric lymphoma in boxer breed of dog which showed symptoms of weight loss, anorexia, lethargy, pyrexia, tachypnoea and generalized lymphadenopathy. Reduced RBC and platelet count, together with significant lymphocytosis and neutropenia, were found during a haematological investigation. On palpation of lymph nodes, it was revealed enlarged, firm and freely movable lymph nodes which are painless. As per the primary differential diagnosis, the observations were lymphoma, lymphoid hyperplasia and lymphadenitis. The case was diagnosed to be multicentric lymphoma based on FNAC of enlarged lymph nodes which revealed, atypical high-grade lymphoblastic cells suggestive of Lymphoma.

Keywords: Dog, Lymphoma, tumor, FNAC

Introduction

One of the frequent neoplasms in dogs, lymphoma (malignant lymphoma or lymphosarcoma) makes up between 7 and 24 percent of all canine tumors [1]. Histological characteristics and anatomical location are used to classify lymphomas. In general, the cause of lymphoma in dogs is unknown and complicated. The use of pesticides by owners or environmental contamination has both been suggested as potential causes [2]. Some breeds, including the Boxer, German Shepherd, Basset Hound, Rottweiler, Cocker Spaniel, and Golden Retriever, are thought to have a genetic propensity. Lymphoma is frequently seen in dogs who are older (6 to 12 years old) [3]. According to the anatomic site of lymphoma, multicentric, cranial, mediastinal, gastrointestinal, and cutaneous lymphomas are the most often seen types. Less frequently are primary extra nodal lymphomas seen in the central nervous system (CNS), eyes, bones, testicles, and nasal cavity.

Multicentric canine lymphoma accounts for 72-80% of all lymphoma cases in dogs [5] and is classified into five stages according to the standard classification given by World Health Organization (WHO) [6]. Generalised lymphadenopathy, with or without hepatomegaly/splenomegaly and bone marrow involvement, characterises the multicentric form of lymphoma [7]. The present case describes the multicentric lymphoma (Stage III) without metastasis involvement.

Case history and clinical findings

A case of a male boxer with 6-8 years of age was presented to Veterinary Clinical Complex (VCC) Jabalpur with a history of anorexia, weight loss, lethargy and fever. On clinical examination, the dog appeared dull and depressed with a rectal temperature of (102.8-103.5°F), tachypnoea (38-40 breaths/min.), enlarged peripheral lymph nodes (prescapular, popliteal, submandibular) which are painless on palpation.

The haematological parameters revealed; non-regenerative anemia with decreased haemoglobin concentration (8.5-9.2g/dl; reference range, 13-18g/dl), TEC (4.34-4.61millions/ μ l; reference range, 5.5-8.5millions/ μ l), PCV (24-27.1%; reference range, 37-55%), platelet count (1.2-1.5 lakhs/ μ l; reference range, 2-5 lakhs/ μ l) and severe lymphocytosis with neutropenia [8]. Serum biochemical parameters revealed normal to mild elevation in alanine transaminase and aspartate aminotransferase whereas total protein, albumin, and serum calcium level were found to be normal.



Fig 1: Enlarged submandibular, (A) and popliteal lymph nodes (B)

Thoracic and abdominal ultrasonography was also performed to determine metastases and/or other disease presence. The findings revealed the absence of metastasis in the case. A fine needle aspiration cytology was done on the affected lymph nodes. A minute amount of fluid was extracted from the swollen lymph node using a 24G needle, and then smear preparation and Giemsa staining were performed [9].



Fig 2: Fine needle aspiration (FNA) of enlarged popliteal lymph node

Cytological findings

The preferred diagnostic method for high-grade lymphoma is cytological evaluation of a fine-needle aspirate from a neoplastic lymph node since it is a rapid, sensitive, and minimally invasive procedure [6].

In the current case, Fine needle aspiration (FNA) of the popliteal and submandibular lymph nodes followed by Giemsa staining was performed. Large immature atypical lymphoblasts with open chromatin, numerous pleomorphic nucleoli, profoundly blue cytoplasm, and fewer Mitotic patterns were found in high concentrations by FNAC.

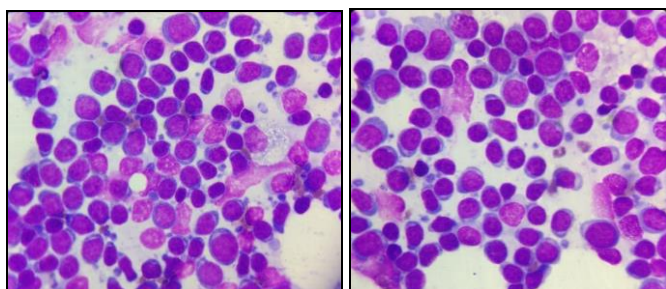


Fig 3: Atypical large lymphoblastic cells with hyperchromasia and anisocytosis (Giemsa, X1000)

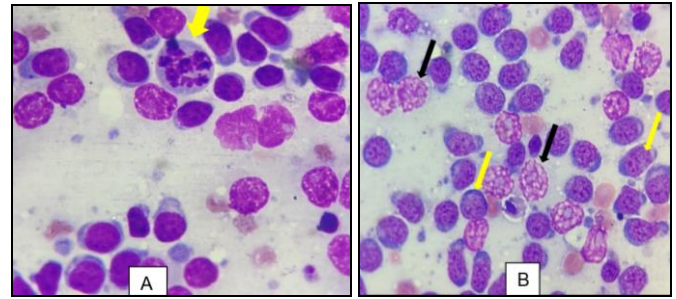


Fig 4: Lymph node aspirate showing (A) mitotic figure, (B) lymphoblasts (yellow arrow) and smudge cells (black arrow) (Giemsa, X1000)

On the basis of clinical examination and cytological findings, it was diagnosed as Multicentric lymphoma stage III as per the staging system given by WHO (Table 01). Further, the patient was advised with chemotherapy, where vincristine and prednisolone were given weekly for a period of 4 weeks. The clinical remission of the lymph nodes was observed both grossly and cytologically, after 2 doses of the treatment. Grossly, there was a reduction in the size of lymph nodes and cytologically, there was an increased number of mature lymphocytes compared to lymphoblasts.

Table 1: The World Health Organization (WHO) stages for canine multicentric lymphoma [10].

Stage	Description
I	Involvement restricted to one lymph node or one organ's lymphoid tissue (apart from bone marrow)
II	Involvement of several lymph nodes in a local area (+/-tonsils)
III	Generalized lymph node involvement
IV	Liver and/or spleen involvement (+/-stage III)
V	Manifestations in the blood and involvement of bone marrow and/or other organ systems (+/-stage I-IV)



Fig 5: Reduction in size of submandibular lymph node (A) and popliteal lymph node (B) after chemotherapy.

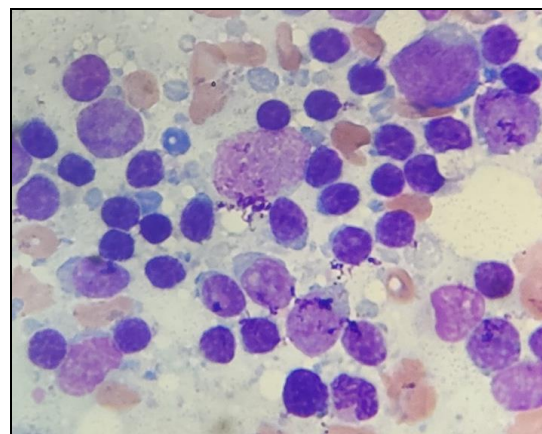


Fig 6: Increased number of mature lymphocytes compared to lymphoblasts (Giemsa, X1000)

Conclusion

With 13 to 24 cases per 100,000 dogs, lymphoma/lymphosarcoma is one of the most prevalent hematopoietic neoplasms in dogs^[11]. The most prevalent type of lymphoma in dogs is multicentric lymphoma. Painless generalised lymphadenopathy is the most frequent clinical symptom of multicentric lymphoma, but other nonspecific symptoms such as fever, anorexia, vomiting, diarrhoea, and emaciation can also be observed^[12]. According to experts, fine needle aspiration cytology is the best technique for diagnosing lymphomas since it can identify big, atypical lymphoblasts with mitotic features, as was the case in the current case. Vincristine and Prednisolone had a brief, favourable effect in this instance, but more research is necessary to determine whether radiation therapy and other types of chemotherapy are effective for treating lymphoma in dogs.

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