

Multicentric lymphosarcoma in a dog

C. Balachandran^{1*}, N. Pazhanivel¹, A. Anil¹, K. Gopal¹, A.P. Nambi² and R.V. Suresh²

¹Department of Veterinary Pathology

²Department of Veterinary Clinical Medicine, Ethics and Jurisprudence
Madras Veterinary College, Chennai-600 007, Tamilnadu, India

ABSTRACT

Balachandran, C., Pazhanivel, N., Anil, A., Gopal, K., Nambi, A.P. and Suresh, R.V. (2009). Multicentric lymphoma in a dog. *Indian J. Vet. Pathol.*, 33(2): 236-237.

A 10 year old male Dalmatian dog carcass on necropsy exhibited enlarged of peripheral lymph nodes, hepatomegaly, splenomegaly with three grayish white nodules of 7x5x3, 3x3x1 and 2x1x1 cm in size on the ventral surface of spleen, enlarged kidneys with grayish white foci (1x0.5 cm size) on the cortex, enlarged mesenteric lymph nodes, pallor bone marrow and congested stomach and intestines. Fine needle aspiration biopsy of peripheral lymph nodes showed large lymphoblast cells with occasional mitotic figures. Ultrasonography revealed splenomegaly and hepatomegaly. Cytologically, it was classified as lymphocytic diffuse type, poorly differentiated lymphosarcoma. Biochemically, hypercalcaemia was recorded in the serum. Microscopically, solid, dense sheets of lymphoblast cells were seen with scanty cytoplasm.

Keywords: Cytology, dog, lymphosarcoma, pathology

Cancer is an important disease in pet dogs. Lymphosarcoma is a spontaneous neoplasm of the dog, accounting for approximately 8.5 to 9 per cent of all canine tumours⁵ and multicentric form of the disease is most common in the dog, which accounts for 84 per cent of all cases of lymphosarcoma¹. Multicentric lymphosarcoma has been recorded in India in a mongrel dog². The present report deals with a case of multicentric lymphosarcoma recorded in a Dalmatian dog.

A 10 year old male Dalmatian dog carcass was brought for routine postmortem examination with the history of distended abdomen and severe respiratory distress. Earlier, fine needle aspiration biopsy (FNAB) of the popliteal lymph node was performed and the smear was stained with Leishman-Giemsa stain. Ultrasonography and complete blood cell count were carried out. Serum sample collected was subjected for estimation of blood urea nitrogen (BUN) by glutamyl dehydrogenase method, creatinine by Jaffe's kinetic method, aspartate transaminase (AST) by IFCC method, calcium by O-cresolphthalein complexone method and phosphorus by modified metol method using reagent kits (Agappe) and semi-autoanalyzer (Ruby). Tissue specimens from liver, spleen, lymph nodes, kidneys, bone marrow and intestines were fixed in 10 per cent formal saline, processed by routine procedure and about 5 micron thick haematoxylin and eosin stained sections were obtained for histopathological examination.

Haemato-biochemical examinations revealed reduction in haemoglobin (8 g/dL), packed cell volume (26%) and mild leukocytosis (10,800/cumm) and increased serum levels of BUN (34 mg/dL), creatinine (2.63 mg/dL), AST (22.7 IU/L) and calcium (22.25 mg/dL) whereas

phosphorus (4.67 mg/dL) level was within the normal range. The findings of elevated serum calcium level concurred with earlier studies, where hypercalcaemia was reported in 20 per cent of dogs bearing lymphoma⁶.

Ultrasonography (USG) revealed hepatomegaly and splenomegaly. FNAB smears from popliteal lymph node exhibited large lymphoblast cells with occasional mitotic figures and diagnosed as lymphoma (Fig. 2). Thereafter, due to deteriorating condition, the dog was euthanized and necropsied. The impression of hepatomegaly and splenomegaly exhibited by USG together with cytological findings of lymphoblastic cells could be attributed to the presence of lymphoma, which is in agreement with previous report⁸, where two principal cytologic types were poorly differentiated, lymphocytic and histiocytic comprising 39 and 56 per cent of the lymphosarcoma, respectively.

Postmortem examination revealed enlargement of prescapular and popliteal lymph nodes. Lungs showed alternate areas of congestion, emphysema with foci of anthracosis. Spleen was enlarged and studded with three light grayish white nodules of 7x5x3, 3x3x1 and 2x1x1 cm in sizes (Fig.1) on its ventral surface. Liver was also swollen and enlarged. Kidneys were pale and enlarged and showed a grayish white nodule of 1x0.5 cm size embedded in the cortex of both kidneys. In addition, enlarged mesenteric lymph nodes, pallor bone marrow and congested stomach and intestines were also observed. Microscopically, solid, dense sheets of proliferating lymphoid cells, particularly lymphoblasts with scant cytoplasm in the liver, spleen, lymph node, kidneys, bone marrow and intestines were seen (Figs. 3 & 4). Based on the FNAB, USG, gross and histopathological examination, the case was diagnosed as multicentric lymphosarcoma. The lymphoma has been reported in

*Corresponding author

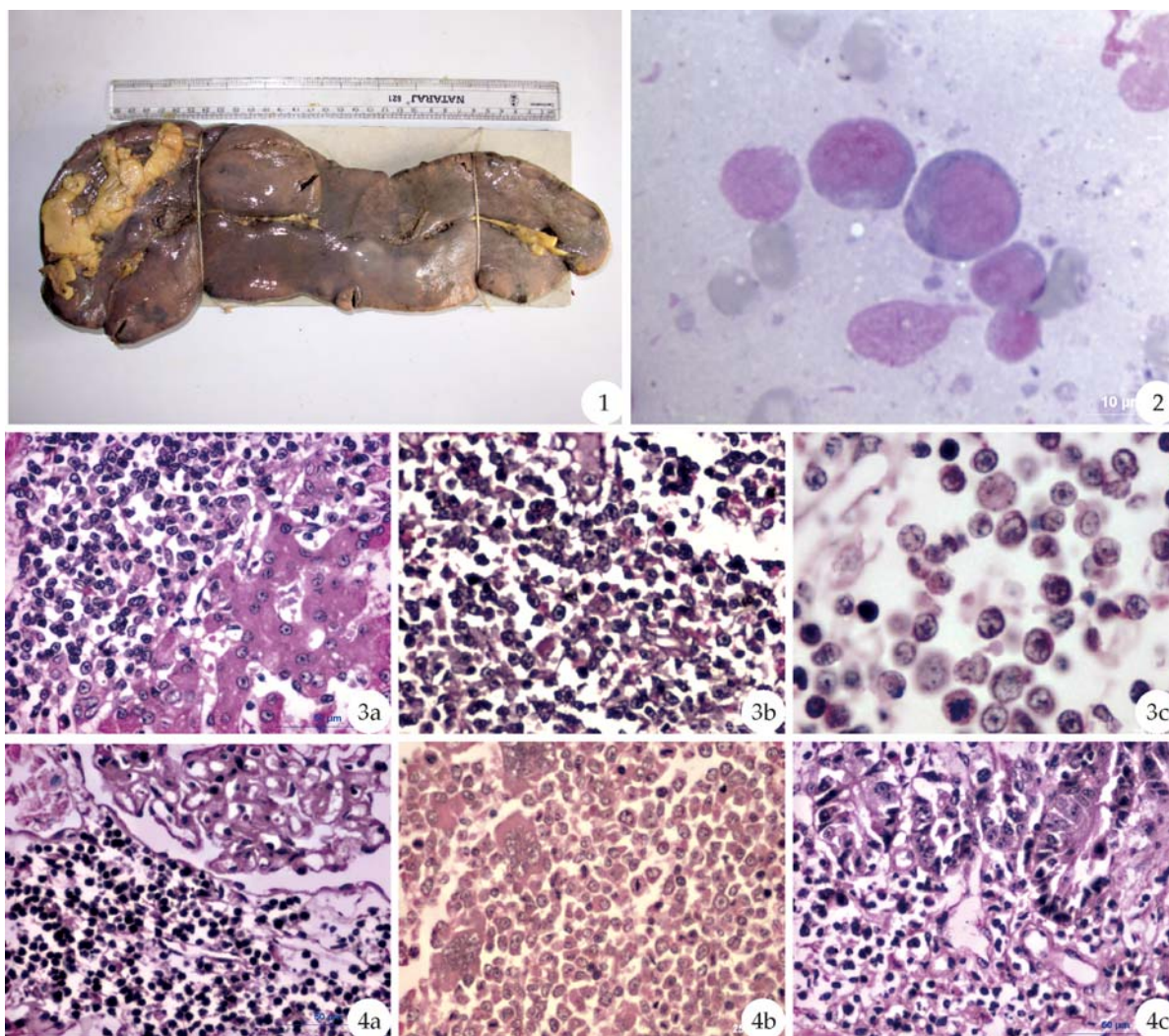


Fig.1. Lymphosarcoma—Grayish white to reddish tumour nodules appearing in spleen **Fig.2.** Lymphosarcoma- FNAB- Large sized lymphoblast cells (HE x200) **Fig.3.** Lymphosarcoma-Lymphoblast cells in (a) Liver (b) Spleen (c) Lymph node (HE x100) **Fig.4.** Lymphosarcoma-Lymphoblast cells in (a) Kidney (b) Bone marrow (c) Intestine (HE x40).

dogs with mean age range of 5.5 to 9.08 years^{4,7}, whereas present case occurred in a 10 year old dog.

Further, the type of neoplasia recorded presently was diffuse which is in agreement with earlier report⁸ of 72 dogs, wherein diffuse lymphosarcoma was observed in 90.3 per cent cases as against 9.7 per cent of nodular type. The multicentric presence of lymphosarcoma seen in the liver, kidneys, spleen, lymph node, bone marrow and intestines corresponded to the observation that metastases frequently involved the spleen, liver and kidneys¹. Lakkawar *et al.*² observed neoplastic growths in the lymph node, spleen, liver, kidneys, pancreas, stomach and intestine in a mongrel dog. Intestinal lesions of lymphoma in dog could be either primary or metastatic³.

REFERENCES

1. Fan TM and Kitchel BE (2002). An update on diagnosis and treating canine lymphosarcoma. *Vet. Med.*, **97**: 58-67.
2. Lakkawar AW, Kumar R, Nair MG, Ramesh kumar B and Varshney KC (2002). Lymphosarcoma in a mongrel dog. *Indian J. Vet. Pathol.*, **26**: 83-84.
3. Lowe AD (2004). Alimentary lymphosarcoma in a 4 year- old-Labrador retriever. *Can. Vet. J.*, **45**: 610-612.
4. Parodi A, Wyers M and Paris J (1968). Incidence of canine lymphoid leucosis. Age, breed and sex distribution, results of necropsy survey. *Bibl. Haematol.*, **30**: 263.
5. Priester WA and McKay FW (1980). The occurrence of tumours in domestic animals. *Natl. Cancer Inst. Mono.*, **54**: 1-210.
6. Rosenberg MP, Matus RE and Patnaik AK (1991). Prognostic factors in dogs with lymphoma and associated hypercalcaemia. *J. Vet. Intern. Med.*, **5**: 268-271.
7. Rosenthal R (1982). Epidemiology of canine lymphosarcoma. *Comp. Cont. Edu.*, **4**: 855.
8. Weller RE, Holmberg CA, Theilen GH and Madewell BR (1980). Histologic classification as a prognostic criterion for canine lymphosarcoma. *Am. J. Vet. Res.*, **41**: 1310-1314.