

## A case of ovine lymphosarcoma in Kenya

J M Maribei<sup>a</sup>, E M Njoroge<sup>a</sup> and S M Njiro<sup>a</sup>

### ABSTRACT

Ovine lymphosarcoma was diagnosed clinically in a 5-year-old Blackhead sheep in Kenya, and confirmed on blood smear, leukocyte count and macroscopic pathology. Four progeny of the ewe were examined. They were normal haematologically but 2 revealed bilaterally enlarged lymph nodes.

**Key words:** Kenya, lymphosarcoma, sheep.

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### INTRODUCTION

Clinical cases of ovine lymphosarcoma are rare in adult sheep and only a few cases of the natural disease have been described<sup>4,10</sup>. Lymphosarcoma has been induced experimentally in sheep using bovine leukaemia virus<sup>5-7</sup>. Clinical ovine lymphosarcoma has not been reported previously in Kenya.

### CASE HISTORY

A 5-year-old Blackhead sheep was presented to the Large Animal Clinic, University of Nairobi, with a history of submandibular enlargement that was interfering with breathing and swallowing. Clinical examination revealed generalised enlargement of peripheral lymph nodes (Fig. 1). The lymph nodes were painless on palpation. Breathing was laboured, but the temperature was normal (39.2 °C). A tentative diagnosis of lymphosarcoma was made.

Blood was collected in EDTA for cell counts. Blood and lymph smears were made and stained with Giemsa. A total leukocyte count using a Coulter Counter revealed 667 000 leukocytes/mm<sup>3</sup> (normal range is 4000–12000 leukocytes/mm<sup>3</sup>), 99 % of which were lymphocytes. Examination of the blood smear revealed numerous immature neoplastic lymphocytes (Fig. 2). The lymph-node smear revealed numerous neoplastic lymphocytes, some undergoing mitosis (Fig. 3).

The sheep died 2 days after referral. *Post mortem* examination revealed generalised lymphadenopathy. The lymph nodes

were firm in consistency, white and nodular, and some were extremely enlarged with necrotic centres. The spleen was markedly enlarged and the lungs had firm, multiple, white, presumably neoplastic nodules located both on the surface and in the parenchyma.

Examination of the progeny of the dead sheep yielded interesting results (Table 1). Of the 4 sheep examined, 2, a daughter (3 years) and a son (1 year), had enlarged prescapular lymph nodes but otherwise appeared normal. Haemograms from the progeny (Table 2) revealed total white blood cell counts ranging between 4900 and 13 200 leukocytes/mm<sup>3</sup>, regarded as being within, or

only slightly above (>12 000), normal limits<sup>2</sup>. Blood smears from these sheep revealed a preponderance of immature circulating lymphocytes, ranging from 5.5–34.5 % of the total lymphocyte count, a feature not encountered in normal blood smears<sup>2</sup>. The progeny were, however, not followed to their deaths, as they were slaughtered without further reference to the University Large Animal Clinic.

### DISCUSSION

Lymphosarcoma is commonly reported in cattle, horses, dogs and cats<sup>8</sup>. Although the disease has been reported as an important tumour of young sheep<sup>1</sup>, clinical cases of lymphosarcoma have rarely been observed in adult sheep, and most cases of the disease have been reported at necropsy. In the present case a diagnosis of lymphosarcoma was based on lymphocytosis and immaturity of the lymphocytes<sup>3,9</sup>.

The gross *post mortem* findings in the present case are similar to those found in cases of bovine lymphosarcoma, in which a lymph node aspirate reveals a homogeneous population of lymphocytes, some



Fig. 1: Enlarged prescapular lymph node (arrow) in the sheep that died from generalised lymphosarcoma.

<sup>a</sup>Faculty of Veterinary Medicine, University of Nairobi, P.O. Box 29053, Nairobi, Kenya.

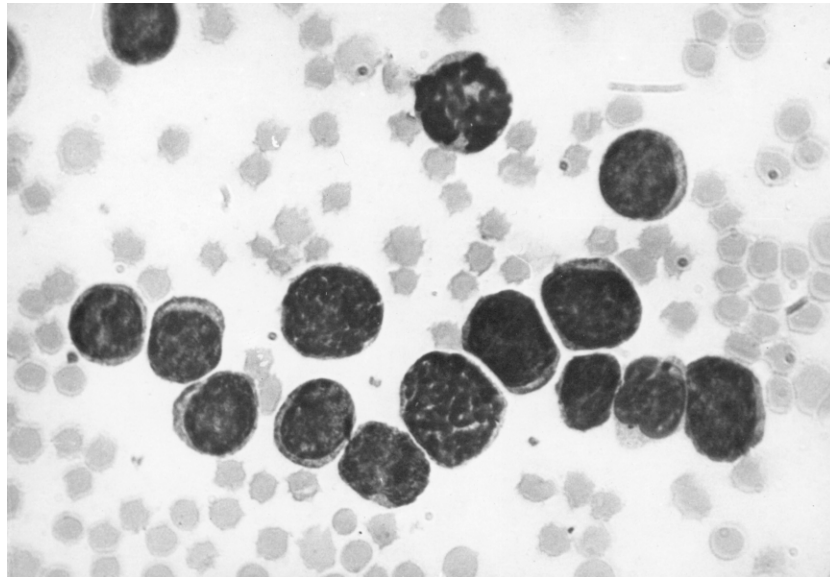


Fig. 2: A blood smear from the sheep in Fig. 1 showing large neoplastic lymphocytes with large nuclei (Giemsa,  $\times 400$ ).

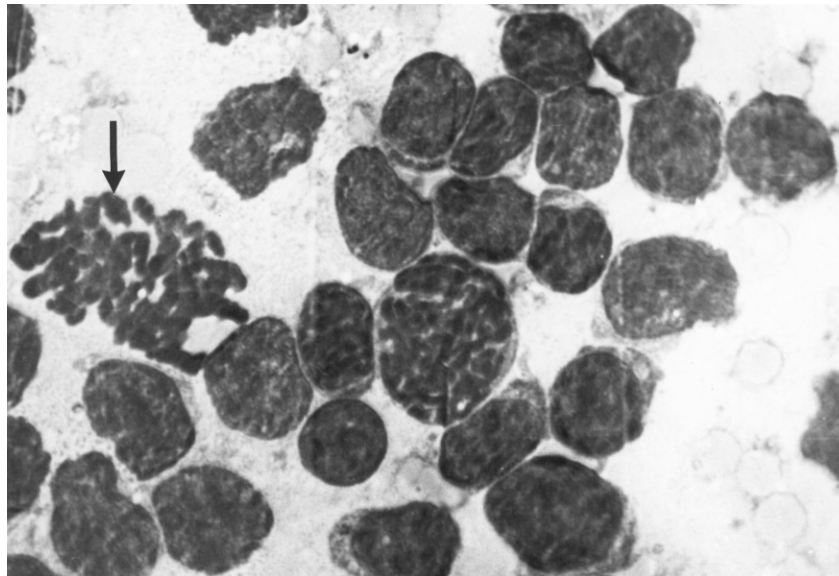


Fig. 3: A lymph smear of the sheep in Fig. 1 with large neoplastic lymphocytes. Note the mitotic figure (arrow) (Giemsa,  $\times 1000$ ).

Table 1: Physical examination of progeny of the sheep that died of lymphosarcoma.

Sheep No.	Age (years)	Sex <sup>a</sup>	Lymph nodes <sup>b</sup>	Relationship
1	3	f	+	Daughter
2	2	f	-	Daughter
3	1	m	+	Son
4	0.5	f	-	Grand-daughter

<sup>a</sup>f = female, m = male.

<sup>b</sup>+ = lymph nodes enlarged.

of which have irregular nuclei<sup>8,9</sup>. At necropsy, enlarged lymph nodes that appear as soft, grey-white masses and bulge on cut surface when incised, are observed; some of the large masses may

have necrotic centres<sup>8</sup>. In the present case, the lymph node smear revealed a homogeneous population of lymphocytes, some with mitotic figures, and necropsy findings included enlarged

white lymph nodes, sometimes with necrotic centres.

In young sheep, affected animals have been reported to be unthrifty, with bilateral enlargement of the superficial

Table 2: Differential leukocyte count<sup>a</sup> in the progeny of the sheep that died of lymphosarcoma.

Sheep No.	WBC	N	L	M	E	B	% Immature lymphocytes
1	4 900	29	66	0	5	0	11.5
2	13 200	43	42	0	5	0	23.0
3	12 500	23	75	0	2	0	5.5
4	9 900	22	69	0	9	0	34.5

<sup>a</sup>WBC = white blood cell count; N = % neutrophils; L = % lymphocytes; M = % monocytes; E = % eosinophils; B = % basophils.

lymph nodes in the generalised form of the disease<sup>1</sup>. In the present case the affected progeny were healthy but 2 had bilateral lymph node enlargement.

The present and previously reported clinical cases indicate that natural lymphosarcoma may be more common in adult sheep than is generally supposed. The present case of lymphosarcoma is of interest, as it is a natural case of this neoplasm in an adult sheep and her progeny. The aetiology and mode of transmission of the disease in the present case could not be established.

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