

## A CASE OF JUVENILE LYMPHOMA IN A CROSS BRED HOLSTEIN FRIESIAN CALF

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### ABSTRACT

A one-month-old female crossbred Holstein Friesian (CBHF) calf was presented with complaints of inappetance, fever and generalized lymphadenopathy. On clinical examination, pale mucous membrane, rectal temperature of 105<sup>o</sup>F and bilateral severe swelling of parotid, submandibular, retropharyngeal, prescapular and prefemoral lymph nodes were recorded. On fine needle aspirate cytology of lymph nodes, numerous pleomorphic lymphoid cells having scant rim of basophilic cytoplasm, large bizarre nucleus with diffusely spread fine chromatin, occasional prominent chromatin, marked anisokaryosis and anisocytosis was noted. Based on the findings, a diagnosis of sporadic case of juvenile lymphoma was made.

**Keywords:** Juvenile, lymphadenopathy, lymphoma, CBHF calf

Lymphoma is the malignant neoplasm

of the immune system characterized by uncontrolled proliferation of lymphocytes leading to formation of tumour masses in various peripheral and visceral lymph nodes and organs like spleen, kidney, heart and uterus (De Oliveira ., 2016). It is one of most common neoplasm seen in dairy producing cattle. The classification of malignant lymphoma is based on the age of the animal and epidemiologic association with BLV infection. Enzootic bovine leukosis (EBL) caused by bovine leukemia virus (BLV) occurs in adult cattle whereas sporadic bovine leukosis (SBL), unrelated to BLV infection, occurs in young cattle. Sporadic bovine leukosis manifests in 3 main forms, viz. juvenile, thymic and cutaneous. Juvenile lymphosarcoma occurs in calves less than 6 months of age and is presented by generalized lymphadenopathy followed by death in 2-8 weeks after onset of disease preceded by weight loss, depression and weakness. Tumour cells in EBL predominantly consist of B-cell lineage and in SBL, it comprises of

T-cell lineage. Sometimes, B cell lymphoma is also possible with SBL like younger cattle affected by the B-cell calf form (Tawfeeq ., 2012; Veeraiah ., 2017; Gupta ., 2018). Fine needle aspiration cytology (FNAC) is a very helpful method in diagnosis of benign and malignant lesions of lymph node.

### CASE HISTORY AND OBSERVATION



Fig 1. CBHF calf with generalized lymph node enlargement: Lymphadenopathy of parotid, submandibular, prescapular and prefemoral lymph nodes (arrows) can be observed grossly.

A one-month-old female CBHF calf was presented to the Veterinary Dispensary, Mathil with complaints of inappetance, severely enlarged lymph nodes and fever. On initial examination, the calf had a rectal temperature of 105<sup>o</sup>F and pale mucus membrane.

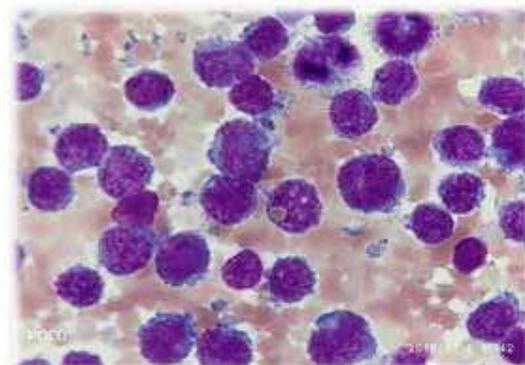


Fig 2. Aspiration cytology smear of the diffuse lymphoma showing numerous pleomorphic lymphoid cells having scant rim of basophilic cytoplasm with fine chromatin, marked anisokaryosis and occasional prominent nucleoli in a back ground of clumps of erythrocytes (Giemsa staining)

Diffuse lymphadenopathy involving the parotid, submandibular, retropharyngeal, prescapular and prefemoral lymph nodes were noted as in Fig. 1. On complete blood count, mild anemia (Hb-7.3g/dl and RBC-4.52million/ $\mu$ l), mild leucocytosis (13,300/ $\mu$ l) with neutrophilia and monocytosis were noted. Morphologically, erythrocytes were normocytic and normochromic. Microscopic examination of peripheral lymphocytes from Giemsa's stained blood smear was normal except for a reactive cytoplasm. Despite the treatment with antibiotics and anti-inflammatory drugs, the general condition of the animal did not improve. On cytology of fine needle

aspirate (FNAC) from the superficial pre-capsular and pre-fermoral lymph nodes, numerous pleomorphic lymphoid cells having scant rim of basophilic cytoplasm, large bizarre nucleus with diffusely spread fine chromatin, occasional prominent chromatin, marked anisokaryosis and anisocytosis was revealed as shown in Fig 2.

## DISCUSSION

The clinical and cytological findings of this study were suggestive of lymphoma and were consistent with the previous findings of Dey . (2006) and Veeraiah . (2017). Even though, diagnosis of lymphoma is often a relative straightforward process on cytology, prognostic details and specific classification of type of disease condition has to be achieved through immunophenotyping, histopathology and molecular techniques. There is a paucity of recent data on the etiopathogenesis of bovine lymphosarcoma in the country. It is transmitted horizontally or iatrogenically through biological materials containing B-lymphocyte in body fluids and also through insect vector transmission. In India, BLV infection in cross-bred Zebu cattle was first reported in 1980 by Bansal . (1980). Hassan . (2018) reported a rare sporadic clinical case of chronic diarrhea due to lymphosarcoma in a seven year old CBHF cattle from Punjab. The clinical diagnosis of the case was based on lymphadenopa-

thy, cytological characterization of peritoneal fluid and negative serological and fecal evidence of any parasitic or bacterial infection. The hematological findings of leucocytosis and anemic profile were also reported by the authors similar to the present study. It is stated that anemia and atypical lymphocytes are commonly seen clinical pathological findings in skin form of cutaneous lymphoma (Thangapandiyar . 2018). A case of sporadic juvenile thymic lymphoma was diagnosed based on postmortem and histopathologic examination in a six month-old Holstein heifer with recurrent bloat and a firm, primarily left-sided mass in the caudoventral cervical region. (Nasir, 2005).

Cutaneous form of T cell granular lymphoblastic lymphoma was diagnosed by Thangapandiyar . (2018) in Tamil Nadu based on cytological features and immunocytochemical studies. The cytological analysis of the fine needle aspirates of raised, spherical alopecic, non-ulcerated multiple varying sized masses on left inguinal region revealed monomorphic population of large lymphoblasts with high nuclear to cytoplasmic ratios, moderate basophilic cytoplasm, single to multiple distinct nucleoli, increased number of mitotic figures and a finely stippled chromatin pattern in agreement with the present study. A case of sporadic cutaneous lymphoma in a nine month old Hallikar bullock on

the lateral aspect of abdomen was recorded by Chandrasekaran . (2015) from Tamil Nadu. In the present case, a diagnosis of juvenile lymphoma was made based on the age of the animal, clinical and cytological findings.

### SUMMARY

This paper reports on a sporadic case of juvenile lymphoma characterized by generalized lymphadenopathy in a one month old female CBHF calf identified by the presence of numerous medium and large lymphoid cells with fine chromatin, occasional prominent nucleoli and obvious atypia on FNAC from sampled multiple nodes.

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