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Canine Liposarcoma

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Abstract
Liposarcoma represents a malignant tumour originating from adipose tissue, a condition rarely observed in domesticated animals. In this particular investigation, tumours were identified through both cytological and histopathological methodologies. For cytological assessments, Fine Needle Aspiration Cytology (FNAC) and impression smears were employed for both palpable and non-palpable tumour masses. Cytological smears revealed pleomorphic neoplastic lipocytes within foamy background, well demarcated cytoplasmic vacuoles, anisokaryosis and anisocytosis were observed. Histopathologically showed neoplastic polygonal to spindle shape lipocytes were found in lobules that surrounded by collagen bundles with distinct vacuoles of varying size, anisokaryosis and anisocytosis, round to oval nuclei and mitotic figures were observed. Cancer is a fatal malignant disturbance can damage sensitive organs so Early diagnosis and treatment of liposarcoma is necessary.

Keywords: FNAC, liposarcoma, cytology, histopathology, neoplasm

1. Introduction
Neoplasms or tumours are quite different from other swellings that show inflammatory signs because the neoplastic cells are abnormal in their shape, size, and arrangements which serve no valuable function (Weiss and Frese, 1974) [12]. Skin is the largest body organ in dog and it is more prone to neoplastic growths or tumours. The skin emerges as the predominant location for the development of neoplasms, constituting a range of 9.5% to 51% compared to the aggregate of other tumours observed in canines. (Bronden *et al.*, 2010) [1]. Liposarcomas display a morphological diversity, ranging from clusters of pleomorphic adipocytes in well-differentiated liposarcomas to formations of spindloid cells and lipoblasts in myxoid liposarcomas. (Goldschmidt and Hendrick, 2002) [5]. Liposarcomas outside the skeletal structure are frequently located in the subcutaneous layer, deeper soft tissues, as well as the thoracic and abdominal cavities. Diagnostic cytology entails the microscopic examination of cells to promptly ascertain the nature of a lesion and diagnose a disease. This method is characterized by high specificity, sensitivity, and widespread acceptance in diagnosing various human and animal diseases (Cohen *et al.*, 2003) [2]. Cytology specifically focused on the skin and underlying tissues proves valuable in identifying bacterial, fungal, parasitic, and most surface-level neoplastic skin conditions. Obtaining samples from skin and subcutaneous masses is a straightforward process, not requiring tranquilization or anesthesia for cytologic assessment and the differentiation between neoplastic and non-neoplastic processes (Wellman, 1990) [11]. This article provides insights into the incidence, macroscopic characteristics, as well as cytological and histopathological features of liposarcomas in dogs.

2. Materials and Methods
2.1 Source and Collection of Samples
The research was carried out at the Department of Veterinary Pathology, Post Graduate Institute of Veterinary Education and Research, Jaipur, spanning from August 2020 to February 2021. The study material comprised samples derived from 58 naturally occurring tumour masses, collected from dogs of diverse breeds and ages, encompassing both males and females.

Tissue samples for the study were sourced from the Government Veterinary Polyclinic (Department of Animal Husbandry), the Department of Veterinary Surgery and Radiology, the Department of Veterinary Pathology at PGIVER Jaipur, and the Veterinary Hospital (Help in Suffering/HIS, Jaipur).

2.2 Gross Examination
Before surgery, a comprehensive macroscopic examination was conducted on all tumours. The tumour masses were scrutinized for signs of ulceration and their specific locations on the body. Following surgical removal, various parameters such as size (measured in centimeters), shape (round, oval, irregular, multilobulated, etc.), weight (in grams), consistency (soft, hard, firm, cystic, etc.), and the colour of the cut surface of the tumour were meticulously examined.

2.3 Cytological Examination
To conduct cytological assessments, fine needle aspiration cytology (FNAC) and impression Smear / touch Imprint cytology were employed (Cowell and Valenciano, 2014) [3].

2.4 Histopathological Examination
The dissected tissue samples were immersed in a solution of 10 percent buffered formalin and subjected to staining using the hematoxylin and eosin method for histopathological assessment (Luna, 1960; Culling, 1974) [9, 4].

3. Results and Discussion
3.1 Incidence of Liposarcoma
Two cases of liposarcoma were recorded with 3.45% incidence. These findings were in approximately similar with Khan (2019) [8], who observed 4.38% incidence of liposarcoma.

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3.2 Gross morphology, Cytology and Histopathology of liposarcoma
Grossly, tumour masses were oval to irregular, firm to fleshy located at thigh region of hind leg. The cut section of the tumour exhibited a creamy-white hue (Fig 1). The dimensions of the tumour masses were 7 x 4 x 3 and 9 x 6 x 5 cm, with weights 120g and 150g. These observations align with the results reported by Valeciano (2014) [13]. The findings of the current study share resemblances with those documented by Gopal *et al.* (2017) [6], they reported multilobulated, intermingled soft areas of glistening yellow neoplastic growth.

Impression smears revealed pleomorphic neoplastic lipocytes within foamy background. The cells exhibited a moderate degree of faint staining, displaying indistinct cytoplasm with cytoplasmic vacuoles of varying sizes (lipid droplets) that were well-defined (Fig 2). Anisokaryosis and anisocytosis were evident, and the nuclei, which were round to oval in shape, tended to displace peripherally, featuring one to two prominent nucleoli. Additionally, coarse chromatin was observed (Fig 3). The results of this investigation align with the findings reported by Gopal *et al.* (2017) [6].

Histopathological examination revealed neoplastic polygonal to spindle shape lipocytes were found in lobules that surrounded by collagen bundles. The tumourous cells exhibited a blurred cellular boundary and a considerable quantity of cytoplasm that stained eosinophilic with distinct vacuoles of varying size. Anisokaryosis and anisocytosis with eccentrically located round to oval nuclei and mitotic figures were observed (Fig. 4). The present study showed similarity with Gopal *et al.* (2017) [6].

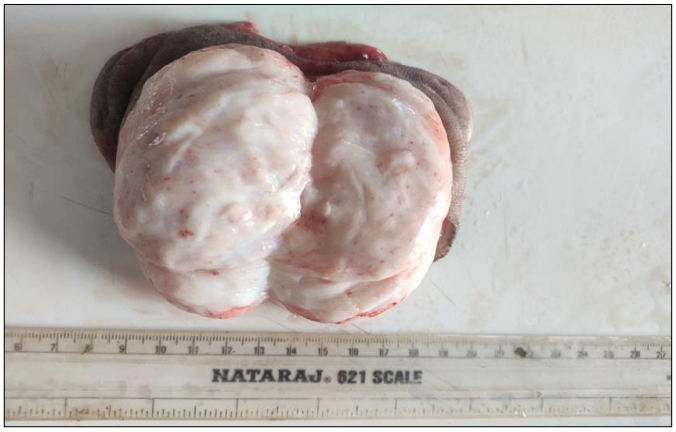

Fig 1: Gross photograph showing creamy white cut surface of liposarcoma

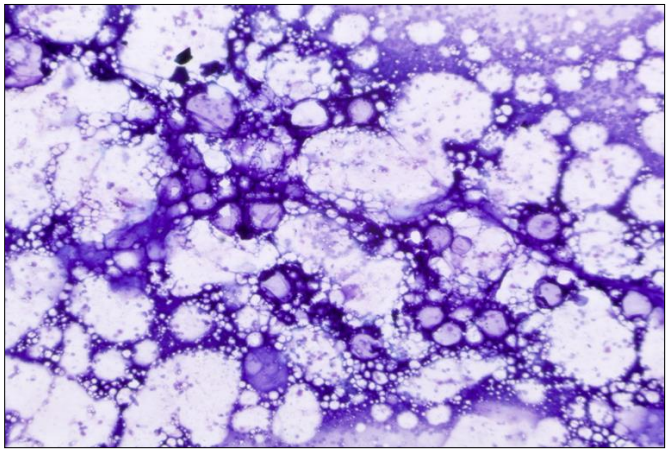

Fig 2: Photomicrograph of impression smear showing pleomorphic neoplastic lipocytes, moderate pale staining cytoplasm with well demarcated cytoplasmic vacuoles. Giemsa stain, 100X

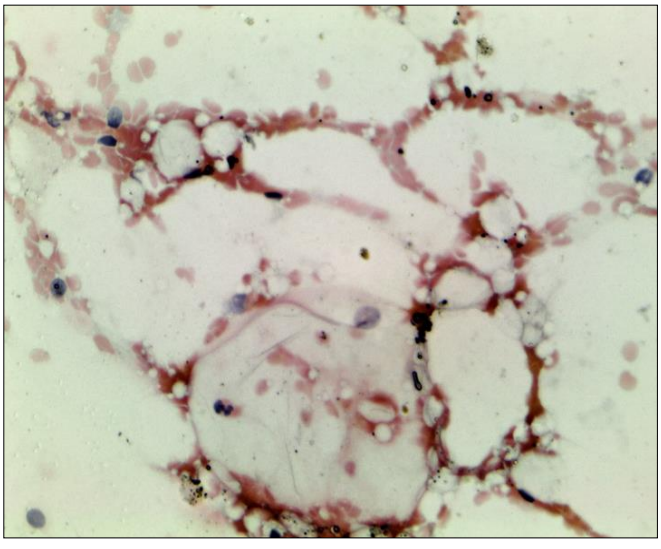

Fig 3: Photomicrograph of impression smear showing round to oval shape nuclei displaced to periphery with one to two prominent nucleoli and coarse chromatin. Papanicolaou stain, 400X

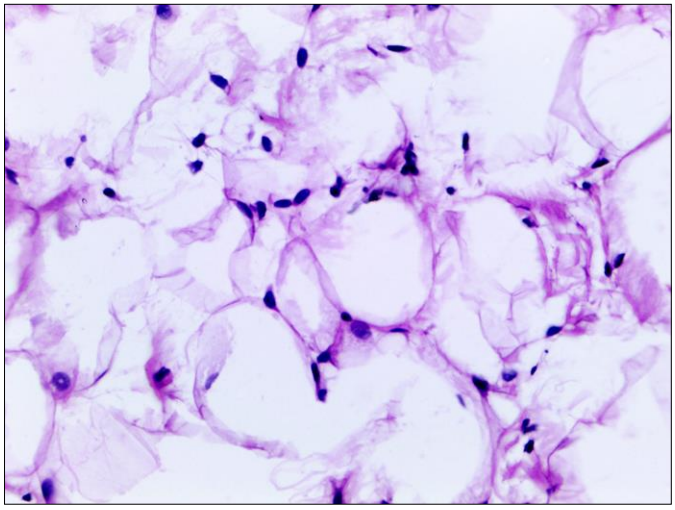

Fig 4: Photomicrograph showing eccentrically located spherical to oval nuclei, mitotic figures, anisokaryosis, and anisocytosis stain, 400X

4. Conclusions

In the current investigation, among the 58 cases examined, 13 instances of mesenchymal cell tumours were identified, accounting for 22.41% of the total cases. In the mesenchymal cell tumour, 2 cases of liposarcoma (3.45%) observed. Liposarcomas were appeared as presence of well demarcated cytoplasmic vacuoles (cytoplasmic lipid droplets), anisokaryosis, anisocytosis with peripherisation of round to oval nuclei and Coarse chromatin. Cytology serves as a primary diagnostic method for identifying disease processes and neoplasms in diverse tissues of the body. It is a straightforward, swift, cost-effective, and dependable technique that can be performed on outpatient basis without the need for anesthesia or sophisticated equipment.

References

1. Bronden LB, Eriksen T, Kristensen AT. Mast cell tumours and other skin neoplasia in Danish dogs - data from the Danish Veterinary Cancer Registry. Acta Veterinaria Scandinavica. 2010;52:6.
2. Cohen M, Bohling MW, Wright JC, Welles EA, Spano JS. Evaluation of sensitivity and specificity of cytologic examination: 269 cases (1999-2000). Journal of the American Veterinary Medical Association. 2003;222:964-967.
3. Cowell RL, Valenciano AC. Cowell and Tyler's Diagnostic cytology and hematology of the dog and cat. 4th edn. Elsevier Mosby, St. Louis; c2014.
4. Culling CFA. Handbook of histopathological and histochemical techniques. 3rd Edition. Butterworth-Heinemann, London; c1974.
5. Goldschmidt MH, Hendrick MJ. Tumors of the skin and soft tissues. In: Meuten DJ, Ed. Tumors in Domestic Animals. 4th Ed. Iowa City, IA: Iowa State Press; c2002. p. 45–118.
6. Gopal K, Vairamuthu S, Balachandran C, George RS. Liposarcoma in a non-descript dog. Indian Veterinary Journal. 2017;94(06):74-75.
7. Indika KG, Kumara MP, Ariyarathna HMHS, Jayasinghe MGCM, Adikari AMRB, De Silva DDN. Two cases of canine liposarcomas: An uncommon tumour. Sri Lanka Veterinary Journal. 2016;63:1.
8. Khan S. A Study on Incidence and Histopathological Typing of Superficial Neoplastic Growths of Dogs in Jaipur. M.V.Sc. Thesis, Rajasthan University of Veterinary and Animal Sciences Bikaner; c2019.
9. Luna G. Manual of histological staining of the armed forces institute of pathology. 3rd Edition. New York: McGraw Hill Book Co; c1960. p. 32-40.
10. Messick JB, Radin MJ. Cytologic, Histologic, and Ultra structural characteristics of a canine myxoidliposarcoma. Veterinary. Pathology. 1989;26:520-522.
11. Wellman ML. The cytologic diagnosis of neoplasia. Veterinary Clinics of North America: Small Animal Practice. 1990;20(4):919-938.
12. Weiss E, Frese K. Tumours of the Skin. Bull. Bulletin of the World Health Organization. 1974;50:79-100.
13. Kissling E, Valenciano M, Buchholz U, Larrauri A, Cohen JM, Nunes B, *et al.* Influenza vaccine effectiveness estimates in Europe in a season with three influenza type/subtypes circulating: The I-MOVE multicentre case–control study, influenza season 2012/13. Euro surveillance. 2014 Feb 13;19(6):20701.