

## A case report on cutaneous histiocytoma in a dog

Kambala Swetha<sup>1</sup>, S. Kavitha<sup>2</sup>

Department of Veterinary Clinical Medicine, Madras Veterinary College, Chennai-600007

Tamilnadu Veterinary and Animal Sciences University, India.

<sup>1</sup>Ph.D Scholar, <sup>2</sup>Professor and Head

### Abstract

A two-year-old, female Golden Retriever dog weighting 36 kg was presented to the private clinic with the history of solitary growth over the elbow region. Sample was collected for biopsy and it revealed cutaneous histiocytoma. On thoracic ultrasonography no metastasis of lungs was noticed. Microscopic examination of biopsy samples revealed sheets of densely packed round cells, with round to oval nuclei and nucleoli, some cells showed multinucleation and bi-nucleation, moderate amount of pale blue cytoplasm was also observed.

**Keywords:** Histiocytoma, dog, biopsy, tumor

Cutaneous histiocytoma and histiocytic sarcoma are the forms of canine histiocytic neoplasms, which display significantly variable biological behaviours. Histiocytic diseases are more commonly noticed in dogs than in cats. Histiocytoma typically present as solitary cutaneous nodules, characterized by a distinctive dome-like projection above the surrounding epidermis, which is commonly regress on their own within 4-8 weeks of time. During the regenerative process, there is notable infiltration of mature leucocytes in the FNA slides (Gross *et al.*, 1992; Reddy *et al.*, 2018). Histiocytomas often grow rapidly with significant epidermal ulceration. Recurrence at the surgical excision site or development in a new location is highly uncommon, and malignant transformation is a rare occurrence (Goldschmidt and Hendrick, 2002). Immunophenotype and ultrastructural studies have confirmed that cutaneous histiocytoma is characterized by a proliferation of intraepidermal dendritic antigen-presenting cells, known as Langerhans cells. These cells express specific markers including CD1a, CD1b, CD1c, major histocompatibility complex (MHC) class II, and CD11c (Kipar *et al.*, 1998; Pires *et al.*, 2009). Cutaneous histiocytoma is diagnosed by histopathological evaluation, combined with novel immune-histochemical staining protocols. In the present study diagnosis was done by histopathologic examination of biopsy sample collected from the lesion at elbow region.

### Case history and observations

A two-year-old female Golden Retriever dog weighing about 36 kg was brought to the clinic due to solitary growth of 4 x 6 cm size over the elbow region

Corresponding author: kavikrithigaa@gmail.com

persisting for a month (Fig. 1). Previously it was treated with antibiotic cephalexin, and topical medications containing antiseptic and antibacterial properties. Upon clinical examination, the dog was active and slight pale mucous membranes, with normal hydration status and epidermal ulceration of mass is noticed (Fig 2). Vital signs included a rectal temperature of (101.4°F), heart rate (78/min) and respiratory rate (24/min). Blood analysis indicated a haemoglobin level of 10.9 g/dL, packed cell volume 34.2%, total erythrocyte count  $5.06 \times 10^6 / \mu\text{L}$ , total leucocyte count  $29.60 \times 10^3 / \mu\text{L}$ , with 86% neutrophils, 8% lymphocytes, 2% eosinophils and 4% monocytes. Serum biochemistry revealed total protein of 6.70g/dL, albumin 3.1g/dL, alanine transaminase 54 IU/L, bilirubin 0.52 mg/dL, BUN 38.18mg/dL, creatinine 1.55mg/dL. A plain lateral thoracic radiograph displayed no circumscribed nodules in the lungs, without metastasis in lungs. By using punch biopsy needles, samples was collected and preserved in 10% buffered formalin solution. These samples send to the laboratory for histopathological techniques. On microscopic examination, sheets of densely packed round cells, with round to oval nuclei and nucleoli are observed, some cells showed multinucleation and bi-nucleation, moderate amount of pale blue cytoplasm is also observed (Fig 3). Advised the owner for surgical excision of mass.

### Discussion

The most prevalent skin tumour of dogs is cutaneous histiocytoma (Goldschmidt and Hendrick, 2002), constituting around 18% of all canine skin tumours (Reddy *et al.*, 2009). Histiocytoma is a common, benign, cutaneous neoplasm of the dog.

Roshini *et al.* (2013) documented an 8.6% incidence of canine cutaneous histiocytoma among 41 canine tumorous growths studied, ranked second to mammary gland tumour. In the present study age of the affected animal was 2 years, although it can occur in dogs of any age, predominantly noticed in dogs below three years of age (Goldschmidt and Hendrick, 2002). Certain pure breed dogs includes Scottish terriers, Bull terriers, Boxers, English cocker spaniels, Doberman pinschers, and Shetland sheepdogs are noted to be more susceptible to cutaneous histiocytoma (Taylor *et al.*, 1969). Most of the histiocytic diseases of canines involve proliferations of cells from various dendritic cell lineages. Histological findings like sheets of densely packed round cells, with

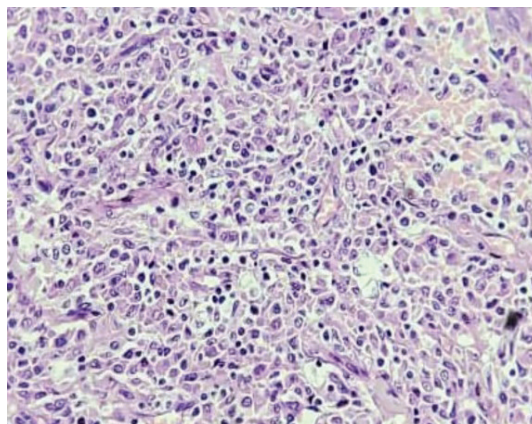
round to oval nuclei and nucleoli observed in the present study were similar to those described previously that Histologically, the nuclei in histiocytomas shows various shapes, extending from round to oval or complexly folded (Goldschmidt and Hendrick, 2002; Baba and Toi, 2007; Reddy *et al.*, 2009). Mitotic counts within histiocytomas can vary significantly, often being substantial, while the cytoplasm typically display abundant and eosinophilic (Guvenc *et al.*, 2002). Immunohistochemistry plays a vital role in differentiating histiocytic tumors from other neoplasms with similar histological appearances, offering a definitive diagnosis, prognosis, and assessment of treatment efficacy.



**Fig 1. Dog having mass at the elbow region of left forelimb**



**Fig 2. Mass at elbow region showing epidermal ulceration**



**Fig 3. Sheets of densely packed round cells, with round to oval nuclei, nucleoli and moderate amount of pale blue cytoplasm was observed.**

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