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## MAST CELL TUMOUR IN DOG: A CASE REPORT

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### ABSTRACT

A 9-year-old male German Shepherd Dog was presented in the Veterinary Clinical Complex in College of Veterinary Sciences and Animal Husbandry, DUVASU Mathura, with the history of huge growth mass at the base of the left ear with intense itching and pus continuous oozes out along with the blood flakes were noticed. Initially, it was a small nodular growth for about one month, then continues growth showed increment in size of a tennis ball with in a span of two weeks. Face was dropping at the right side. On clinical examination pet showed about 10-15 cm diameter of mass in the base of the left ear. No other nodular lesions were observed on the skin. The pet was active and alert with no lymph node swelling nor any clinical signs of concern. A fine needle aspiration was done to find out the aetiology of the nodular lesion. Cytological examination of fine needle aspiration was suggestive of mast cell tumour confirmed by using toluidine blue and H&E staining.

**Keywords:** Canine, Cytology, Mast cell tumour

### INTRODUCTION

Mast cell tumours are proclaimed as one of the commonest cutaneous tumours reported in domesticated dogs with rare occurrence in felines and other domesticated species of animals (Kiupel, 2017). In dog species, the mast cell tumours represent 7 to 21 % of all the skin tumours and 11 to 27 % of the malignant tumours encountered in skin of dogs (Fan and Lorimier, 2005.; Newman *et al.*, 2007). Mostly the mast cell tumours were reported to be presented as solitary tumours masses albeit multiple tumours are also allegedly reported by various researchers (Britton, 2020). Mast cell tumours generally affect the dogs of more than 9 years of age without any predisposition for sex i.e. male or female. Dogs of some breeds viz. Boxer, Pugs, Terriers, Retrievers encompasses a higher risk of more than 8 times than the rest of the breeds to be suffered

from the mast cell tumours (Moore and Frimberger, 2009; Smiechet *et al.*, 2019). It is reported that breed predilections occur due to genetic mutations in c-kit tyrosine kinase receptor that could lead to malignant transformations of mast cells observed in almost 50 % of intermediate to high grade mast cell tumour cases (Garrett, 2014a; Willmann *et al.*, 2019).

Mast cell tumours showed wider gross appearance i.e. either may be raised and superficial in appearance or may be very deep and fixed at the site of occurrence. It may appear either soft or firm on touch perception depending on various stages of tumour. Fine needle aspiration cytology is the easiest technique to diagnose the mast cell tumours.

Further, mast cell tumours comprise up to one fifth of tumours of skin origin in dogs ensuing it to be most common malignant neoplasm of skin tissue in canine species (Garrett, 2014b, Macy, 1985).

Mast cell tumours in canines showed varying biological patterns ranges from solitary benign mass that could easily be cured with surgical procedures alone to systemically affect and metastatic tumours growth (Welleet *et al.*, 2008). Most of these tumours originates from dermis and may extend up to subcutaneous tissue. Albeit reports are also noticed the presence of these tumours upto subcutaneous adipose

tissue and other visceral organs during the process of metastasis (Salviet *et al.*, 2021).

A case of 9 year old male dog of German shepherd breed was presented to Veterinary Clinical Complex of College of Veterinary Sciences and Animal Husbandry, DUVASU, Mathura with the anamnesis of solid growth mass of 10 to 15 cm at the base of left ear with severe itching and oozing of pus with blood flakes and threads. Earlier, it was reported to have small nodular growth for one month duration that turns into a size of tennis ball over two weeks of duration. Face of the animal was dropped on right side during the clinical examination.

No other abnormal growth and nodular lesion was observed in the skin and the dog was showing activeness and alertness without any swollen lymph node.

## **GROSS OBSERVATION**

### **Shape:**

Tumour showed spherical shape with hard consistency of tumour and was around 10-15 cm in diameter with pinkish brown discoloration at the base of the left ear with oozing of the pus witnessed grossly. The skin of the ear was dry and scaly. (Figure 1 & 2)

### **Blood Examination:**

Blood was collected and examined. It



**Figure 1.** Photograph shows hard growth with dry and scaly ear at the base of the left ear.



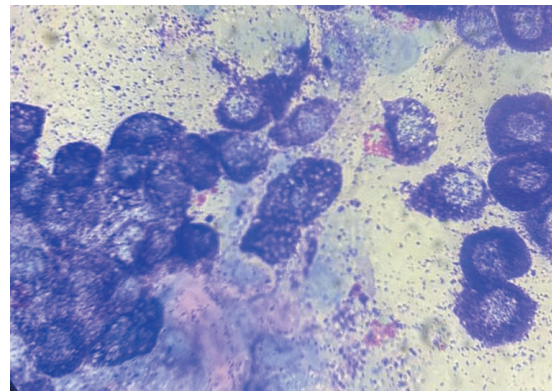
**Figure 2.** Growth of tumour as a tennis ball in size.

showed mild to moderate reduction in total erythrocyte count and platelet count.

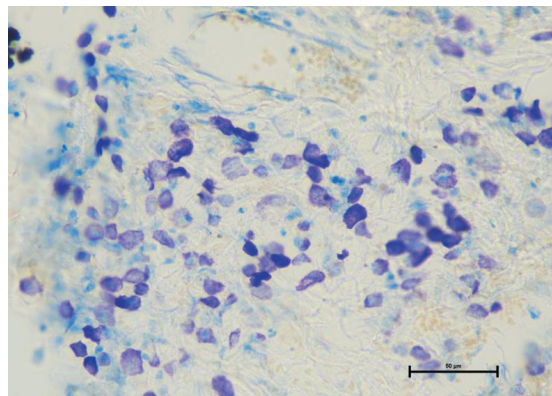
### Cytological Observations:

Cytological diagnosis showed clean background with abundant cellularity composed of clumps of neoplastic round cells. They presented moderate to abundant cytoplasm with well-defined granules with atypical nuclei, and oval shaped nucleus with fine granular chromatin material in the cells. In some cells, it was possible to observe scant intracytoplasmic

metachromatic fine granules, along with anisocytosis (Figure 3). Toluidine blue staining showed mast cell granules purple in colour. (Figure 4)



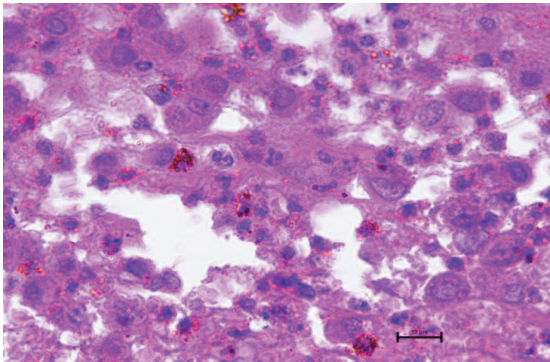
**Figure 3.** Cytology of smear with abundant cellularity composed of clumps of neoplastic round cells



**Figure 4.** Toluidine staining showed purple discoloration

### Histopathological findings:

Representative tissue samples from the tumour were taken for histopathological examination. Briefly, samples were fixed with the 10% buffered formalin and then processed for histopathological examination with H&E staining. Tissue sections revealed the presence of round neoplastic cell of pleomorphic nature



**Figure 5.** H & E staining revealed presence of round neoplastic cell of pleomorphic nature with increased nuclear: cytoplasmic ratio

with increased nuclear: cytoplasmic ratio. The increased nuclear: cytoplasmic ratio exhibited high cellularity, aggressive behaviour of the tissue mass. Neoplastic cells showed distinct cellular borders (Figure 5). Further, it was also observed that cells showed high mitotic index with anisokaryosis. The cytoplasm was observed as granulated structure with deep purple granule. Perusal of the histopathological studies also revealed increase in neutrophil count, total erythrocyte count, eosinophilic increment along with plasma cells and presence of fibroblast. On the basis of all these observations, it is evident that neoplasm is of mast cells i.e. mast cell tumour (MCT).

## CONCLUSION

A mast cell tumour in canine imposes a great challenge as aggressive nature and unexpected evolution. The probability of their occurrence and their incidence are difficult to predict due to

their interrelationship with several factors including the mutational changes in the genes. Present study showed presence of mast cell tumour with rare report of presence in the base of left ear.

Further studies are warranted to explore the molecular signature and patterns for their proper diagnosis and improved prognosis.

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