

A CASE OF ANAPLASTIC MAMMARY CARCINOMA WITH PULMONARY METASTASIS IN A DOG

A. Aneesh¹, I.S. Sajitha², Ajith Jacob George³ and N. Divakaran Nair⁴

^{1,2&4}Department of Veterinary Pathology, College of Veterinary and Animal Sciences, Mannuthy, Thrissur - 680 651, ³Department of Veterinary Pathology, College of Veterinary and Animal Sciences, Pookode, Wayanad, Kerala

Received: 23-10-2017 Accepted: 05-11-2017

ABSTRACT

A 10 year old dog was presented for necropsy with the history of sudden death. Post mortem examination revealed congestion with areas of red hepatisation in lungs. The left inguinal mammary gland was diffusely enlarged and the cut section revealed hemorrhagic areas with cystic spaces. Large numbers of pleomorphic cells were observed in impression smear of the mass and condensed chromatin with prominent nuclei were also seen. Histopathological examination revealed anaplastic carcinoma with micrometastasis in lungs. Liver was yellow in colour and hard in consistency. The kidneys were atrophic with irregular surface.

Keywords: Pleomorphic, anaplastic carcinoma, micrometastasis

INTRODUCTION

Canine mammary tumours are the most common type of neoplasm in dogs and have been classified based on histology into various benign to malignant epithelial and mesenchymal tumours. Anaplastic carcinoma is a neoplasm that cannot be classified in one of the following types: adenocarcinoma, solid carcinoma, squamous cell carcinoma or mucinous

carcinoma (Baba and Catoi, 2007). Anaplastic carcinoma is the most malignant of the mammary carcinomas, often showing diffuse invasion of interlobular connective tissue and lymphatic vessels by the neoplastic cells. The origin of the neoplasm within the mammary tissue is often difficult to find because of difficulty in identifying neoplastic nodules within the tissue submitted for histopathology. Neoplastic cells are often individualized or grouped in small nests; they are also round, oval, or polygonal and 15 to 70 µm in diameter with moderate to abundant eosinophilic cytoplasm. Multinucleated cells containing several irregularly sized nuclei are found in some cases. Anisokaryosis and anisocytosis are severe, and mitoses are common. Nuclei are round to oval, occasionally indented or convoluted with coarsely stippled chromatin. Multiple number of usually two or three variably sized nucleoli are frequently present. The invading carcinoma cells often evoke a marked desmoplastic host response with myofibroblast proliferation, which may be accompanied by an infiltrate of lymphocytes, plasma cells, mast cells, occasional neutrophils or eosinophils and macrophages (Goldschmidt *et al.*, 2011). The interstitial tissue is often oedematous,

with numerous ectatic lymphatics. Neoplastic cells, either as single cells or in aggregates, are often present within lymphatic vessels with metastasis to regional lymph nodes and subsequently to the lung. The present case describes a case of anaplastic carcinoma in a dog.

MATERIALS AND METHODS

A 10 year old dog was presented for necropsy with the history of sudden death. Detailed post mortem examination was carried out. Gross lesions were noted and representative tissues with and without gross lesions were collected for routine histopathological examination. Impression smears were stained by Leishman's stain.

RESULTS AND DISCUSSION

The carcass was in good condition and the mucous membranes were pale. Lungs showed diffuse congestion with areas of red hepatisation, liver was diffusely pale yellow in colour and firm in consistency, the kidneys were atrophic with irregular surface and the left inguinal mammary gland was diffusely enlarged and the cut section revealed hemorrhagic areas with cystic spaces.

Impression smear revealed large number of pleomorphic cells (Baba and Catoi, 2007). The cells were oval to polygonal in shape and with moderate amount of foamy or vacuolated cytoplasm (Plate 1). Anisocytosis and anisokaryosis with basally placed nuclei were seen, multinucleated cells were also present and condensed chromatin with prominent nucleoli were frequently seen. Histopathological examination of the involved gland revealed neoplastic glands of varying size with prominent hyperchromatic and condensed nuclei (Plate 2). The impression smears

and histopathological picture revealed the characteristics of anaplastic type of tumour cells. Distended blood vessels and subcutaneous lymphatics containing the neoplastic cells were seen.

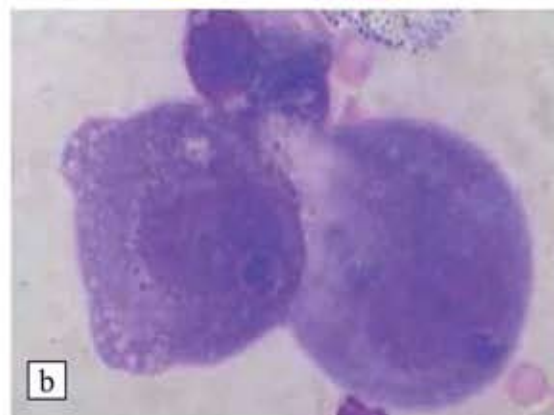
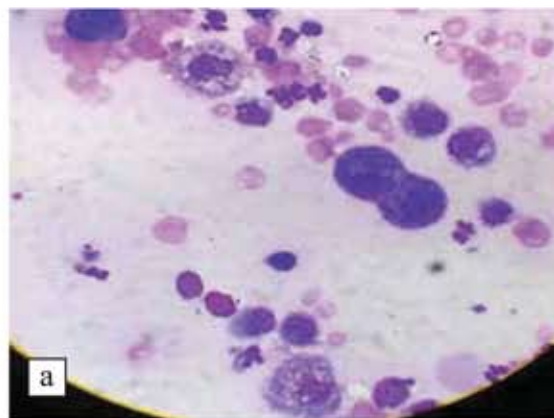
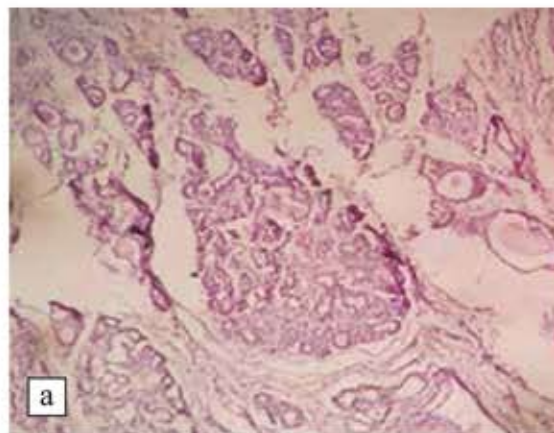


Plate 1. Impression smear - a. Oval to polygonal cells with foamy cytoplasm, b. Condensed chromatin with prominent nucleoli (Leishman x100 and1000)



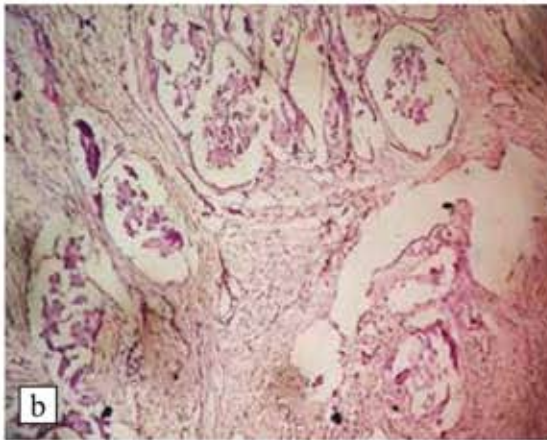


Plate 2. Tumour mass - a. Multiple neoplastic glands, b. distended subcutaneous lymphatic with neoplastic cells, (H&E x 100 and 400)

Misdorp *et al.* (1973) opined that compared to most other types of canine mammary carcinomas, the anaplastic type is not only highly invasive but also predominantly scirrhous. They also observed that carcinomas of this type are difficult to treat by surgery alone because of their early and extensive infiltration into the surrounding tissues and lymphatics.

Chronic inflammatory changes were seen in the liver and kidneys. Lungs showed diffusely congested and hemorrhagic areas and also multifocal areas of micrometastasis (Plate 3). Goldschmidt *et al.* (2011) also observed presence of neoplastic cells, either as single cells or in aggregates within lymphatic vessels with metastasis to

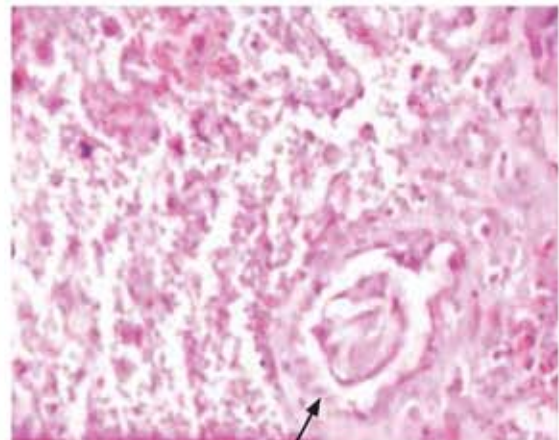
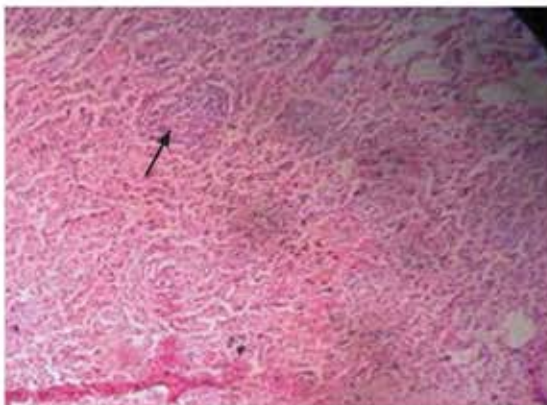


Plate 3. Lung - metastatic foci - Aggregates of neoplastic cells (H&E x 100 and 400)

regional lymph nodes and subsequently to the lung.

SUMMARY

The present case describes a case of anaplastic and metastatic canine mammary cancer. The pathological features indicated the histological type as anaplastic carcinoma and presence of cells with breach in the basement membrane. It also indicated possible ductal origin. Multifocal areas of micrometastasis were observed in the lungs.

REFERENCES

- Baba, A.I. and Cătoi, C. 2007. *Comparative oncology*. Bucharest: Publishing House of the Romanian Academy, 896p.
- Goldschmidt, M., Pena, L., Rasotto, R. and Zappulli, V. 2011. Classification and grading of canine mammary tumors. *Vet. Path.* **48**: 117-131.
- Misdorp, W., Cotchin, E., Hampe, J.F., Jabara, A.G. and Von Sandersleben, J. 1973. Canine malignant mammary tumors. III. Special types of carcinomas, malignant mixed tumors. *Vet. Path.* **10**: 241-256.