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### Short communication

## Mammary adenocarcinoma in lioness

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#### ABSTRACT

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A lioness was brought for postmortem at the Wild Animal Rescue Centre, Kodanad Kerala India. The right mammary gland was extremely enlarged and was completely invaded by coalescent yellowish granular masses and whitish connective tissue. Histopathology of the organs revealed proliferation of round or polyhydric mild anaplastic cells, with round hyper chromatic nuclei, evident nucleoli and eosinophilic cytoplasm and with moderate anaplasia. The cells formed solid masses surrounded by fine connective stroma. Mitotic figures were conspicuous and in many areas the tumor cells invaded the blood and lymphatic vessels. There were metastatic changes in the retro-mammary lymph node and other organs of the pelvic, abdominal or thoracic cavities with similar characteristics of primary tumor.

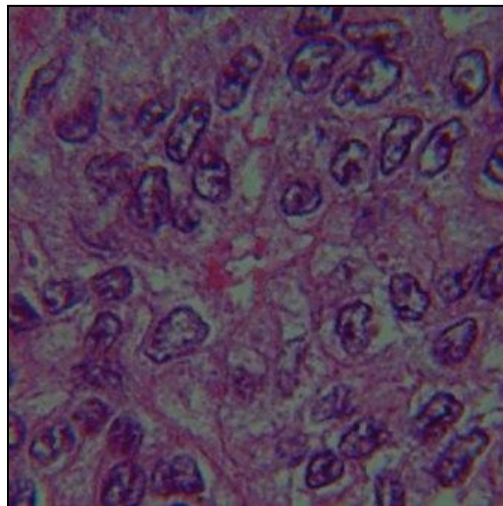
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Mammary gland neoplasms are extremely rare in domestic, but in wild animals due to lack of accurate prevalence statistics they are rarely reported. In wild animals only few reported tumors have been scirrhous solid carcinomas which have been extremely invasive locally, and all have had widespread metastasis. Mammary neoplasms are the most frequent tumors in bitches and form the third most frequent group in queens (Misdorp, 1999). This study was conducted in a lioness brought for postmortem at the Wild Animal Rescue Centre, Kodanad, Kerala, India. The right mammary gland was extremely enlarged. Tissue pieces from mammary gland and all other affected organs were collected and fixed in 10% formalin. After fixation, tissues were processed by routine histological technique, sectioned at 3-5 $\mu$ m, and stained with hematoxylin and eosin. To confirm nature of the tumor immunohistochemistry was also done.

The right mammary gland was extremely enlarged and showed fistulous tracts that opened at the ulcerated skin. The gland was completely invaded by coalescent, beige to yellowish granular masses and whitish connective tissue. Tissue pieces of the mammary gland affected and of other organs were collected and fixed in 10% formalin. After fixation, tissue pieces were routinely processed for embedding in paraffin, sectioned at 3-5 $\mu$ m, and stained with hematoxylin and eosin (HE) and immunohistochemistry was also performed to confirm the nature of tumor.

Histopathology revealed proliferation of round or polyhedral mild anaplastic cells, with round hyperchromatic nuclei, evident nucleoli with eosinophilic cytoplasm and moderate anaplasia (Figure 1). Solid masses of the cells surrounded by fine connective stroma, areas of coagulative necrosis (Figure 2), were observed in the present study. Mineralization foci; loss of adhesion of the cells characterized the tubulo-papillary were main aspect of the neoplasm. Some tubuli were filled with amorphous eosinophilic material, degenerated epithelial cells and neutrophils. Hemorrhagic foci, macrophages filled with hemosiderin were found especially around the tumoral mass. Mitotic figures were conspicuous and in many areas the tumor invaded the lymphatic vessels. There was a metastasis in the retro-mammary lymph node with similar characteristics of the primary tumor. Immunohistochemistry revealed the presence of cytokeratin (Fig 3) which confirm the epithelial origin of the tumor.

Accurate prevalence statistics are not available for zoo felid or canid populations because complete necropsies are not always performed and centralized databases are just now being developed. Most mammary tumors in zoo felids are aggressive cancers, mimicking their domestic counterparts (Harrenstien et al., 1996 and McAloose et al., 2007). Mammary cancers also occur in zoo canids, mustelids (Lair et al., 2002), ursids, viverrids (Efron et al., 1977), and carnivorous marsupials (Canfield et al., 1990, Efron et al., 1977). Data from most free-ranging carnivores is even more limited because deceased animals are only rarely found and necropsied. In present study loss of adhesion of the cells characterized the tubulo-papillary pattern was seen. In domestic and zoo cats, morphologic patterns of mammary cancer are similar to breast cancer in women. Most cancers have some areas of tubule-papillary growth with formation of solid, comedone and cribriform patterns and both intraductal and infiltrating components (Munson and, 2007). Mineralization foci observed in necrotic areas of this neoplasm are frequently observed in intraductular carcinoma in human beings and mare (Kumar. 2005).



**Fig. 1.** Cut surface of the tumor, showing multinodular aspect, hemorrhagic areas and fibrosis.

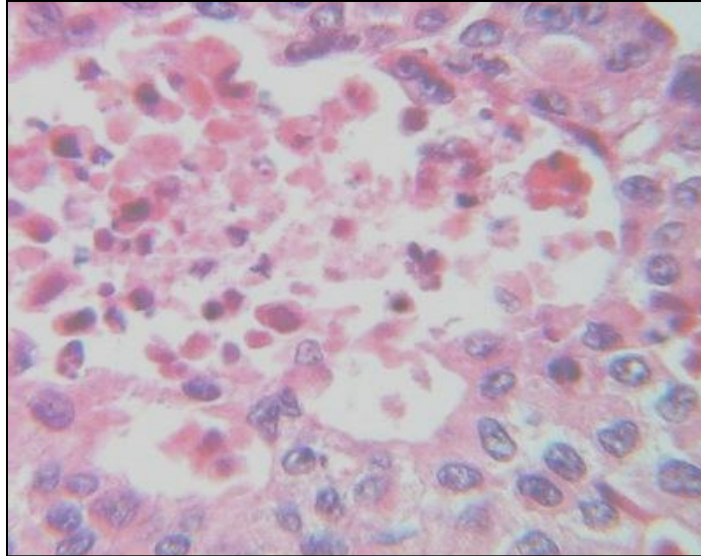


Fig. 2. Neoplastic proliferation with central coagulative necrosis. H&E, obj. 25x.

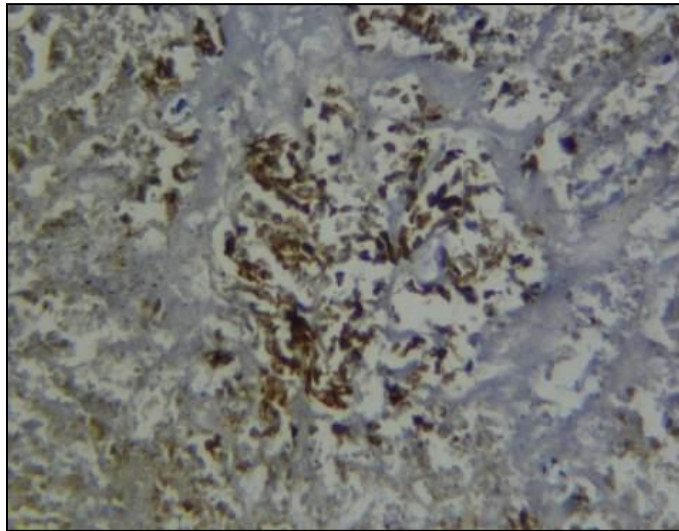


Fig. 3. Immunohistochemistry. Cytokeratin confirming the epithelial origin.

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