


Study of Mammary Carcinoma in a Dog and Its Relationship with Cutaneous Metastasis			Healthcare
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Abstract			
<p>Spontaneous canine tumors consider one of the most common pathologies in dog. Mammary and skin tumors are the more frequented neoplasm in dog. Cutaneous metastases (CM) of a primary mammary tumor are significant clinical findings; CM can be considered as a “cutaneous target” of them. CM represents about 1% to 5 % of skin lesions in dog and they can be the first clinical sign of a primary tumor. Metastasis, usually are painless, with different clinic signs and they are generally multiple. Mammary carcinoma, as one of the most frequented forms of malignant mammary tumors can be spread metastasis in the skin and it is a direct relationship between the primary mammary tumor and the developing of CM. The aim of this study case was clinic and histopathological evaluation of CM from a primary mammary gland carcinoma and relationship according to their histological features.</p>			

1. Introduction

Spontaneous tumors are frequent in dog (E. Destexhe, L. Lespagnard, M. Degeyter, et al (1993); E. Malicka, W. Piusińska, H. Endecka, et al., (1996); S. Giziński, Z. Boryczko, M. Katkiewicz, et al., (2003). Canine mammary and skin tumors are the most important ones and the reason of canine morbidity. Malignant mammary tumors (40-50% of all tumors) potentially should be mortal for animal (Moulton JE (1999). On the other hand primary mammary tumors can be spread in different organs as metastasis. Carcinoma of mammary gland is one of the most malignant tumors in bitch and it can potentially spread by lymphatic via in lung or other organs like as liver, skin, bone, etc (Sorenmo K., (2003), (Pérez-Alenza MD, Tabanera E, Peña L (2001); Muller, A., Guaguère, E. (2006), Ginel, P. J., Perez, J., Lucena, et al., (2000). Multiple skin tumors are often indications of metastases of mammary gland carcinoma (Lana S.E., Rutteman G.R., Withrow S.J., (2007), Ginel, P.J., Perez, J., Lucena, et al., (2000).

Cutaneous metastasis (CM) represents 1-5 % cutaneous lesions in dog. They are reported a little at the international literature (Scott, D. W., Miller, W. H., Griffin, C. E. (2001); Muller, A., Guaguère, E. (2006), Ginel, P. J., Perez, J., Lucena, et al., (2000); Nafe, L. A., Hayes, A. A., Patnaik, A. K. (1979); Pin, D. (1999). Their early recognition can help in an accurate diagnosis and timely treatment.

CM maybe often presented as lump round or oval nodular structures. Their color was in different (brown to reddish). The skin may be ulcerated or not and the nodules maybe solid structures and painless.

The aim of this case study was clinic and histopathological evaluation of CM from a mammary gland carcinoma and relationship according to their histological features.

2. Material and methods

The present case: a bitch (unsterilized), 15 kg weight, 13 old years, mixed breed, in a good condition. It was presented at a Private Veterinary Clinic because of a lot of lump nodules presented in mammary and skin areas. This animal was operated from a mammary gland tumor of fourth couple of breast two years earlier. It was diagnosed with a carcinoma of mammary gland.

In clinical examination the nodules were displayed again in all mammary region, from 0.3 mm to 2.1 cm in size. Two masses were seen in skin of head area (0.4 mm) and thoracic area (1 cm in diameter). Mammary and skin nodules were painless in palpation. They arose of skin surface, in brown to reddish color, with a solid structure and without ulcerations.

Study was carried out at the Laboratory of Histopathology, Faculty of Veterinary Medicine and Safety Food and Veterinary Institute (SFVI), Tirana, Albania.

Surgery technique: The bitch was put under narcosis (ketamine (15 mg/kg) and xylazine (2 mg/kg) in/m). It was prepared the operated field and the incision was in oval shape, 1 cm round tumor mass. Removed masses were used for citological and histopathological studies.

Citological study is a rapid microscopic examination. This technique based on evaluation of cells' feature malignancy. Biopsied mass was used to prepare smears. FNA and impression cytological techniques were used of. The smears were dried in ambient temperature, were fixed on 95° alcohol and colored with Right-Giemsa (fig. 1).



Fig. 1. Cytological impressed technique of neoplastic mass

Histopathology is a “gold standard” to diagnose tumor. Specimens of mammary and skin tumors were collected after surgical intervention of bitch from this veterinary clinic. Formalin buffer solution 10% was used as a fixative. The tumor specimens were prepared for histopathological examination using the semi - automated tissue processor (SF-TS3B –

LABKITS-1 2012). The paraffin blocks were cut into 5µm thick sections using a semi-automated microtome (LABKITS-1 2012). The paraffin sections were stained using the standard hematoxylin-eosin staining method(Lillie, R.D. (1954). Microscopic analysis was performed using a light microscope(MOTIC BA-210).The final histological diagnosis was made according to the origin and differentiation of tumor cells.

Result and Discussion

Cutaneous metastases were appeared simultaneously with the primary neoplasm represented after 2 years, at our patient (Fig. 2). MCs originated from mammary carcinoma are relatively unknown in clinical practice, but they are important in veterinary oncology.



Fig. 2. Mammary gland tumor in the dog

In clinical examination, mammary lesions size were 0,3mm – 2,1cm in diameter, whereas cutaneous masses varied from 0,4 mm till 1cm in diameter. These findings were painless, aroused on skin, in round form, in brown to reddish color, with a solid consistence and without ulcerations (fig. 3, 4). Clinical examination of a tumor mass based on its size, infiltration, mobility, consistency, ulceration and metastasis presence and all of them are important criteria of prognosis (Dalal Nemenquani, Nausheen Yaqoob (2009).



Fig 3. Metastatic lesion in head region



Fig 4. Metastatic lesion in thoracic region

These masses were used to prepare smears and slides for cytological and histological studies. The both of CM's features were compared and the common features of them were defined (Bofin AM, Lydersen S, Isaksen C. (2004).

Interpretation of Cytological Smears

Malignancy of cancerous cells based on cell, cytoplasmic and nuclear criteria. Cell criteria: cell type, one or polymorphic (round /spindle form); anizocytosis– low/ high; cell position – single cells/group cells; Cytoplasmic criteria: cell border - regular/ irregular; cytoplasmic substance – vacuoles/cell products /granules; basophily– moderate/high.

Nuclear criteria: nucleus/cytoplasm ratio (B:C) – variable/high; mitotic activity – low/moderate /high with abnormal mitotic figures, etc. amount of nucleoli– present/lack. Cells had very basophilic cytoplasm and one or some nuclei. Microscopically, the smears contained numerous epithelial cell clusters and single cells (Fig. 5, 6). The cells in the clusters were arranged in a papillary pattern or morula-like structures. They contained a small amount of blue cytoplasm and had large round nuclei (Hazirolu R, Yard B, Aslan S, (2010). The nuclear to cytoplasmic ratio was high. There wasn't necrotic debris in the background.

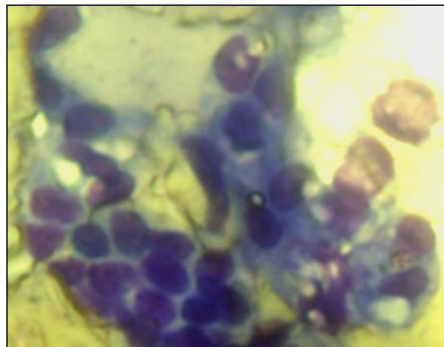


Fig 5. Epithelial cell clusters. Impression Technique (X40)

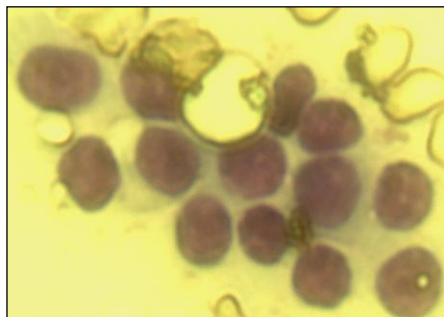


Fig 6. FNA of canine mammary carcinoma. Epithelial single cells (Wright – Giemsa) (X100)

It was observed a lobular lesion, which infiltrated the connective tissue, irregular lobule, and atypical nuclei and stratified epithelia (X40). This adenocarcinoma is formed by cylindrical or

cubic cells, which take papillary form and a stroma of connective tissue. In this figure were observed pleomorphism and mitotic figures (fig.7, 8).Based on the anatomic location and the malignant cytological features, the diagnosis was mammary adenocarcinoma of intermediate differentiation (G2).

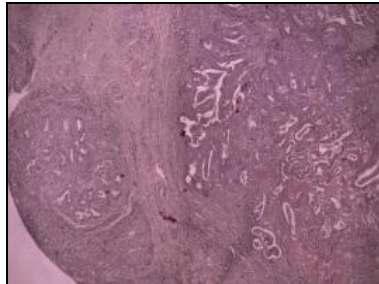


Fig. 7 (X10)

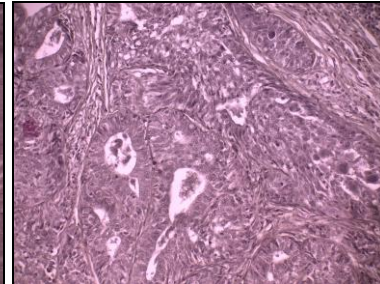


Fig. 8 (X40)

Microscopic findings of mammary gland with infiltration of adenocarcinoma intermediate differentiated. H-E.

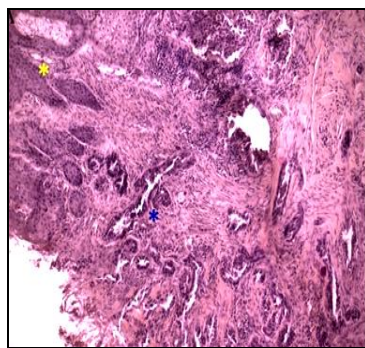


Fig. 9 (X10)

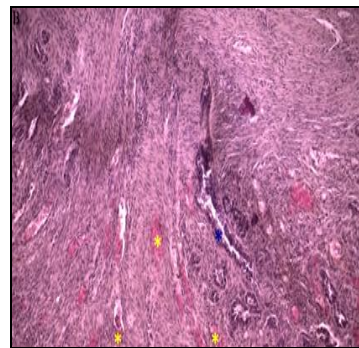


Fig.10 (X40)

Microscopic findings of skin metastases originated from a mammary gland. It was seen a lot of neoplastic cells around blood vessels (blue asterisk) and a new blood vessels (yellow asterisks). H-E.

The histopathological features show the metastatic nature of skin CM of the breast origin. The metastases are characterized by diffuse infiltration of cells near blood vessels and those new being formed (angiogenesis) (Fig. 10). Histopathological study has shown infiltrated mass that often substitutes normal tissue of dermis and hypodermis (Fig. 9). Neoplastic cells have regular borders, enlarged mitochondria and thick microfilament bundles, what it means their epithelial origin. Based on these histological characteristics, we try skin tumor represents cutaneous metastases (CM) of a primary tumor in the mammary gland. The morphological patterns of cutaneous metastases corresponded with the primary tumor (Simon D, Schoenrock D, Baumgartner W., (2009)

Histopathologic results of mammary and skin tumor masses were similar with of biopsies carried out two years ago.

4. Conclusion

Mammary gland and skin biopsy findings are significant in diagnose of neoplasm and its metastases. The morphological, cytological and histological patterns of CM corresponded with the primary mammary gland tumor. Their evaluation helped to put together features of primary and secondary (metastatic) tumors.

Quick and accurate cytological and histopathological methods of tumour diagnose can be used for. At last but not least CM are a small part but very important in veterinary oncology, because of their importance in knowledge of these findings in human oncology.

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