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RESEARCH ARTICLE

A Retrospective Study on some Prevalent Musculocutaneous Neoplasm in Dogs

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Abstract

Fifty two musculocutaneous neoplasm had been recorded among dogs during the period extended from 2008-2015. Benign neoplasm of the musculocutaneous were recorded in 25 case which represented by 48% of the examined cases. Out of these benign masses, fibroma was the most commonly diagnosed skin neoplasm that represented (25%). Meanwhile, malignant one was recorded in 27 animals which represent 52%. Out of these masses rhabdomyosarcoma was recorded in 6 cases which represented (11.5%). The methods of diagnosis as well as the surgical management and the outcome of the surgery were all recorded and studied.

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INTRODUCTION

Musculocutaneous are the most frequent neoplasm in dog. Detection of these tumors are common because they are either visible or palpable, prompting the client or clinician to pursue further diagnostic and therapeutic options (Slatter, 2003 and Behera et al 2014). Among them benign fibromas and lipomas are common superficial tumors in dogs (Preister and Mackay, 1987).

Papilloma is a benign epithelial tumor growing exophytically (outwardly projecting) in nipple-like and often finger-like fronds. A benign papillomatous tumor derived from epithelium (Mukaratirwa et al, 2005).

Hemangiosarcoma (HSA) is a highly malignant tumor that originates from vascular endothelium (Schultheiss, 2004). It is a rapidly growing, highly invasive variety of cancer, occurring almost exclusively in dogs (Yoon et al 2014).

The most common sites of HSA include the spleen (28 % to 50 %), right atrium/auricular appendage (3% to 50%) and skin or subcutaneous tissue (13%) (Wood et al, 1998; Hargis et al, 1992 and Yamamoto et al, 2013). The mean age range of occurrence in dogs is 8 to 13 years (Guinan et al 2012; Fry et al, 2014). Echocardiography and computed tomography (CT) are considered to be good diagnostic tools; however, histological evaluation is necessary for a definitive diagnosis (Sharma 2012; Yamamoto et al 2013)

Basal-cell carcinoma or basal cell cancer (BCC) is one of the most common cancers in the elder dogs. It rarely metastasizes however, because it can cause significant destruction and disfigurement by invading surrounding tissues, it is still considered malignant (Nourth and BanKs 2009).

A rhabdomyosarcoma (cancer of connective tissues), in which the cancer cells are thought to arise from skeletal muscle progenitors (Withrow and Vail, 2007 Gandhi and Vivekanand, 2012). It mostly occurs in the head, neck, trunk and limb. It appears as solitary, circumscribed, round, firm nodule, elevating large area of the skin. The cut section was red-brown and lobulated.

Squamous cell carcinoma usually arises in unpigmented or lightly pigmented skin and is often related to solar exposure (Bosward et al, 2004). The most common cutaneous locations were the nail, scrotum, nose, legs and anus.

Mast cells originate from the connective tissue of the body. As they release histamine, they are associated with allergic reactions. Mastocytoma are usually skin tumors in older dogs and represented up to 25 percent of skin tumors. Their appearance can be varied, from a wart-like nodule to a soft subcutaneous lump to an ulcerated skin mass. They may be hairless, ulcerated, or itchy. They are usually solitary, but in about six percent of cases, there are multiple mast cell tumors (Sfiligoi et al, 2005 and Vandis et al, 2007).

Plasmacytoma refers to a malignant plasma cell tumor growing within soft tissue or within the axial skeleton. Plasmacytomas are a rare form of cancer (Bink et al 2008).

These uncommon tumours of epithelial origin arise from either the apocrine sweat glands that make up the majority of the tubular skin glands or eccrine sweat glands that are found in the footpad. Cysts of apocrine sweat glands are benign lesions and are common neoplasm in dogs (Bettini et al, 2009).

A sebaceous gland epithelioma is a type of neoplastic growth that affects the sebaceous glands found in canine skin. They are considered low grade malignancies that appear as yellow to pink colored, mushroom shaped masses, on the head, ears, back and legs. Cysts may be present within the mass. They are similar to sebaceous gland adenomas in physical appearance (Bink et al, 2008 and Bettini et al, 2009).

The aim of this study is to present the most commonly encountered neoplasms of the skin and muscle in dogs as well as their incidence, prevalence regions, diagnostic methods and surgical management. Further aim is to throw a light on the recurrence of these tumors.

MATERIALS AND METHODS

Fifty two cases of dog neoplasm were collected over the period extended from 2008-2015. The cases observed at the Veterinary Medicine Clinic in Faculty of Veterinary Medicine, Benha University and Private Clinics at Tanta and Alexandria cities. The collected cases were of both sexes and ranged in age between 7-15 years.

The cases were subjected to thoroughly clinical examination and using x-rays and CT for determining the internal structures and relation of tumors with the nearby structures. X-ray was done in the department of Surgery, Faculty of Veterinary Medicine, Benha University by using simply HP x-ray machine and private x-ray centers in Tanta and Alexandria cities, while CT examination was performed at Ahmed Faried CT center at Benha.

All these cases were subjected to surgical intervention; the animals were anesthetized by Xylazine-ketamine mixture in a rate of 2-1. The surgical intervention was performed in all cases by using the standard measure of such case. Follow up for detection of recurrence also was carried out when possible.

Specimens from the neoplasm were fixed in 10% formalin solution. Five micron thick paraffin sections were prepared, stained with Hematoxyline and Eosin (H&E) and examined microscopically.

RESULTS

The prevalence of the recorded neoplasm of the musculocutaneous tissues among dogs was tabulated in table 1. Benign neoplasm of the musculocutaneous were recorded in 25 case which represented by 48% of the examined cases. Meanwhile, malignant one was recorded in 27 animals which represent 52%.

Papilloma was recorded in 11 cases (6 males and 4 females) with 21.1%. Grossly appeared as a well demarcated, papillary, proliferative, nodular mass was found on haired skin of the lower leg (Fig. A 1), face and neck. The mass was reddened, and hyperkeratotic.

Microscopically, there was a circumscribed, exophytic neoplasm composed of epithelial cells that form papillary projections from the epidermis supported by fine fibrovascular cores. There was hyperplasia of the basal cells with differentiation to large polygonal, hyperplastic epithelial cells of stratum spinosum (acanthosis). Cells had distinct cell borders, a moderate amount of eosinophilic cytoplasm, round to elongate nuclei with finely stippled chromatin. Mitotic figures average 1 per HPF. Numerous cells within the stratum spinosum and granulosum had abundant finely granular, amphophilic cytoplasm with clear cytoplasmic vacuoles, vesiculate nuclei and prominent nucleoli (koilocytes). There was prominent orthokeratotic and parakeratotic hyperkeratosis (Fig. A2) with few multifocal aggregates of ghost cells. Elongated branching rete ridges were characteristic in the dermis. Multifocally, within the dermis, there were aggregates of lymphocytes, scattered neutrophils, and macrophages. The masses were surgically excised and showed no recurrence after 2 months of follow up.

Apocrine sweat gland cyst adenoma was diagnosed in 2 cases (1 male and 1 female – 1.9 % -) and represented grossly by the presence of solitary raised fluctuant nodule, 0.7 cm in diameter, was seen on the haired skin of the face and neck (Fig A3a).

Microscopically, a well-circumscribed, encapsulated, cystic, neoplasm expanded the subcutis and dermis. The tumor composed of one cystic cavity lined by multiple layers of well-differentiated cuboidal to columnar epithelium with basally located nuclei, often with apical blebbing and supported by a variably dense fibrous stroma (Fig. A4). Neoplastic cells had indistinct cell borders with moderate amounts of eosinophilic granular cytoplasm. Nuclei were round to oval, with finely stippled chromatin and one variably distinct nucleolus. Mitotic figures were not observed. Neoplastic cells formed papillary projections into the lumen which was filled with homogenous eosinophilic secretion. Multifocal within the dermis and subcutis were ectatic lymphatics and edema. Follow up for 2 months postoperatively showed no recurrence and the skin incisions were healed completely with good cosmetic results.

Fibroma was diagnosed in 13 cases (7 male and 6 female - 25 % -). Grossly, solitary, firm or rubbery, circumscribed mass, 2.2 cm in diameter, with an ovoid, dome-shaped. These masses were distributed anatomically on hind limb, neck, preocular region, perineal region and head (Fig. A3b). On cut surface, there is a dense, white, fibrotic core with a rim of variably thick epidermis. Microscopically, there was a well-circumscribed, unencapsulated, neoplasm expanding the dermis and subcutis and elevating the overlying epidermis. The tumor was sparsely cellular, composed of spindle cells arranged in long thick interlacing streams and bundles separated by an abundant mature collagenous matrix (Fig. A5). Neoplastic cells had indistinct cell borders, oval to elongate nuclei with finely stippled chromatin and variably distinct nucleoli. Mitoses were rare. Occasionally, hyalinized collagen fibers arranged in whorls, and were predominantly located at the center of the lesion. Numerous minute or variable amounts of hemorrhages were scattered throughout the tumor. Multifocal within the neoplasm and adjacent dermis were perivascular aggregates of lymphocytes, macrophages and few plasma cells. Surgical excision was curative in all cases.

Basal cell tumor was diagnosed in 3 cases (3 male and no female – 5.7 %-). Grossly, raised, rounded, well-circumscribed multilobular alopecic mass was embedded in the dermis of the head (Fig. A6) especially around eyelids, nose, neck, shoulder regions and trunk.

Microscopically, the dermis, adnexal structures was expanded and replaced by a moderately cellular neoplasm, composed of lobules of neoplastic epithelium varied in size and was separated by thin septa of dense fibrous tissue. Neoplastic cells arranged in ribbons, garlands or cords, generally of two cells wide; embedded in a moderate amount of fibrovascular stroma. These cells were typical of those seen in basal cell tumors. They were of moderate size, closely packed, and had variably indistinct cell borders, moderate amounts of eosinophilic cytoplasm. The nuclei were ovoid and slightly vesicular, and had one or two small, dark nucleoli. There were palisades of nuclei with the long axes parallel. Mitotic figures were moderately frequent, with one or two per high-power field (Fig. B1).

Standard surgical excision was used for removal of most BCCs with at least 4 mm free surgical margin is obtained around tumor. One case showed recurrence and metastasis to shoulder region 10 month postoperative.

Squamous cell carcinoma was diagnosed in 4 cases (3 male and 1 female – 7.6 %-). The most common cutaneous locations were the nail (Fig. B2), scrotum, nose, legs and anus. Grossly, the mass appeared as poorly demarcated, firm, white, nodular, masses. By X- Ray examination, the neoplastic mass was accompanied by osteolysis of the digit bone (Fig. B3).

Microscopically, there was an expansile, unencapsulated, neoplasm extending from the ulcerated epidermis to deep dermis and infiltrating preexisting bone. The tumor composed of anastomosing cords, trabeculae, and nests of polygonal cells supported by a moderate amount of fibrovascular stroma. Neoplastic cells had distinct cell borders, abundant brightly eosinophilic cytoplasm, and prominent intercellular bridges. Nuclei were round to oval with finely stippled chromatin and 1-3 distinct nucleoli. The mitotic rate averages 3 per HPF with occasional bizarre mitotic figures. There is moderate anisokaryosis and anisocytosis. Cords and nests often contain central, eosinophilic accumulations of compact lamellated keratin (keratin pearls). The neoplastic cells were surrounded by variable amounts of fibrous connective tissue. Within the connective tissue there was reactive woven bone lined by osteoblasts and osteoclasts. Multifocally extensive ulcers of overlying epidermis filled with fibrin, proteinaceous fluid, and neutrophils were observed. There is also orthokeratotic and parakeratotic hyperkeratosis. Multifocal within the dermis and subcutis, there were moderate numbers of hemorrhage, and edema admixed with fibrin, lymphocytes, neutrophils and plasma cells. Surgical intervention depends on size, location and degree of invasiveness. Follow up of three cases after surgical intervention showed no recurrence while it could not be continued for the fourth case.

Hemangiosarcoma was diagnosed in 5 cases (2 male and 3 female – 9.6 %). The cases were single, well-defined brown to black firm mass was seen on the skin of abdomen (Fig. B4); blood exudes when incised; alopecia, thickened skin, hemorrhage, or ulceration was also found.

Microscopically, the deep dermis and subcutis was effaced by an unencapsulated, infiltrative neoplasm. Neoplastic cells formed irregularly sized blood-filled vascular channels, and often wrap collagen bundles (Fig. B5); in more densely cellular areas are arranged in short, haphazard streams and bundles, all separated by variable amounts of collagenous matrix. Neoplastic cells were spindle with variably distinct cell borders and a moderate amount of eosinophilic fibrillar cytoplasm. Nuclei were irregularly oval to elongate, with finely stippled chromatin, and one to two variably distinct nucleoli. Mitotic rate averaged 3-5 per high power field. There was marked anisokaryosis, anisocytosis, cellular pleomorphism, and single cell necrosis. Multifocal there were varisized areas of hemorrhage, necrosis, and fibrin thrombi. There were low numbers of scattered lymphocytes, plasma cells, neutrophils and hemosiderin-laden macrophages. Surgical excision was curative in one case while recurrence was detected in the other case which necessitated re-excision and complicated with large skin defect.

Rhabdomyosarcoma was diagnosed in 6 cases (2 male and 4 female – 11.5 %). It mostly occurs in the head, neck (Fig B6), trunk (Fig, C4) and limb. Grossly: Solitary, circumscribed, round, firm nodule, elevating large area of the neck skin. The cut section was red-brown, lobulated and revealed extensive areas of hemorrhage and necrosis. X-Ray scanning indicated that the tumor does not affect the bone (Fig. C3). CT examination of the head and neck mass revealed that the swelling was originated from the muscle and not threatened any important structure (Fig, C1)

Microscopically, there is an unencapsulated, poorly circumscribed, infiltrative, lobular neoplasm expanding the dermis and subcutis, elevating the epidermis, separating, and replacing pre-existing skeletal muscle fibers and collagen bundles. The tumor composed of large, eosinophilic, polygonal cells, arranged in solidly cellular areas and vague streams, separated by thin bands of fibrous stroma (Fig. C5). Neoplastic cells had variably distinct cell borders, moderate to abundant amounts of granular cytoplasm, and round to oval nuclei with finely stippled chromatin and 1-2 variably distinct nucleoli. Multifocal, there were binucleate and multinucleate polygonal cells. There was moderate anisocytosis and anisokaryosis. Mitotic activity was moderately high, with averages 3-5 per high power field. Multifocal, few peripheral myocytes were hypereosinophilic and fragmented with pyknotic or absent nuclei. There were multifocal to coalescing areas of hemorrhage and necrosis. The masses were excised surgically (Fig C2) without recurrence after 2 month follow up.

Mast cell tumor was diagnosed in 4 cases equally distributed between both sexes with 7.6%. It appeared macroscopically as multicentric, dermal, grayish red nodular and ulcerated masses were present in the limb (Fig. C6& D1) and perineal region. Microscopically, there is an unencapsulated, poorly circumscribed, neoplasm infiltrating the dermis and subcutis, elevating the epidermis, separating, and replacing pre-existing skeletal muscle fibers and collagen bundles. The tumor composed of neoplastic mast cells loosely arranged in sheets and cords (Fig. D2). Neoplastic cells were slightly pleomorphic, round, with distinct cell borders, moderate amounts of amphophilic cytoplasm that occasionally contain fine basophilic granules, and generally centrally located, round nuclei with stippled chromatin and indistinct nucleoli. The cytoplasmic granules exhibited positive metachromatic reaction by alcian blue stain. Mitotic rate was moderate to high and atypical, with averages 8-10 per high power field. There were multifocal brightly eosinophilic, hyalinized bands (collagenolysis) and dense fibrous connective tissue. Scattered throughout the neoplasm were moderate numbers of eosinophils and fewer lymphocytes, plasma cells, and hemosiderin-laden macrophages. Surgical excision was successful in such cases and recovery was uneventful with no recurrence for 5 months follow up.

Plasmacytoma was diagnosed in 3 males with 5.7%. Grossly appeared as solitary raised smooth nodule, well circumscribed, firm, and pink were observed in the perineal skin (Fig. D3).

Microscopically, there is an unencapsulated, well demarcated, densely cellular neoplasm infiltrating the dermis, compressing surrounding dermal collagen and adnexa, elevating the epidermis, and replacing pre-existing collagen bundles. The neoplasm was composed of round cells arranged in sheets and nests (Fig. D4), separated by a fine fibrovascular stroma. Neoplastic cells had distinct cell borders and moderate amounts of eosinophilic, granular cytoplasm, and toward the periphery of the neoplasm, few cells have a perinuclear hof. Nuclei were irregularly round or crescentic (sickle-shaped), eccentrically positioned in the cells, with variability in chromatin pattern, which ranged from finely stippled to dense with indistinct nucleolus. Mitotic figures averaged 2 per high power field. Within the neoplasm, there was mild to moderate anisokaryosis, occasional single cell necrosis, and multiple foci of hemorrhage. Follow up after surgical intervention could not be performed in these cases.

Sebaceous epithelioma was diagnosed in 2 cases one in each sex with 3.8%. Grossly, solitary, raised, greasy nodule, 0.4 Cm in diameter, protruded from the skin of the eye lid (Fig. D5), scrotum and vulva.

Microscopically, there was a partially encapsulated, well circumscribed, multilobulated neoplasm expanding the dermis and subcutis, elevating the overlying epidermis and compressing adjacent adnexa. The tumor composed of basaloid reserve cells arranged in islands and trabeculae supported by a fine fibrovascular stroma and scattered well differentiated sebocytes (Fig. D6). The basaloid reserve cells (up to 80%) are polygonal cells, closely packed, with variably distinct borders, moderate amounts of granular eosinophilic cytoplasm and round to oval nuclei with finely stippled chromatin and up to 3 nucleoli. Speckled among basaloid cells were pale dots composed of sebocytes, which were individual or small aggregates of polygonal cells with distinct cell borders, abundant microvacuolated eosinophilic cytoplasm, centrally located round nuclei with stippled chromatin and distinct nucleolus. These pale cells showed evidence of sebaceous differentiation in the form of clusters or individual sebocytes in different stages of maturation. There is multifocal single cell necrosis, large cyst-like spaces filled with eosinophilic cellular and karyorrhectic debris (cystic degeneration) and few foci of ductular differentiation. Multifocal neoplastic cells and macrophages contain a golden brown granular to globular pigment (melanin). There were also multifocal areas of hemorrhages within the mass and the adjacent dermis exhibited small aggregates of lymphocytes and plasma cells. The masses were excised surgically without recurrence after 3 month follow up.

Table 1: The incidence of the different cutaneous tumors among dogs

Cases	Number	Male	Female	Incidence
Benign neoplasm	25	15	10	48
Papilloma	11	6	4	21.1
Apocrine sweat gland cyst adenoma	1	1	-	1.9
Fibroma	13	7	6	25
Malignant neoplasm	27	13	14	52
Basal cell tumor	3	3	-	5.7
Squamous cell carcinoma	4	3	1	7.6
Hemangiosarcoma	5	2	3	9.6
Rhabdomyosarcoma	6	2	4	11.5
Mast cell tumor	4	2	2	7.6
Plasmacytoma	3	-	3	5.7
Sebeceous epithelioma	2	1	1	3.8

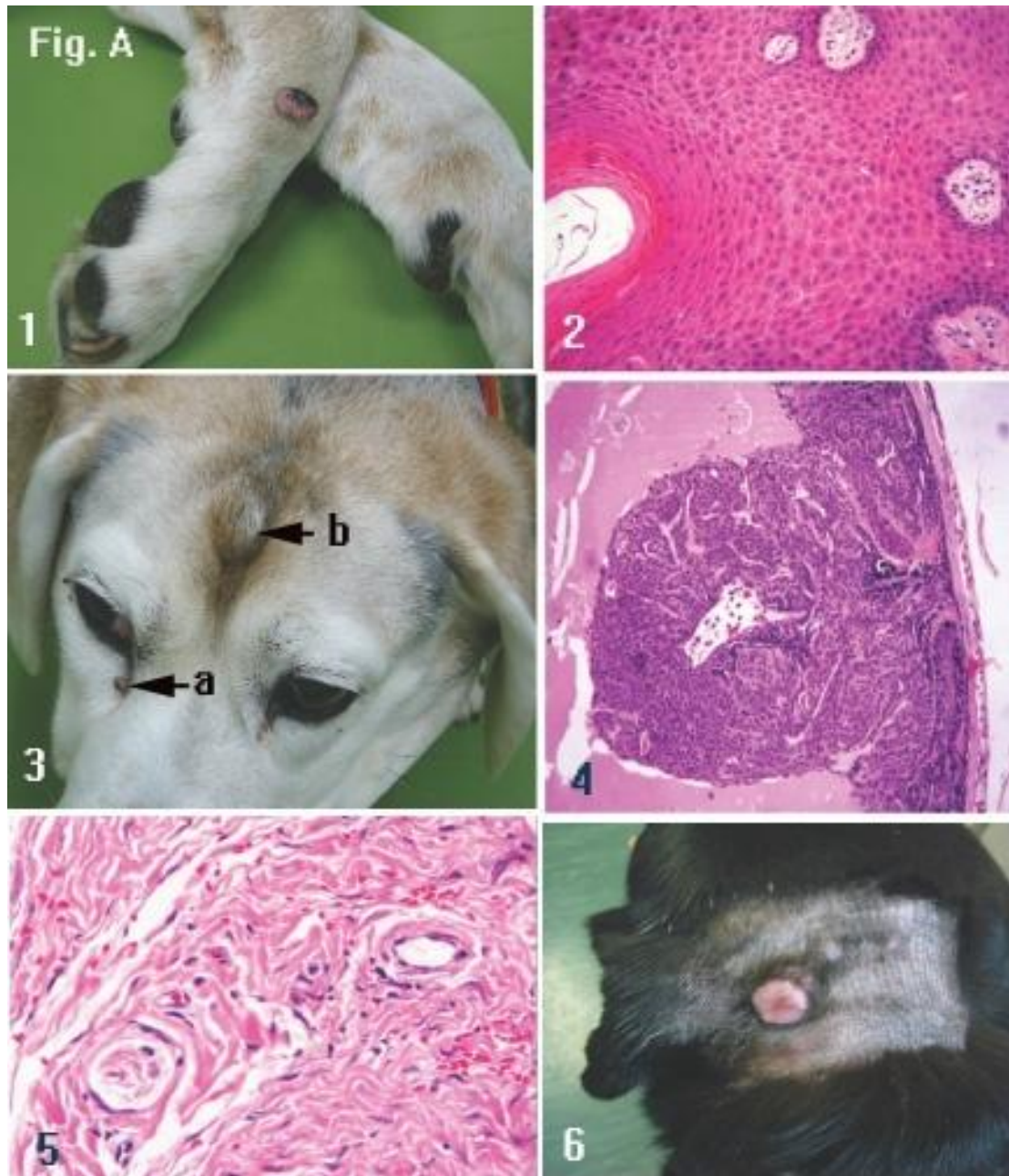


Fig {A}: (1) Papilloma, skin, dog. A well demarcated nodular mass on the proximal haired skin of the lower leg, (2) Papilloma, skin, dog. Acanthosis and parakeratotic hyperkeratosis. HE, 20x, (3a) Sweat gland cyst adenoma, skin, dog. Small cystic mass near the medial cathus of the eye, (3b) Fibroma, skin, dog. Firm circumscribed ovoid mass, on the head, (4) Sweat gland cyst adenoma, skin, dog. Cystic cavity lined by well-differentiated cuboidal to columnar epithelium, which formed papillary projections into the lumen. HE, 20x, (5) Fibroma, skin, dog. Hyalinized collagen fibers arranged in whorls, and numerous minute hemorrhages scattered throughout the tumor. HE, 40x, (6) Basal cell tumor, skin, dog. Raised, rounded, well-circumscribed multilobular alopecic mass embedded in the dermis of the head.

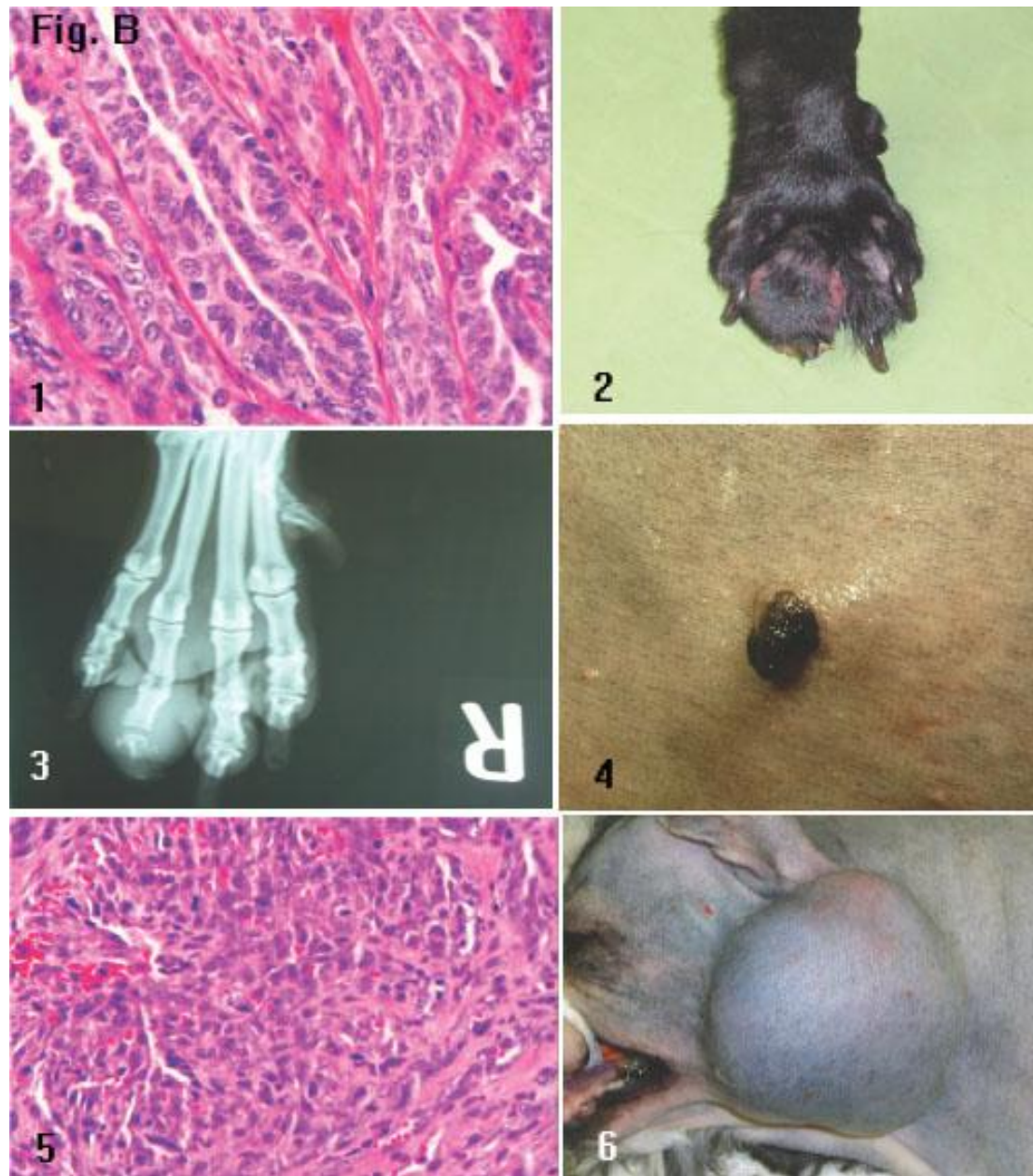


Fig {B}: (1) Basal cell tumor, skin, dog. Neoplastic cells arranged in cords of two cells wide, embedded in a fibrovascular stroma. There were palisades of nuclei with the long axes parallel. HE, 40x, (2) Squamous cell carcinoma, skin, dog. poorly demarcated, firm, white, nodular, masses in the toe, (3) Squamous cell carcinoma, skin, dog. Neoplastic masses in the toe accompanied by osteolysis of the digit bone. X- Ray scanning, (4) Hemangiosarcoma, skin, dog. Well-defined brown to black firm mass on the skin of abdomen, (5) Hemangiosarcoma, skin, dog. Neoplastic cells form irregularly sized blood-filled vascular channels, and often wrap collagen bundles. HE, 20x, (6) Rhabdomyosarcoma, skin, dog. Circumscribed, round, firm nodule, elevating large area of the neck skin.

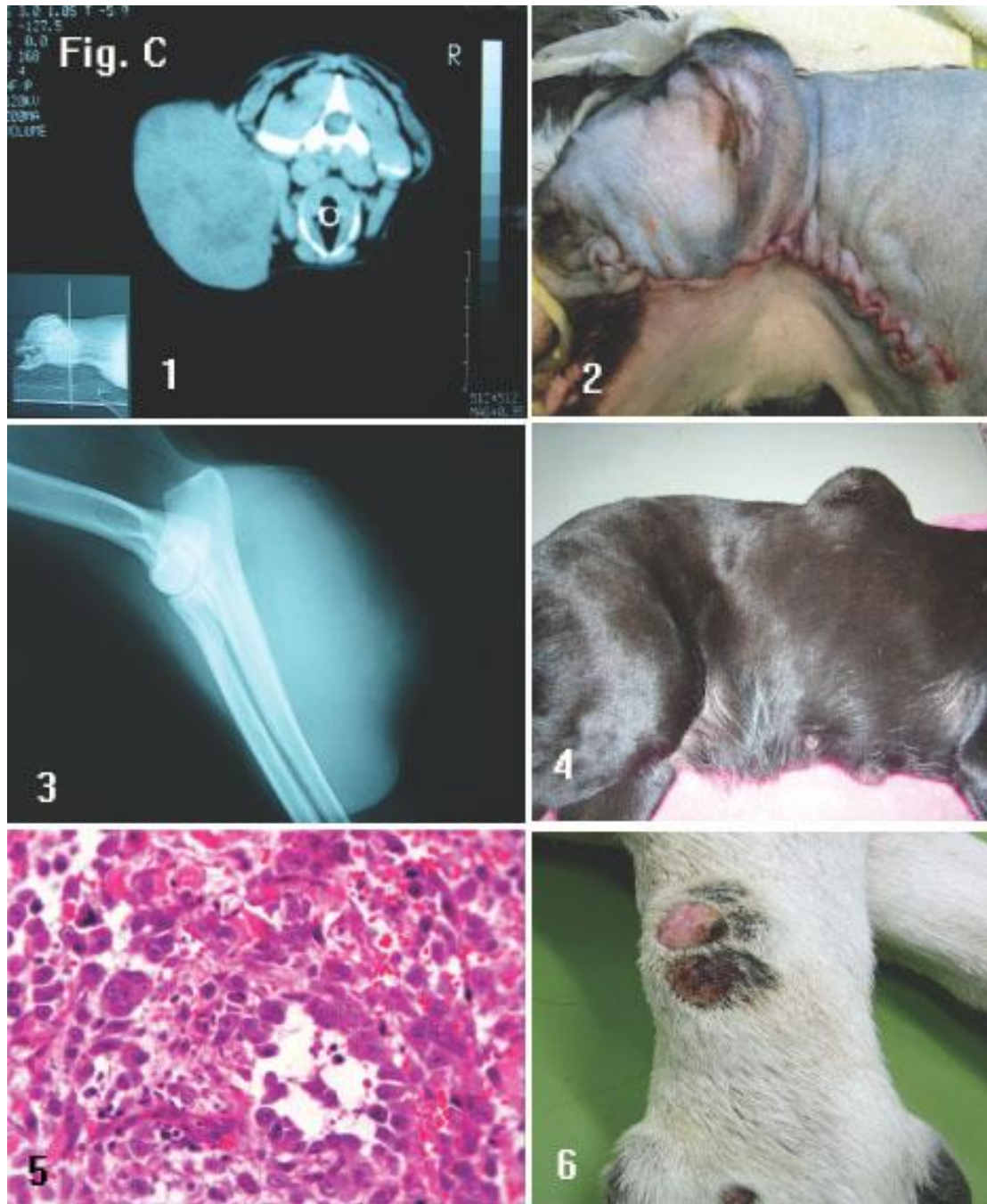


Fig {C}: (1) Rhabdomyosarcoma, skin, dog, CT examination, (2) Rhabdomyosarcoma, skin, dog after surgical interference, (3) Rhabdomyosarcoma, skin, dog. X-Ray scanning, (4) Rhabdomyosarcoma, skin, dog. Circumscribed, round, firm nodule, elevating large area of the back skin, (5) Rhabdomyosarcoma, skin, dog. The neoplasm composed of large, eosinophilic, and multinucleate polygonal cells, arranged in solid areas and streams. HE, 40x, (6) Mast cell tumor, skin, dog. Multicentric, dermal, grayish red nodular and ulcerated masses.

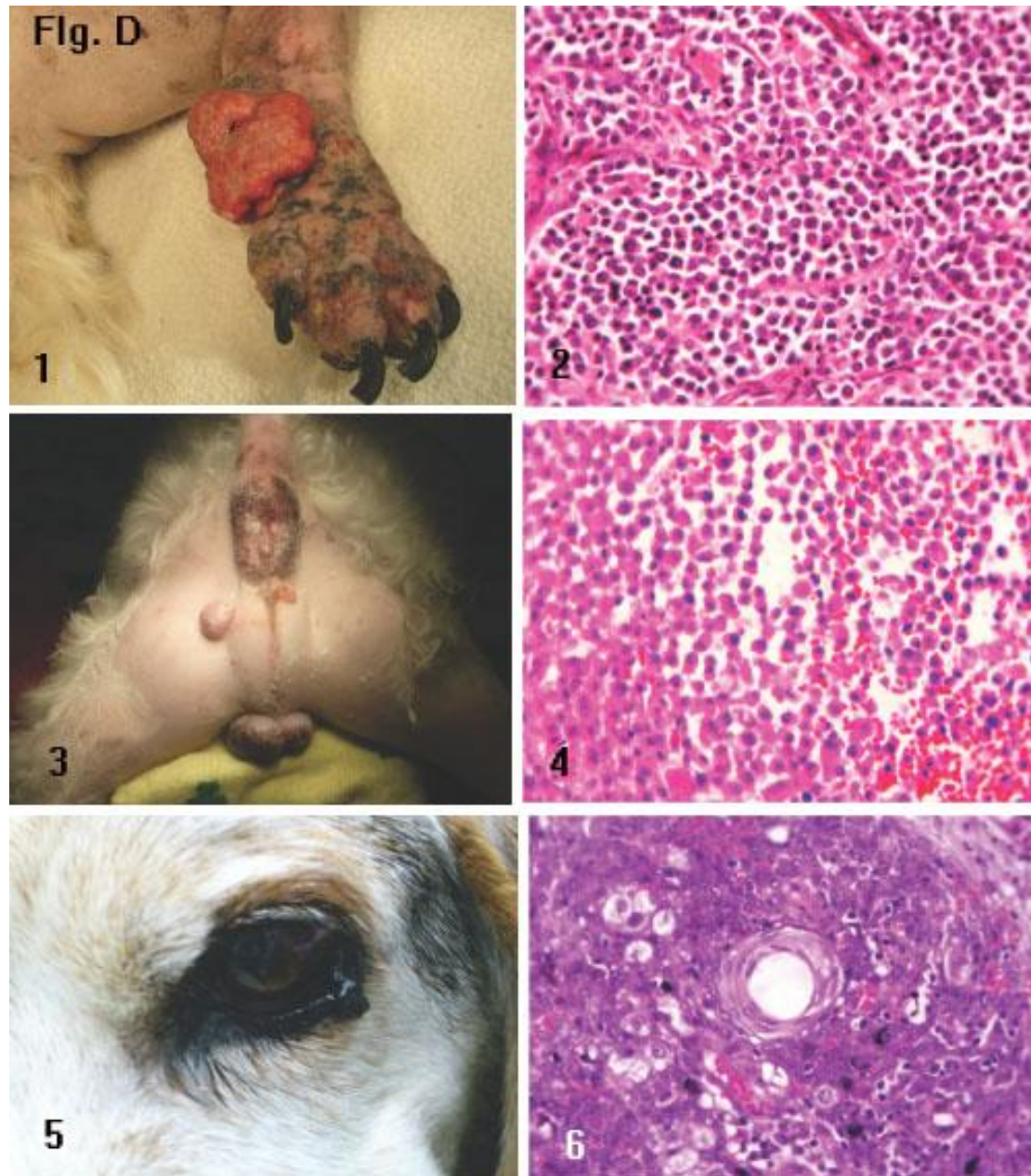


Fig {D}: (1) Mast cell tumor, skin, dog. Multicentric, dermal, grayish red cauliflower and ulcerated masses, (2) Mast cell tumor, skin, dog. Neoplastic cells loosely arranged in sheets and cords; note high atypical mitotic figures and collagenolysis. HE, 40x, (3) Plasmacytoma, skin, dog. Raised, smooth, well circumscribed, pink nodule in the perianal region, (4) Plasmacytoma, skin, dog. The neoplasm is composed of round cells arranged in sheets and nests. HE, 40x, (5) Sebaceous epithelioma, skin, dog. Solitary, raised, greasy nodule protruded from the skin of the eye lid, (6) Sebaceous epithelioma, skin, dog. Solid growth of basaloid cells with scattered well differentiated sebocytes. HE, 40x.

DISSCUSION

The present investigation was carried out to illustrate the most common musclocutaneous tumors in dogs and the outcomes of the surgical interference of these cases. The result of these study indicate that the malignant neoplasm (52%) were more prevalent than benign one (48%) in dogs. These results coincide with that recorded by (Nourth and

BanKs, 2009; Yamamoto et al, 2013). Who stated that more than 60% of canine musclocutaneous tumors were malignant at the initial presentation.

Among the malignant masses, rhabdomyosarcoma were the highest musclocutaneous neoplasm recorded in this study (11.5%). While the lowest one were sebaceous epithelioma (3.8). This might differ from that previously recorded by (Sfiligoi et al, 2005; Vandis et al 2007), who reported that mast cell tumor was the most common malignant tumor in canine oncology and represented 25% of the total recorded cases.

The recorded benign masses in this study were fibroma (25%), papilloma (21.1%) and apocrine sweat gland cyst adenoma (1.9%). This incidence was not so far from that recorded from (Schultheiss, 2004; Mukaratirwa et al, 2005; Withrow and Vail, 2007).

The prevalence of the recorded masses in this study distributed in male and female dogs by 53% and 47% respectively. This result was attributed to high population of male at the area of study and the male subjected to trauma of different kind. This in close agreement with that reported by (Mukaratirwa et al, 2005 Sfiligoi et al, 2005). On the other hand the malignant neoplasm was highly recorded within female population more than the male dogs and represented (51.9%). This result came in accordance with (Preister and Mackay, 1987; Kaldrymidou et al, 2002; Slatter, 2003) who reported that the metastasis from mammary gland and genitourinary tract produce high prevalence of malignant tumors among bitches.

The collected cases were ranged in age between 7-15 years. The same result was recorded by Simkus et al, 2015.

Despite cryosurgery, hyperthermia, radiation, chemotherapy and laser surgery have very effective and appreciated results in the treatment of musclocutaneous neoplasm and recommended by many reports Bosward et al, 2004; Behera et al, 2014; Fry et al, 2014, surgical excision with adequate skin margin remains the most valuable procedure for management of such cases.

Chance of a surgical cure is greatest with the first surgery with wide free margin, while, repeat surgeries, low-grade tumours can, with time, become more malignant and likely to metastasize (Fossum, 2013).

Effective treatment of musclocutaneous neoplasm might be due to the unique ability of their early diagnosis. Radiography, ultrasonography, CT and MRI are the most important tool for early diagnosis and staging of metastatic neoplasm (Kiessling and Pichler, 2011).

Musclocutaneous neoplasm is more amenable to surgical excision than the other types of tumors which arise from other deeper sites. (Harari, 2004)

Rhabdomyosarcoma was recorded in 6 cases (11.5%) resembling a great challenge for practitioners as it originates from somewhat deeper tissue, a long time elapsed until detected from the cutaneous surface and appeared as huge mass resulting in skin defect after surgical intervention (Mukaratirwa et al 2005). Radiographic and CT imaging plays an important role for detection the existence of the mass, its relation to nearby structure and its metastasis to surrounding vital organ (Kiessling and Pichler, 2011).

The result of this work explored that the clinical symptoms of neoplasm either nodules (single, solitary, wart like, or cauliflower), lump lesion, cystic, soft or hard swelling, intact or ulcerated with or without hemorrhage. As regard color, the masses appear colorless, faint color, dark brown or black coloration in hairy or hairless situations. These symptoms were non specific for such masses so the histopathological examination was indicated for biotyping, grading and differentiation either benign or malignant and also give good information about the ability of recurrence of musclocutaneous tumors. These finding similar to those reported by (Mann et al, 2011)

The result of this study concluded that, the malignant musclocutaneous neoplasm was in general higher than the benign ones. The canine rhabdomyosarcoma was the commonest recorded malignant tumor of the examined dogs (11.5%). On the other hand fibroma represented the higher percent (25%) of benign masses. Different methods of diagnostic imaging employed to early diagnosis and to assist in further staging in selected cases for planning either the surgical approach or radiation therapy, especially for large fixed tumor or swelling in close proximity to vital structures. The radical excision with wide free margin still remains the method of choice for treatment of musclocutaneous neoplasms in dogs.

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