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A Gigantic Cutaneous Fibroadenoma in a Dog

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ABSTRACT

Mixed skin tumors are uncommon in dogs. This study reports the clinical findings, radiography, ultrasonography, histopathology and clinical outcome of a rare case of gigantic fibroadenoma in a 4-year-old American Pit Bull Terrier bitch. Four firm, painless at palpation, poorly circumscribed swellings of various sizes and shapes were observed at the left hock joint and hind canon. Mixed echo pattern of the neoplasm and central large blood vessels were observed under doppler ultrasonography. The neoplasm was surgically excised with complete remission and the dog was still disease-free after 6 months. The excised tumor weighted 2350 g. Histopathological findings included; diffuse bundles of fibrous connective tissue arranged in different direction with whorl formation, sebaceous glands adenoma with cyst formation and fibroadenoma in certain areas. Tendency of malignancy was common denoted by pleomorphic cells, hyperchromacia and atypical mitotic figures. Several areas of inflammatory reaction and hemorrhages were also observed within the tumor. No evidence of metastasis was seen in both chest and abdomen. In conclusion, fibroadenoma should be listed as a mixed skin neoplasm in dogs and surgical excision is curative.

Key words: Adenoma, fibroma, fibroadenoma, pit bull dog, sebaceous gland, histopathology

INTRODUCTION

Cutaneous neoplasms are frequently recorded in dogs worldwide. More than thirty different histological types of tumor were diagnosed. These tumors are classified into four main groups including; epithelial, mesenchymal, lymphohistiocytic and melanocytic tumors. The 10 most common tumors were mast cell tumors, squamous cell carcinomas, perianal gland adenomas, lymphomas, benign melanomas, haemangiosarcomas, sebaceous gland adenomas, fibrosarcomas, lipomas and malignant melanomas (Mukaratirwa *et al.*, 2005).

Sebaceous glands are specialized cutaneous adnexal glands, working under constant hormonal control to produce sebum. These glands can give rise to several proliferative lesions such as; hamartoma, hyperplasia and neoplasia (adenoma, epithelioma and carcinoma) (Bongiovanni *et al.*, 2012).

Collagen-rich non-neoplastic and neoplastic lesions are reported in the canine skin. They include fibromas, nodular dermatofibrosis, collagenous hamartomas, fibroadnexal hamartoma, dermatofibromas and fibrosarcomas (Mikaelian and Gross, 2002). Cutaneous fibroma was rarely diagnosed in dogs. It comprised 2.8% of the total diagnosed canine skin neoplasms (Pakhrin *et al.*, 2007).



Fig. 1(a-b): 4 year old American Pit Bull bitch showing a gigantic multilobular fibroadenoma at the left hind limb, (a) Lateral view and (b) Medial view of the neoplasm showing alopecia, hypopigmented skin and many ulcerative wounds

Several methods have been used for treatment of canine skin neoplasms. They included; surgical excision, radiotherapy, electrochemotherapy, immunologic and genetic therapies (Sersa *et al.*, 2008; Spugnini *et al.*, 2013).

There have been few previous reports of canine mixed tumors. Therefore the aim of this study was to report the clinical findings, ultrasonography, histopathology and clinical outcome of a rare case of gigantic fibroadenoma in a dog.

Case report: A 4 years American Pit Bull Terrier bitch was referred for a large multilobular mass at the left hock joint and hind canon (Fig. 1). The mass grew over one year, starting as a small nodule that evolved over time into a gigantic multilobular mass. Although, the dog was bright, alert and in a good body condition, the animal showed slight degree of lameness. Firm, painless at palpation, four poorly circumscribed swellings of various sizes were present at the left hock joint and hind canon. These swellings were located at the lateral, posterior and medial aspects of both left hock joint and hind canon. The large two swellings were nearly equal in the size and measured 15×10×7 cm. The small swellings measured 7×4×3 cm. The over growths were sessile, alopecic and hypopigmented with multiples ulcerative wounds (Fig. 1). Complete blood cell count, serum biochemical profile and urinalysis were carried out. The only abnormality on all tests was a mild macrocytic anaemia (haematocrit 28.5%, reference range 32-50%, red blood cells $4.3 \times 10^6 \mu\text{L}^{-1}$, reference range $5-8 \times 10^6 \mu\text{L}^{-1}$, mean cell volume 60.3 fL, reference range 50-56 fL).

Plain chest radiographs were performed using an X-ray machine (Fischer, Stuttgart, Germany). The radiographic setting factors were 55 kVp and 10 mA. Both ventrodorsal and lateral views were performed to observe any tumor metastasis. In addition, latromedial and anteroposterior plain radiographs were taken on the left hock joint and hind canon for detection of any bone or joint involvement. The radiographic setting factors were 50 kVp and 10 mA. The chest, left hock joint and hind canon radiographs were unremarkable.

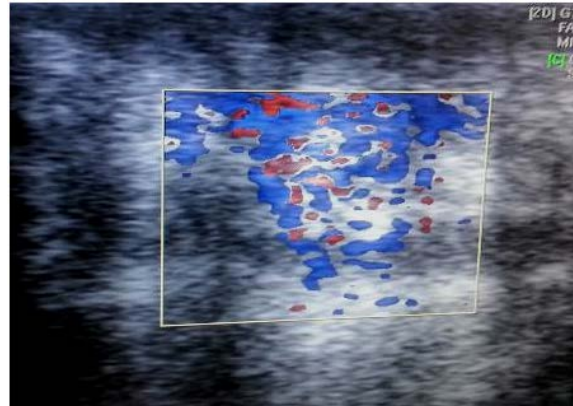


Fig. 2: Colored doppler ultrasonogram of the fibroadenoma showing large hyperechoic areas, small hypoechoic and anechoic areas with large central blood vessels

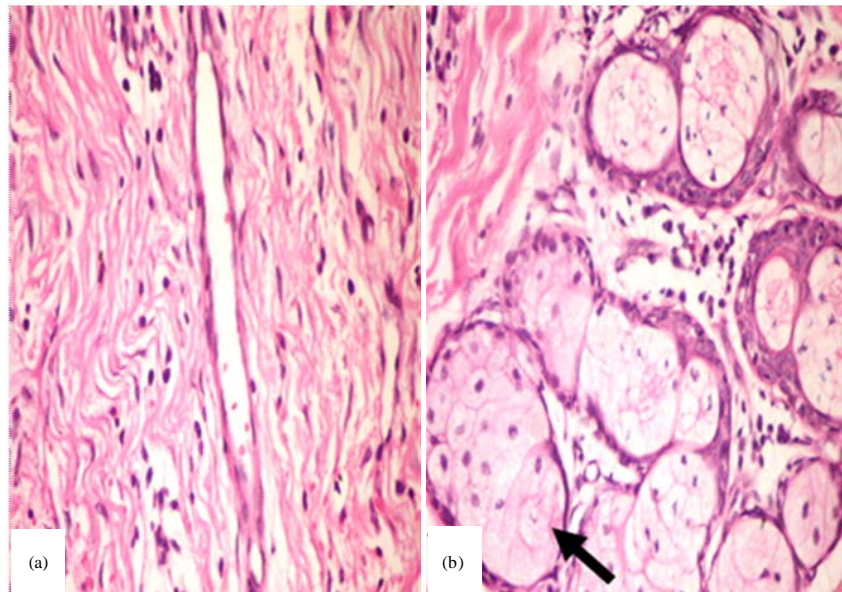


Fig. 3(a-b): (a) Diffuse bundles of fibrous connective tissue in different direction with whorl formation revealing fibroma (H and E X400) and (b) Sebaceous glands adenoma in the form of proliferative hyperplastic glands (arrow) (H and E X400)

Colored doppler ultrasonography using Medison device (Seoul, Korea) connected with 4-7 MHz linear transducer was performed to identify the contents of the overgrowths and any abdominal tumor metastasis. The tumor had a mixed echo pattern in the form of large hyperechoic areas with small hypoechoic and anechoic areas under ultrasonography. Central large blood vessels were also observed inside the outgrowths (Fig. 2). No metastatic tumors were noticed in the abdominal organs.

Benign tumor was suspected and multiple tissue specimens from the outgrowths were obtained by biopsy punch for further histological examination according to Bancroft and Gamble (2013).

Diffuse bundles of fibrous connective tissue arranged in different direction with whorl formation revealing fibroma were observed (Fig. 3a). In addition, sebaceous glands adenoma (Fig. 3b) with

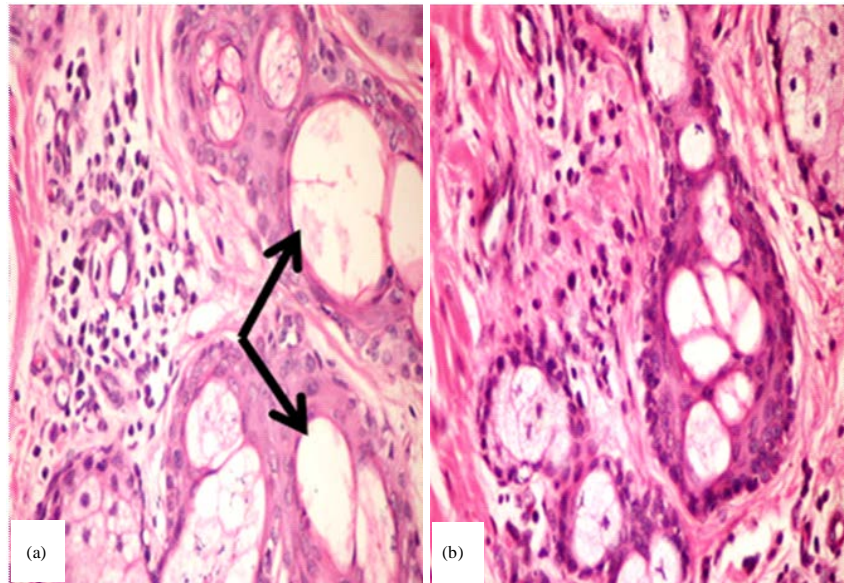


Fig. 4(a-b): (a) Sebaceous glands adenoma with cyst formation (arrows) (H and E X400) and (b) sebaceous glands adenoma encircled with fibrous connective tissue representing fibroadenoma (H and E X400)

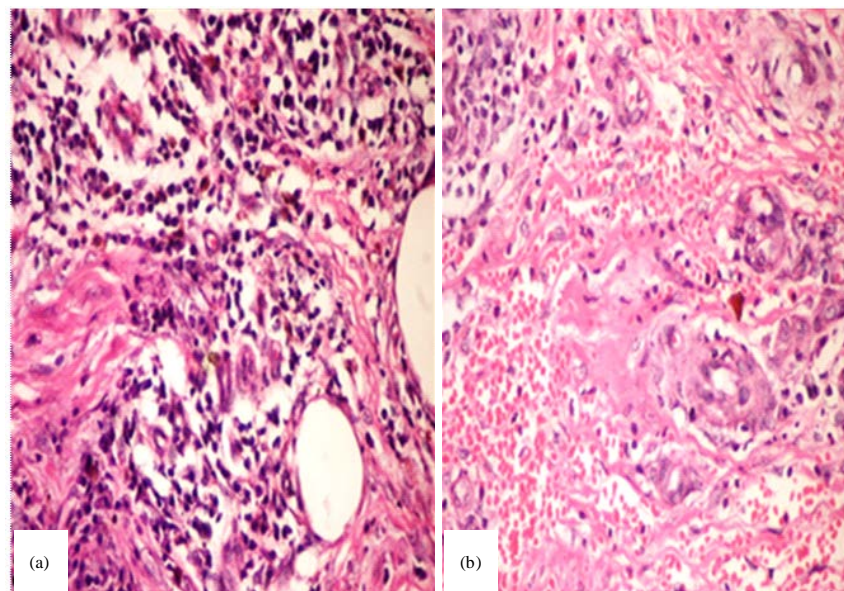


Fig. 5(a-b): (a) Tendency of malignancy denoted by pleomorphic cells, hyperchromasia and atypical mitotic figures together with inflammatory reaction (H and E X400) and (b) Tendency of malignancy together with hemorrhagic areas (H and E X400)

cyst formation (Fig. 4a) was noticed. Certain areas revealed fibroadenoma (Fig. 4b). Tendency of malignancy was common denoted by pleomorphic cells, hyperchromasia and atypical mitotic figures (Fig. 5). Several areas of inflammatory reaction (Fig. 5a) and hemorrhages (Fig. 5b) were also observed within the tumor.

The bitch was premedicated with intramuscular administration of Xylazine HCl 2% (Xylaject®, ADWIA company, Egypt) at the dose rate of 1.0 mg kg⁻¹ and subcutaneous administration of Atropine sulphate (Atropine sulphate®, ADWIA company, Egypt) at a dose of 0.1 mg kg⁻¹. General anesthesia was induced with Ketamine HCl 5% (Keiran; EIMC pharmaceuticals Co., Cairo, Egypt) at a dose of 5 mg kg⁻¹ given intravenously. The anesthesia was maintained by intravenous Thiopental sodium 2.5% solution (Thiopental sodium®, EPICO, Egypt) at the dose rate of 10 mg kg⁻¹. Animal was placed in lateral recumbency with the thoracic limbs fixed cranially and the pelvic limbs fixed caudally in a relaxed position. The area from left hock joint to the foot was clipped and prepared for aseptic surgery. An elliptical incision around the outgrowths, 1 cm from the tumor was made. Blunt dissection of the subcutaneous tissues was carried out using smooth gliding motion of scissors and the superficial hemorrhage was controlled with swabbing, hemostats or ligation. Simple continuous sutures were used to undermine the subcutaneous tissues using ployglactin 910 suture material # 0. Most of the skin wound edges were closed by a series of simple interrupted sutures using nylon suture material # 0. The non sutured part of the skin wound was left open to heal by secondary intention. The excised tumor weighted 2350 g.

A bandage was used to support the wound, compress dead space and absorb any fluid. The bitch was given intra-muscular Cefotaxime sodium at a dose of 10 mg kg⁻¹ and Diclofenac sodium at a dose of 1.1 mg kg⁻¹ injected once/day for one day before and 5 days after surgery (Abu-Seida, 2012).

Daily change of the bandage was done for the first 3 days post operative. The wound was inspected for inflammation, swelling, drainage, seroma, dehiscence and any other complications. The bandage was removed after 3 days and the interrupted nylon sutures were removed 10 days after surgery. The open part of the skin wound was dressed twice daily by Povidone iodine solution and Mebo wound ointment (Langfang MEBO Pharmaceuticals Co., Ltd., Hebei, China) for 2 weeks postoperative. The wound closed completely at 3 weeks postoperative. No local recurrence or metastasis of the tumor were observed after six months of surgery.

DISCUSSION

The skin is the most common site of occurrence of canine neoplasms (Bostock, 1986). Because of the location of skin tumors, affected dogs are frequently presented to the veterinary clinics (Meleo, 1997).

The age of the affected animal was 4 years. This finding agrees with that recorded by Mikaelian and Gross (2002) who reported sixteen dogs (2-12 years of age) with one (n = 15) or two (n = 1) cutaneous keloidal fibroma. In contrast, the most frequent age range for dogs with cutaneous neoplasms was 10-15 years (Villamil *et al.*, 2011).

As regards the sex, the affected animal was a female. In contrast, Mikaelian and Gross (2002) mentioned that males were more affected than females by canine keloidal fibroma. However, Mukaratirwa *et al.* (2005) and Pakhrin *et al.* (2007) concluded that, for all classes of canine skin tumors, the sex of the dog did not has any significant influence on the likelihood of developing a tumor. Additionally, Ginel *et al.* (2010) mentioned that when all the sebaceous gland tumors were grouped and analysed, no sex difference was found although estrogen and progesterone receptor expression was reduced in some canine sebaceous gland tumors.

Regarding the animal's breed, the affected dog was American Pit Bull Terrier. In this respect, Kaldrymidou *et al.* (2002) observed that the odds of neoplasm presence were two times higher in pure bred dogs than in mongrels but did not differ between cross-breeds and mongrels.

Although, skin neoplasms either congenital (Abu-Seida, 2015) or acquired (Zabady *et al.*, 2004; Abu-Seida and Kawkab, 2007; Abu-Seida *et al.*, 2008; Abu-Seida and Saeid, 2013) are commonly reported in all animal species in Egypt, the cause of the present neoplasm was unknown as many canine skin neoplasia.

The gigantic size of the excised neoplasm indicates long standing of the case. Although the affected bitch was in a good health condition, slight mechanical lameness was noticed due to the heavy weight of the neoplasm. This finding was also supported by the plain radiographs on the affected regions which revealed normal bones and joints.

The presence of many ulcerative wounds in the neoplasm could be attributed to self licking and biting of the neoplasm. In addition, the mild reported anemia is possibly due to chronic inflammation induced by self licking and biting of the neoplasm.

In the present case, surgical excision was curative and no local recurrence or metastasis has been recognized during the 6 months postoperative. These results agree with that recorded before by Mikaelian and Gross (2002) and Nibe *et al.* (2005). Although, the surgical wound could not be sutured completely due to loss of the skin in the operation site, the wound healed completely by secondary intention within 3 weeks post surgery.

Fibroadenoma is a mixed tumor consisted of two types of neoplasms included an epithelial neoplasm (sebaceous gland adenoma) and a mesenchymal neoplasm (fibroma). Histopathologically, the recorded tumor was confirmed as fibroadenoma with a tendency of malignancy. In this respect, the odds of tumor malignancy linearly increased with increasing age by a factor of 1.1 per year (Kaldrymidou *et al.*, 2002).

CONCLUSION

The fibroadenoma should be encountered as a mixed skin neoplasm in dogs and surgical excision is curative.

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