

A Case of Apocrine Sweat Gland Adenocarcinoma in a Tabby Cat

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Geliş Tarihi: 22.09.2020

Kabul Tarihi: 11.01.2021

Abstract: In this report, clinical, radiological, macroscopic and histopathological findings of apocrine sweat gland adenocarcinoma are presented in a 13-year-old male tabby cat. In clinical examination, soft tissue masses were detected in the caudal abdomen and left tuber coxae. Upon radiological examination, subcutaneous masses with the appearance of soft tissue contrast were detected and the masses were surgically removed under general anesthesia. The sizes of the masses were approximately 2x2x3 cm in the caudal abdomen and approximately 1x1x2 cm in the tuber coxae region. The cross-section of the mass was whitish-yellow in color. After the masses were fixed in 10% formaldehyde solution, a routine histopathology procedure was applied. In histopathological examination, apocrine sweat glands in a cystic structure and extensions from the center of the cyst to the lumen were determined, and anisonucleosis, anisocytosis and anaplastic cells with giant nuclei were observed in the epithelial cells of the gland facing the lumen. A diagnosis of papillary-cystic type apocrine sweat gland adenocarcinoma was made with these findings.

Keywords: Apocrine sweat gland, Carcinoma, Cat.

Tekir Bir Kedide Apokrin Ter Bezi Adenokarsinomu Olgusu

Özet: Bu raporda 13 yaşlı, erkek, tekir ırkı bir kedide apokrin ter bezi adenokarsinomunun klinik, radyolojik, makroskopik ve histopatolojik bulguları sunulmuştur. Hayvanın klinik muayenesinde kaudal abdomen ve sol tuber coxae bölgesinde deri altı yerleşimli yumuşak doku kitleleri tespit edildi. Radyolojik muayenede yumuşak doku kontrastlı görünümünde deri altı kitleler saptandı ve genel anestezi altında cerrahi olarak kitleler uzaklaştırıldı. Kitlelerin boyutları kaudal abdomende yaklaşık 2x2x3 cm, sol tuber coxae bölgesinde ise yaklaşık 1x1x2 cm ebatlarında idi. Kesit yüzü beyazımsı-sarı renkli görünümde olan kitleler %10'luk formaldehit solüsyonunda tespit edildikten sonra rutin histopatoloji prosedürü uygulandı. Histopatolojik incelemede apokrin ter bezlerinin kistik yapıda olduğu ve kistin ortasından lümeneye doğru uzantıların yer aldığı, bezin lümeneye bakan epitel hücrelerinde anizonükleozis, anizositosis ile dev nükleuslu anaplastik hücreler bulunduğu görüldü. Bu bulgularla papiller-kistik tipte apokrin ter bezi adenokarsinomu tanısı konuldu.

Anahtar Kelimeler: Apokrin ter bezi, Karsinom, Kedi.

Introduction

Skin sweat glands are classified into 2 types: apocrine and eccrine (Sato et al., 1987). Eccrine sweat glands are commonly found in hairless areas of the body and they regulate body temperature. Apocrine sweat glands secrete odorous fluid rather than regulating body temperature (Girgin et al., 2008).

Apocrine sweat gland tumors can be benign and malignant. Apocrine carcinoma is a malignant tumor that originates from the apocrine secretory epithelium (Khodakaram-Tafti et al., 2012). It has been reported that apocrine sweat gland adenocarcinoma accounts for 0.7-2.2% of all skin-related tumors in dogs and 3.2% in cats (Khodakaram-Tafti et al., 2012). The peak incidence is between the ages of 8 and 12 in dogs, and between 5 and 15 years in cats. No sex predilection has been noted (Goldschmidt and Hendrick, 2002).

Apocrine sweat gland adenocarcinoma is seen in the groin and axillary areas in dogs and cats, as well as in the perioral region in cats (Goldschmidt and Hendrick, 2002). It is classified histologically as solid, tubular, and cystic (Ginn et al., 1993). Apocrine sweat gland tumor spreads both through lymphatic and vascular ways and can metastasize to the regional lymph node, lung, liver, and bone (Ginn et al., 1993; Baharak et al., 2012).

In this case we described radiological, macroscopic, and histopathological findings of a feline apocrine sweat gland adenocarcinoma.

Case Description

A 13-year-old, male cat was referred to the Veterinary Clinic at the Kastamonu University with a 6 month history of swelling in the caudal abdominal and left tuber coxae region. The animal owner

reported that these swellings gradually became larger and that there was no other disorder in the general condition of the animal.

Upon physical examination, solid soft masses were observed in the caudal abdomen (one mass) and on the left tuber coxae region (two masses) (Figure 1). Routine hemogram was performed and no abnormality was detected. Radiography revealed that the subcutaneous mass had soft tissue contrast (Figure 2). Additionally, metastasis-suspected areas were identified in the left caudal lobe of the lungs (Figure 2). No biopsy or lobectomy was performed in areas where metastasis was suspected.

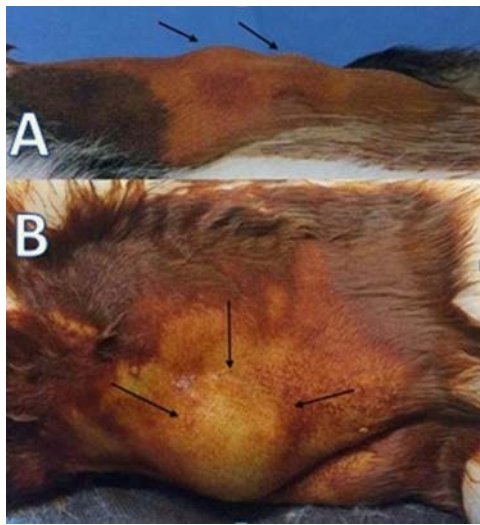


Figure 1. Clinical or presurgical view of the masses (A: masses in the left tuber coxae, B: mass in caudal abdomen)

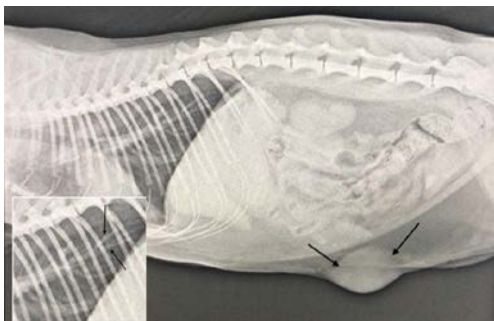


Figure 2. Radiographic view of the mass in the caudal abdomen and metastatic masses in the left caudal lobe of the lung (metastatic masses are seen in the inset)

After physical and radiological examinations, surgical extirpation of the masses was planned under general anesthesia. Anesthesia was induced with a combination of xylazine HCl (1 mg/kg IM, 2% Rompun, Bayer, Istanbul, Turkey) and ketamine HCl (20 mg/kg IM, 10% Ketazol, Richter Pharma, Austria). Respiratory rate, heart rate and rectal temperature were monitored before and during anesthesia (mean respiratory rate 20/min, mean

heart rate 95/min, mean rectal temperature 38.5 °C). The cat was positioned in left lateral recumbency and surgical site was prepared normally. After making incisions on the masses, they were removed by blunt dissection. Subcutaneous tissue was closed with simple continuous sutures. Finally, the incision line was closed with a simple separate interruption. Meloxicam (0.1 mg/kg, orally, q24h, Bavet, Istanbul) and synulox (1 ml/20 kg SC, Zoetis 40 ml, Italy) was used for 3 days after surgery. Sutures were removed on the tenth day postoperatively. Since the owner of the animal was out of town after the operation, phone calls were made every two months and it was learned that there was no recurrence and the general condition of the cat was good.

The masses were approximately 2x2x3 cm in the caudal abdomen and 1x1x2 cm at the level of the left tuber coxae region and both masses were surrounded with a fibrous capsule. It was determined that the mass with a whitish-yellow cross-sectional surface had cystic structures with centrally located cavities (Figure 3).



Figure 3. Macroscopic image of the mass removed from the caudal abdomen (apocrine sweat gland adenocarcinoma)

The masses were fixed in 10% formaldehyde solution for histopathological examination. After fixation, tissues were blocked in paraffin for routine histological staining procedure. Five µm thick sections were taken from the paraffin blocks and stained with hematoxylin-eosin (H&E). In the histopathological examination an increase in the fibrovascular connective tissue was observed between the glands in the dermis layer. Anaplastic cell formations were found in glandular and myoepithelial cells. Apocrine sweat glands were found to have cystic structure, and finger-like projections towards the lumen were detected (Figure 4). In these papillary appendages, atypical cell structures and tumor-type giant cells were seen (Figures 4 and 5). Anisonucleosis, anisocytosis and

anaplastic cells with giant nuclei were detected in the luminal epithelial cells of the sweat glands. Few mitotic figures were encountered with an increase in the number of nucleoli (Figure 5).

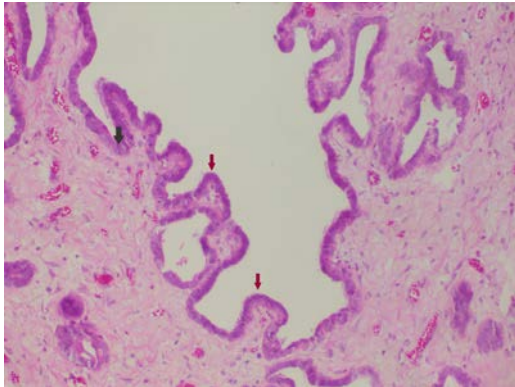


Figure 4. Papillary extension (red arrows) and giant nucleus (black arrow), apocrine sweat gland adenocarcinoma, skin. H&E x 200

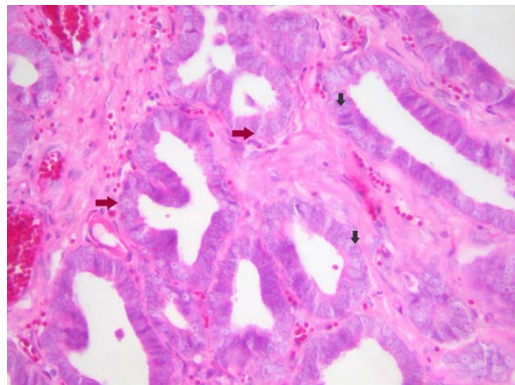


Figure 5. Giant nucleus (red arrows), anaplastic cell and increase in the number of nucleoli (black arrows), apocrine sweat gland adenocarcinoma, skin. H&E x400

Discussion and Conclusion

Apocrine sweat gland adenocarcinoma has been reported in dogs, cats, cows, monkeys, mice, and other animal species (Khodakaram-Tafti et al., 2012; Matthias et al., 2012; Tessele et al., 2015). Apocrine carcinoma accounts for 3.2 % of cat skin tumors, and it is more common in Siamese and tabby cats, and less in domestic short-haired cats (Goldschmidt and Hendrick, 2002; Haziroğlu et al., 2014). The tumor is seen in cats between the ages of 5 and 15, especially over 10 years of age (Goldschmidt and Hendrick, 2002). Haziroğlu et al. (2014) reported that apocrine sweat gland adenocarcinoma can be seen in tabby cats between the ages of 2.5 and 3. In our case, feline apocrine carcinoma was found to be within the age limits stated by Goldschmidt and Hendrick (2002). This tumor is seen in both male and female cats

(Goldschmidt and Hendrick, 2002; Kalaher et al., 1990). In our case report, the tumor was detected in a male cat.

Apocrine sweat gland adenocarcinoma has usually been reported on inguinal, axillary regions (Goldschmidt and Hendrick, 2002), the head, neck, trunk, abdomen, and limbs in cats and dogs (Haziroğlu et al., 2014; Miller et al., 1991). Similar to other studies, one of the masses was detected in the caudal abdomen. However, the other masses were detected in the tuber coxae region on our clinical examination. As seen in the present case, the tumor can metastasize to different regions. Therefore, clinical examinations of these patients should be done carefully in order not to miss the metastatic tissues.

Apocrine gland carcinoma spreads both by lymphatic and vascular pathways and metastasizes to regional lymph nodes, lung, liver, and bone tissues (Baharak et al., 2012). In the radiological examination of this case, nodules were found in the left caudal lobe of the lung. This nodule was evaluated as an apocrine sweat gland adenocarcinoma metastasis.

In cats and dogs, the size of the tumor nodule can be less than 1 cm (Goldschmidt and Hendrick, 2002). However, in recent case reports, it has been reported that the size of the tumor is larger than 1 cm in dogs (Baharak et al., 2012; Khodakaram-Tafti et al., 2012). In our case, the size of the tumor was more than 1 cm (approximately 2x2x3 cm in the caudal abdomen, and approximately 1x1x2 cm in tuber coxae region).

The World Health Organization classifies apocrine sweat gland tumors in domestic animals as adenoma/carcinoma, complex or mixed adenoma/carcinoma (or both) and ductal adenoma/carcinoma (Goldschmidt and Hendrick, 2002; Nibe et al., 2005). Histopathologically, apocrine carcinoma can be of solid, tubular, and papillary-cystic structure (Ginn et al., 1993). In our case, the tumor had a cystic-papillary structure histopathologically. In apocrine carcinoma, cell cytoplasm is eosinophilic, while nuclei are oval, hyperchromatic, and pleomorphic. Also, a large number of mitotic figures are encountered (Goldschmidt and Hendrick, 2002). In this case, atypical cell morphology was detected in the apical faces of the sweat gland epithelial cells, and the apocrine sweat gland adenocarcinoma of these cells was found to be compatible with histological findings.

In the treatment of localized apocrine gland carcinoma, curative treatment, regional lymph node dissection, wide local excision and postoperative radiotherapy in patients with poorly differentiated tumors are applied (Chamberlain et al., 1999). In

our case, after the disease was diagnosed, the detected masses were deeply extirpated by making a wide incision.

In the phone calls made with the animal owner, it was learned that no new masses were formed in the postoperative period.

In this case report, clinical, radiological, macroscopic, and histopathological findings of apocrine sweat gland adenocarcinoma were described in a 13-year-old tabby cat. It is concluded that by reporting similar cases in cats, useful information about the diagnosis and treatment of this tumor can be obtained.

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