VETERINARIA

Apocrine adenocarcinoma in the ear pinna of a 2 month old cat

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Apocrine adenocarcinoma (AAC) is a rare malignant neoplasm of the sweat glands that affects adult/senior cats and dogs. AAC is characterized by a highly aggressive local behaviour, with possible involvement of regional lymph nodes, but low systemic metastatic rate at distant sites. The prognosis is directly related to the degree of histologic differentiation. The case described involves a 2 month old kitten presenting a neoformation localized on the concave surface of the ear pinna, subsequently identified histopathologically as AAC. To the authors' knowledge, this is the first documented case of AAC in a cat under one year of age.

Keywords - Apocrine adenocarcinoma, Sweat gland tumours, Skin tumours, Apocrine gland tumours, Cat.

INTRODUCTION

Unlike humans, in whom merocrine glands prevail, in domestic mammals apocrine glands are the most numerous sweat glands.[1] Apocrine adenocarcinoma (ACA) is a rare malignant tumour, of unknown aetiology, which originates from gland secretory epithelium.[2] In the dog and cat it accounts, respectively, for 0.7%-2.3% and 3.6%-6.5% of skin cancers,[2,3,4,5] while it is considered rare in other species.[2] In dogs a higher incidence has been reported in the Golden retriever,[3,5] while it is not yet clear if a breed predisposition is present in the cat, as reported by some authors in the Siamese and in the European shorthair cat.[3,5,6] In both species no sex predisposition has been reported and the onset of the neoplasm is in adult/senior subjects. The diagnosis of ACA is to be confirmed histologically as both the physical and cytological examinations are scarcely indicative.[3,7] The clinical case reported describes an ACA in a cat under one year of age.

CLINICAL CASE

A 2 month old, male European cat was brought to visit for vaccination prophylaxis; the physical examination revealed the presence of a cutaneous neoformation on the concave surface of the left pinna, approximately 2 mm in diameter and of dark brownish colour. After two months the owner required a follow-up examination in view of the gradual increase in size of the lesion. The general physical examination resulted normal; a more specific dermatologic examination revealed the presence of brownish plaques localized on the concave surface of the left pinna. Based on the clinical presentation, the differential diagnoses included: a) infectious causes, such as localized dermatophytosis caused by *Microsporum canis*, deep mycoses (cryptococcosis, sporotrichosis), initial forms of superficial or deep pyoderma and cutaneous papillomatosis; b) immune-mediated causes, such as pemphigus foliaceus or erythematosus (with non-typical clinical features); diseases of unknown aetiology such as feline necrotizing proliferative otitis; tumour-like lesions such as feline dilated pore of Winer and follicular cysts, although not in a typical site; neoplastic diseases (cutaneous and adnexal tumours - papilloma, epithelioma and carcinoma), although considered highly unlikely given the young age of the subject.

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Figure 1 - Apocrine adenocarcinoma on the concave surface of the pinna a few days before surgery: dark-coloured plaque of about 3-4 cm in diameter.

Cytology was thus performed by impression smear and surface and deep scraping. The cytologic preparation from superficial and deep scraping, Diff-Quick stained, revealed an inflammatory cell population consisting predominantly of well preserved and mostly multisegmented neutrophil granulocytes, in the absence of infectious agents, probably caused by an inflammatory lesion. A mycological examination was then performed (on a "DTM Dermatophyte Test Medium" soil plate); in view of the negative results, a local therapy with betamethasone was started, based on the suspicion of an immune-mediated inflammatory lesion, together with gentamicin to prevent secondary bacterial infections. The next control visit revealed a further increase in volume of the lesion, with a size of about 3 x 4 cm (Figure 1), in the absence of clinical alterations of regional lymph nodes and with a normal overall clinical picture. The surgical removal of the lesion was thus decided, by total conchectomy, with prior preanaesthesia evaluation and subsequent histological examination.

Apocrine adenocarcinoma (ACA) is a rare malignant tumour, of unknown aetiology, which originates from gland secretory epithelium[2].

The histological examination allowed to establish the diagnosis of simple and infiltrating apocrine adenocarcinoma, combined with an inflammatory response (Figure 2) in view of the presence, within the dermis layer, of a not well demarcated and not capsulated neoplastic proliferation, grown infiltrating the surrounding tissue, extending from the cartilage to the epidermis, free from ulceration. The neoplasm consisted of moderately pleomorphic epithelial cells, arranged to form tubular-like/acinar structures of variable size and with irregular papillae supported by a thin fibrovascular stroma. The cells, deprived of normal polarity and with a tendency to be arranged in several layers, presented a cubic to columnar shape, apical vesicles, elevated nucleus:cytoplasm ratio, clear cellular margins and moderate eosinophilic cytoplasm (Figure 3). The central

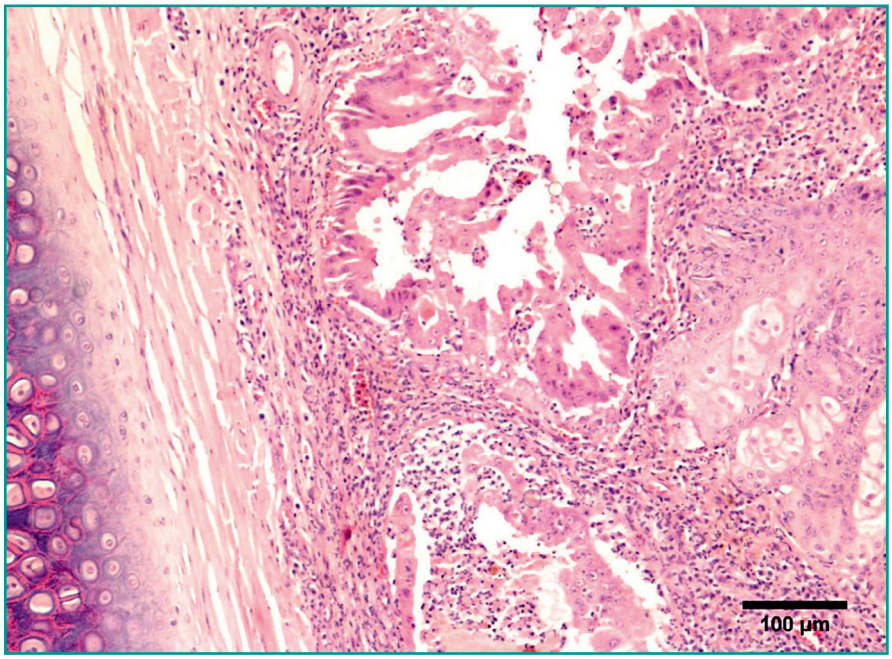

Figure 2 - Piogranulomatous inflammatory response caused by cyst rupture. (Haematoxylin and Eosin, 10x).

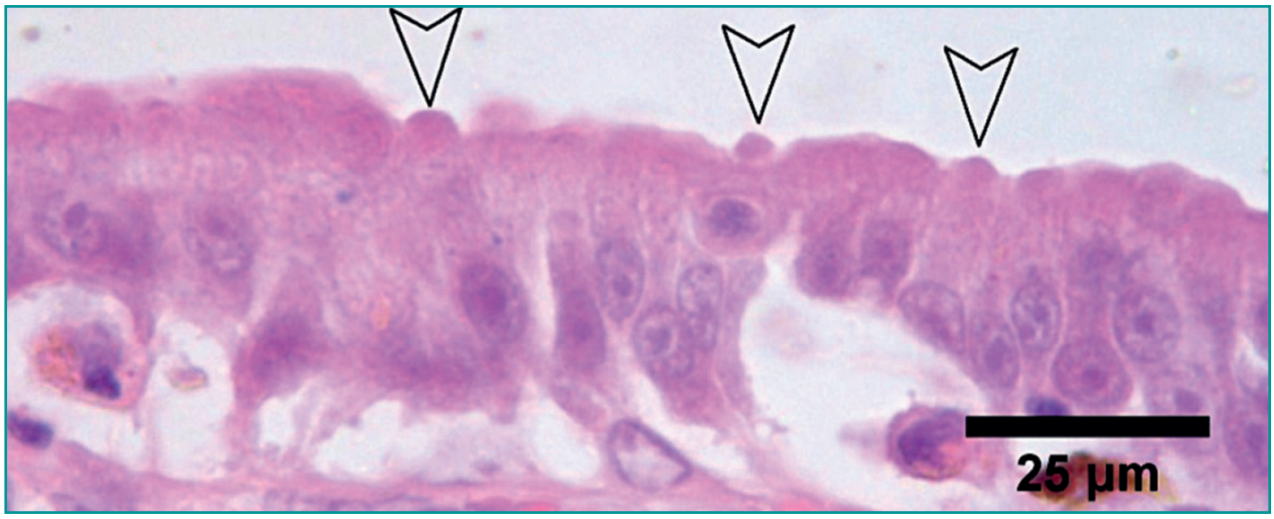

Figure 3 - Apical vesicles (empty arrowheads) and neoplastic cells with loss of polarity (Haematoxylin and Eosin, 63x).

or at times basal nucleus, of rounded or oval shape and of variable size, was characterized by finely granular chromatin and evident nucleolus, single or occasionally multiple. Marked anisocytosis, anisokaryosis and mitosis, of variable number from 0 to 1 per microscopic field at 400x, were observed. The lumen of the tubular/acinar structures revealed the presence of secretions and neutrophil granulocytes, while in the supporting stroma a mixed infiltrate of lymphocytes, plasma cells and macrophages containing brownish pigment. The epidermis presented ortokeratotic hyperkeratosis. The histological examination of the tissue sampled from the surgical margin of the submitted sample was free of cancer cells.

Two years after surgery no relapses have been observed.

DISCUSSION

In the dog and cat, ACA presents itself as a painless lesion, occasionally ulcerated,[6,7,8] typically located in the regions of the head, neck, limbs or tail.[2] The biological behaviour is locally very aggressive, with regional lymph node involvement in 25% of cases,[8] while the systemic metastatic potential is low (<2%);[3] in cases of haematogenous spread, the main sites of metastasis are the lungs, liver and, in the feline species, the feet's digits.[3,6,7] Also in human medicine ACA is a rare malignancy, of nodular appearance, characterized by slow growth and the involvement of axillary regions, the face and upper limbs, although the involvement of other locations is also documented. Dissemination is mainly through the lymphatic system, with regional lymph node involvement in 9%-86% of cases, depending on the degree of differentiation, while haematogenous spread is rare.[9,10,11] ACA therapy, both in human and veterinary medicine, is surgical and is accomplished via a broad base excision of the tumour;[3,6,7,8,9,10,11] in dogs undergoing surgical excision a mean survival of 30 months has been reported.[3,6] In human medicine since a few years the concomitant removal of regional lymph nodes has also been recommended, even in the absence of a clear lymphatic spread, as relapses to local lymph nodes have been reported even after many years from the surgical removal of the neoplasm.[9,10,11]

ACA is a tumour that affects subjects of adult/senior age (range 5-17 years), with a higher incidence in patients over 10 years of age.

The clinical case presented differs from other reports in veterinary literature in view of the young age of the patient: ACA is in fact typically a tumour that affects subjects of adult/senior age (range 5-17 years), with a higher incidence in patients over 10 years of age.

The youngest cats with ACA reported in scientific literature are two tabby cats of 2.5 and 3 years, respectively.[2,5] In human medicine, ACA is a neoplasm that affects patients over the age of 50[9,10,11] and it is not documented in young subjects.

The clinical case described underlines the importance, in the presence of skin neoformations even in very young subjects, of including neoplasms among the differential diagnoses, and hence the need to follow the entire diagnostic protocol, including histopathology, in order to reach a final diagnosis. The young age of the subject potentially allows a long-term follow-up of the case, even if it is a single case, in order to better define the biological behaviour of this tumour in the feline species.

KEY POINTS

- In the dog and cat, apocrine adenocarcinoma accounts, respectively, for 0.7%-2.3% and 3.6%-6.5% of all skin cancers.
- The final diagnosis of ACA may be difficult without histologic examination as both the physical and cytological examinations may be scarcely indicative.
- ACA presents itself as a painless lesion, occasionally ulcerated, typically located in the regions of the head, neck, limbs or tail.
- The biological behaviour of ACA is locally very aggressive, with the involvement of regional lymph nodes in 25% of cases;8 the systemic metastatic potential is low (< 2%),3 even if haematogenous spread is possible, mainly to the lungs, liver and, in the feline species, to the feet's digits.

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