



## Case report

# Sebaceous epithelioma in a ferret (*Mustela putorius furo*)

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## Abstract

An eight years-old male ferret presented a ventral abdominal nodular mass near the inguinal region. On clinical examination, a warty nodular mass in the abdomen was detected and the ferret was submitted to excisional biopsy by surgical procedure. At histopathology, adenomatous structures with preponderance of basophilic reserve cells, some sebocytes and showing squamous differentiation were observed. The diagnosis of sebaceous epithelioma was established based on clinical presentation and histopathologic findings. The animal recovered and at the moment no complication was reported.

**Key Words:** Sebaceous Epithelioma, Ferret, neoplasia, pathology, diseases of Ferrets, *Mustela putorius furo*

## Introduction

The domestic ferret, *Mustela putorius furo*, belongs to the order Carnivore, family Mustelidae. Other members of this family include the weasel, skunk, mink, badger, marten, sable, and otter. 'Ferret' is from the Latin *furonem* and the Italian *furone*, meaning thief and 'putorius' from the Latin *putor*, meaning stench, aptly describing their musky odor (7).

The ferret's skin is covered by fur that comprises a soft, short undercoat and long, coarse guard hairs. The skin itself is very thick and has many sebaceous glands. These glands produce secretions that give the ferret its natural, slightly musky odor. The sebaceous glands are less active in spayed and neutered ferrets (3). In the dorsal and ventral tail, pinna and ear canal sebaceous glands were highly developed, but were absent in glabrous sites/regions (e.g. tactile elevation, plenum nasal, footpad). Sexually

mature males and females presented larger sebaceous glands than neutered members of the same group (7).

Cutaneous mast cell tumors (2, 3, 4, 11), basal cell tumors (2, 4), squamous cell carcinomas (3, 4) and sebaceous epitheliomas (3) are the most common diagnosed neoplasms in ferrets.

Sebaceous epitheliomas (SE), which include sebaceous adenomas, can appear as warts, ulcerated or cystic mass in the skin (3). This elevated, nodular skin mass may exhibit alopecia, hyperpigmentation and ulceration with secondary infection. On cut section, these tumors are pale yellow to white and often divided into small lobules by fine connective trabecular tissue. Sebaceous ducts may be dilated and filled with keratin. Some of them may appear brown/black due to the presence of melanocytes within the tumor (1).

## Case report

An eight year-old, male ferret was presented to a private practitioner. The owner referred a nodule at ventral abdomen area protruded in the last six months. During clinical examination, the animal was active and had good nutritional status. The ferret was submitted to excisional biopsy of the nodule by surgical procedure.

The tumor was fixed in formalin 10% and submitted to the Animal Pathology Department in the Veterinary College at the Federal University of Pelotas (DPA/FV-UFPel). At gross pathology it was observed a solitary, firm, nodular, verrucous, pedunculated, 3 centimeter diameter mass, located at the inguinal region, next to the left pelvic member. The tumor surface was ulcerated and had pale white coloration (Fig. 1). On cut section, the tumor was pale yellow to white and divided into small lobules by fine connective trabecular tissue.



Fig.1) Peduncular warty lesion in the inguinal region. Sebaceous epithelioma. Ferret.

Small pieces were collected and imbedded in paraffin for thin sectioning (4 to 5  $\mu$ m). Hematoxylin and eosin staining were done and slides were evaluated by light microscopy.

Histopathologically, this neoplasm presented a multinodular pattern. Each nodule was constituted by cells arranged in groups (adenomatous pattern) with predominance of basophilic reserve cells over sebocytes. Squamous differentiation was noted in sparse areas, and mimic ductular structures. There was a high grade of mitotic figures at a high power dry field. Thin fibrovascular stromas were observed between the lobules (Fig. 2).

## Discussion

Intergumentary neoplasms are the third most common tumors seen in ferrets (2, 3). Cutaneous neoplasms make up the last large category of ferret neoplasms reported (4, 8, 11), being the cutaneous mast cell tumors (2, 3, 4, 11), basal cell tumors (2, 4), squamous cell carcinomas (3, 4) and sebaceous epitheliomas (3) more

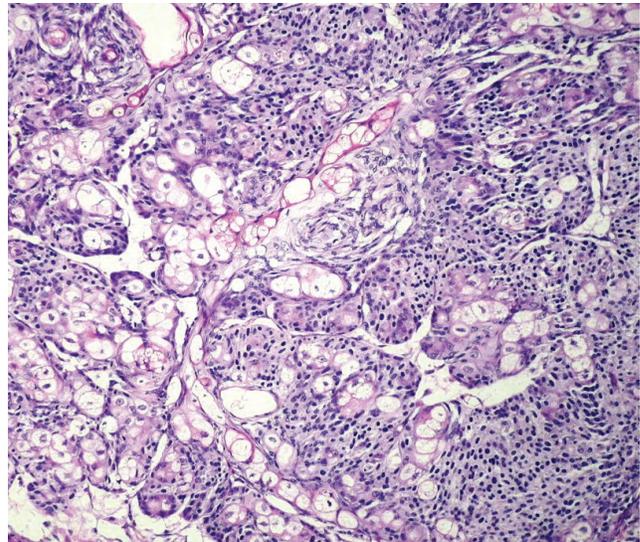


Fig.2) Mass constituted by cells arranged in an adenomatous pattern. A predominance of basophilic reserve cells over sebocytes, arranged in groups, was noted. There were also ductular structures showing squamous differentiation. Sebaceous epithelioma. Ferret. HE, obj. 40x.

diagnosed. A cutaneous melanoma in a 4-year-old spayed female ferret (4) and piloleiomyosarcoma report in seven ferrets (9).

In a four-year survey, twelve ferret tumors were diagnosed; five were cutaneous neoplasms and only one SE (12). In a study of 57 ferret cutaneous neoplasms, the majority were basal cell tumors (n=33), mastocytomas and fibromas (6). In another study, in thirteen ferrets from two different colonies, six lymphomas, two ovarian leiomyoma, a uterine teratoma, two Sertoli-cell tumors, a pancreatic acinar carcinoma and a schwannoma were diagnosed (5). Two spayed female ferrets presented subcutaneous abdominal neoplasms post ovariohysterectomy surgery, evidencing the possibility of surgically transplanting tumors cells to the subcutis (10).

Sebaceous epitheliomas (SE) belong to the group of sebaceous gland tumors that include sebaceous adenoma, sebaceous ductal adenoma, sebaceous epithelioma and sebaceous carcinomas. These are tumors showing sebaceous differentiation and the dividing line between these tumors may be arbitrary. There is a preponderance of basaloid reserve cells with fewer sebocytes in sebaceous epitheliomas (1)

The SE are relatively common neoplasms in dogs and are rare in cats (1, 13). These tumors are usually solitary, firm, nodular or plaque-like masses ranging from several millimeters to several centimeters in diameter. Surface ulceration is frequent and some tumors, especially those on the eyelids, are melanized and may be confused clinically with melanoma. Sebaceous epitheliomas occur most often on the head, dorsal neck, and back. These tumors may also growth multiple, either synchronously or metachronously (13).

SE has a preponderance of small, basophilic reserve cells with fewer sebocytes and ducts (1). Basaloid

cells of the neoplasm resemble the reserve cells at the periphery of normal sebaceous glands. These cells have scant, amphophilic cytoplasm and ovoid, hyperchromatic nuclei. Multiple small foci of distinct sebaceous differentiation are characterized by individual cells in clusters of cells with expanded, foamy cytoplasm. It is possible to verify small foci of squamous metaplasia and formation of small horn cysts (13, 14, 15). Mitotic activity is fairly high, as would be expected in a normal reserve cell population (1, 13, 15).

These neoplastic cells are arranged in multiple lobules of basaloid epithelial cells in a sparse stroma of reactive collagenous tissue with secondary suppurative and plasmacytic inflammation. Neoplasm rim is irregular and mildly infiltrated. As in basal cell carcinoma, multifocal contiguity with the overlying epidermis is present (13). Melanocytes with dendritic processes interdigitated tumor cells may be present and melanin granules are in cells or within the macrophages in the interlobular stroma (1).

This neoplasm had many histopathological characteristics that resembled the basal cell carcinoma. The clusters of mature sebocytes supported the diagnosis of SE, whereas individual sebaceous cells are more consistent with a diagnosis of basal cell carcinoma. As both entities are derived from the same germinative population of small, mitotically active, theoretically pluripotential epithelial cells, they have similar biological behavior (1, 13). Sebaceous gland epitheliomas can be locally aggressive and may exhibit regional lymph node metastasis in rare cases (13). The referred case presented local invasion, but until the present, no recurrent signs were noticed.

In cutaneous neoplasms, spontaneous regression has been reported, but typically, local surgical resection with minimal peripheral margins is curative (11). In domestic animals these tumor may recur in the excision site in cases that a metastatic tumor was found in lymph nodes (1). Although malignant forms are rare, surgical excision of any cutaneous neoplasm is recommended (8).

In this case the surgical wound had a complete healing, with an appropriate cicatricial evolution. The animal recovered and, after nine months, no complications were reported. The proper treatment for SE is surgical removal based on the low grade of metastasis, providing a good prognosis for dogs and cats. The lack of reports in exotic animals neoplasms provides an obscure prognostic and more reports are necessary for proper clinical guidance.

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