Linear arrector pili muscle hamartoma on the tail of a sphynx cat

Abstract: Arrector pili muscle (APM) hamartoma is reported in humans and dogs. We describe a linear APM hamartoma in a sphynx cat. The lesion was characterized by multiple nodules linearly distributed along the tail, made of randomly arranged hypertrophic smooth muscles, the size of which tended to wax-and-wane during one-year follow-up.

Keyword: arrector pili muscle, comparative pathology, dermatopathology, feline, hamartoma, skin, sphynx cat.

Introduction

Arrector pili muscle (APM) is a specialized adnexal structure made of smooth muscle fibers. Lesions arising from APMs are rare piloleyomioma and piloleyomiosarcoma are the unique examples in cats.[1,2] Hamartoma of this muscle, made of disorganized but mature muscle bundles in their normal anatomic location, is described in humans and more rarely in dogs of different breeds.[2,3] In humans, congenital and acquired forms have been reported, mainly occurring as solitary lesions in the lumbosacral region.[3] The aim of this case report is to describe the clinical and microscopic features of an APM hamartoma occurring on the tail of a sphynx cat.

Case report

A 2-year-old male sphynx cat was presented with several nonpruritic and nonpainful skin nodules on the tail, noticed one month before presentation. General physical examination was unremarkable, with alterations limited to the skin of the tail.
At dermatological examination seven cutaneous nodules were noticed, arranged in a linear fashion on the dorsal surface of the tail. The nodules were alopecic, 5 mm in diameter, some eroded, surrounded by normal skin considering the breed (figure 1a). Cytology showed neutrophils, eosinophils and rare lymphocytes. Histological examination of the lesions was declined by the owner and considering lack of discomfort, no therapy was instituted.
The cat was re-evaluated after two months; the previously observed erosions had spontaneously resolved but the nodules were otherwise unvaried. Two new small nodules of the same size as the previous ones were observed; the skin surrounding the nodules showed marked hypertrichosis compared to the rest of the body and the surface of the nodules was hypotrichotic with a few thicker and longer hair emerging (figure 1b).
Two weeks later, surgical excision of three nodules was performed for histopathology. Skin biopsy samples were fixed in 10% neutral formalin and routinely processed. On haematoxylin-eosin stained section lesions were similar in all the sites examined. An unencapsulated, expansile, well demarcated lesion was seen involving the APMs (figure 2); these were numerous, large, randomly distributed within the dermis and not originating from isthmus but rather closely encompassing follicles. The hypertrophic smooth muscle fibers showed small tapered elongated euchromatic nuclei and eosinophilic cytoplasm (figure 3). Mitotic activity was very rare. Inflammatory superficial infiltrates were represented by neutrophils, sparse eosinophils and lymphocytes. Given the histomorphological findings of hyperplastic and hypertrophic APMs which did not maintain their normal spatial relationship,

namely obliquely connecting the superficial layer of dermis to the isthmus, a diagnosis of APM hamartoma was made. A piloleyomioma was considered less likely because of the multinodularity and the lack of interlacing highly cellular bundles of smooth muscle which characterize this type of neoplasm.

Two weeks later, at recheck, biopsy sites had healed uneventfully, all the remaining nodules showed progressive reduction in size and height and partial hair regrowth on the surface (figure 4a). The surrounding skin was still hypertrichotic. At this moment a pseudo Darier, a transient piloerection and vermiform superficial movements occurring after the rubbing of the skin, was not observed. Then the nodules tended to wax and wane in their size and at a one-year follow-up were still present (figure 4b).

Discussion

This case report describes APM hamartoma in a young sphynx cat, with similarities to the same entity reported in humans and dogs. Although Sphynx is a congenital alopecic breed, follicles are similar to other breeds and APM are described as part of their follicle units,[4] therefore lesions originating from this structure are expected. Hamartomas originate from errors in embryologic development, over-time they can grow up in size proportional to the animal growth therefore the onset of the lesions in a 2-year-old cat does not allow to exclude a congenital origin.
The unusual and characteristic clinical presentation over the tail resemble linear plaques or multiple nodules rarely described in humans.[5,6]

The pseudo-Darier's sign, was not observed, although this sign is a distinctive finding for congenital smooth muscle hamartoma in humans, it is only present in 50% of patients with these lesions.[8]
Apart the possible role of inflammation in determining the size of the nodules over time, the authors are unaware about the wax and wane type of growth. However, biopsy-proven spontaneous regression of hamartomas of different origin has been recently reported.[9] We cannot exclude that the surgical excision of the three nodules might have influenced the biological behaviour of the remaining ones. The authors consider that clinical observation of this lesion is warranted, provided that no functional but only aesthetic deficits are noted.

In conclusion, this is the first case report of linear APM hamartoma in a cat, sharing similar clinical presentation with some of the smooth muscle hamartomas in humans.

Figures legend:

Figure 1. Clinical lesions of linear APM hamartoma in a sphynx cat. Cutaneous alopecic nodules linearly arranged along the tail (a); two months later the skin of the tail is hypertrichotic (b).
Figure 2. Photomicrograph of an APM hamartoma in a sphynx cat. Unencapsulated dermal nodule made of large randomly oriented APMs. Haematoxylin and eosin stain, 4x.
Figure 3. Photomicrograph of an APM hamartoma in a sphynx cat. APMs are composed of hypertrophic smooth muscle fibers surrounded by inflammatory cells. Haematoxylin and eosin stain, 10x.

Figure 4. Clinical follow-up of linear APM hamartoma of the sphynx cat. Reduction in size and height and partial hair regrowth on the nodule surface two weeks after biopsy (a); at five-month follow-up nodules and hypertrichosis are still present (b).

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