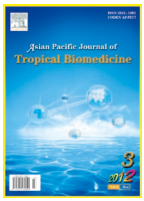
Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Biomedicine

journal homepage:www.elsevier.com/locate/apjtb



Document heading doi:10.1016/S2221-1691(12)60051-3

Dermoid cyst in a domestic shorthair cat

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ARTICLE INFO

Article history:
Received 9 August 2011
Received in revised form 2 September 2011
Accepted 20 September 2011
Available online 28 March 2012

Keywords:
Cutaneous dermoid cyst
Cat
Feline medicine
Shorthair cat
Dermoid cyst
Histopathology

ABSTRACT

A 5-year-old neutered male domestic shorthair cat was presented for examination of a subcutaneous mass in his tail. The mass was firm, non-painful, oval, and approximately 2.5 × 3.5 cm. Surgical exploration revealed a well-circumscribed, encapsulated mass. The mass was removed and sectioned for histopathological examination. In gross section, it was filled with numerous dark hairs. Histologically the mass was consisted of haired skin with dermal cystic structures lined by stratified squamous epithelium. The cyst lumen contained squamous debris and filled with keratinous material. Numerous hair shafts were extended from the wall of the cyst. The sebaceous and apocrine gland adnexal structures were also observed which confirmed the diagnosis of dermoid cyst. No tumor recurrence was observed after surgery in fallowing checkups. Cutaneous or subcutaneous cysts of all types are considered rare in cats and to our knowledge this is the third reported case of cutaneous dermoid cyst of cats in veterinary literature which is different from the other cases because it occurred in dorsal midline in tail area whereas others occurred in flank area.

1. Introduction

In the cat, skin and subcutaneous tumors occurs in the second frequency in compare to lymphoid system tumors and account approximately one third of all tumors in this species[1]. The dermoid cyst is an uncommon tumor like developmental anomaly that has been reported in dogs, cats, horses, cattle and camel. This tumor is caused by defective epidermal closure along embryonict fissures that isolates an island of ectoderm in the dermis or subcutis[2,3]. The lesion usually shows a progressive enlargement due to accumulation of hair, keratin, and sebum inside the cyst[4]. Dermoid cysts are usually solitary and appear clinically similar to follicular cysts. The cysts have been described as structures arising on the dorsal midline of dogs as a result of failure of the skin to separate from the neural tube during embryonic development which creates focal reduplication of the entire skin structures[2,4]. However, except few case reports that presented dermoid cyst in cats there is no other information about this rare anomaly in feline medicine[5-7]. Dermoid cyst is reported as a congenital or hereditary lesion in the veterinary literature, whereas congenital forms more commonly involves the cornea, conjunctiva, nictitating membrane and eyelids in affected cats[8]. Theses cysts consist of a well circumscribed circular or tubular structure in the skin or subcutis and frequently connect to the skin surface by a small pore. A tuft of hair may protrude through this pore and it may be surrounded by a whorl of hair. In dogs, Rhodesian Ridgeback, Boxer and Kerry Blue breeds were reported to have genetic predisposition to suffer from dermoid cyst[9,10]. Dermoid cyst was also present in young dogs at a mean age of 4 years and in most cases, associated with multiple vertebral and spinal malformations and hind limb neurologic deficits[2,4]. As there are very few reported dermoid cases in cats, the characteristics of this lesion were not well described in feline medicine yet. In this report, the macroscopic and microscopic characteristics of a dermoid cyst in a 5 year neutered male cat were described.

2. Case report

A 5-year-old neutered male domestic shorthair cat was presented for examination of a subcutaneous mass in his mid tail which was palpated by the owner approximately

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3 month prior to examination. The mass was firm, non-painful, oval, and approximately 2.5 × 3.5 cm (Figure 1A). Past medical history showed Feline Immunodeficiency Virus (FIV) seropositivy in the mentioned case. Surgical exploration revealed a well-circumscribed, encapsulated dark mass. The minimal vascular supply to the mass was ligated, and the mass was removed completely and sectioned for histopathological examination. On transverse gross section the mass was filled with numerous dark hairs (Figure 1B). Tissue samples were obtained, fixed in 10% neutral buffered formalin, processed routinely, embedded in paraffin, sectioned at 5 μm thickness, stained with hematoxylin and eosin, and studied with a routine light microscope. Histologically, the cyst was lined by flattened stratified squamous epithelium with orthokeratotic hyperkeratosis and filled with keratinous material and hair shafts (Figure 2A). Adnexal structures including sebaceous and apocrine glands were associated with the cyst wall (Figure 2B). The cyst was surrounded by a densely packed collagenous connective tissue. In some parts, proliferation of fibrovascular tissue and

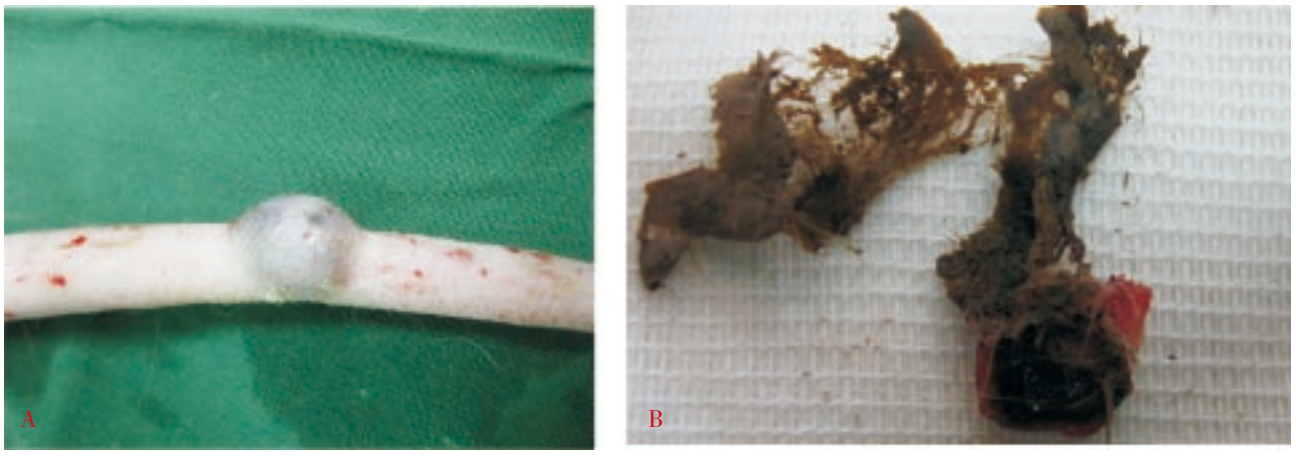

Figure 1. A) The oval mass approximately 2.5 × 3.5 cm in diameter was observed on the mid part of the tail; B) The mass was consisted of dark sticky hair shafts.

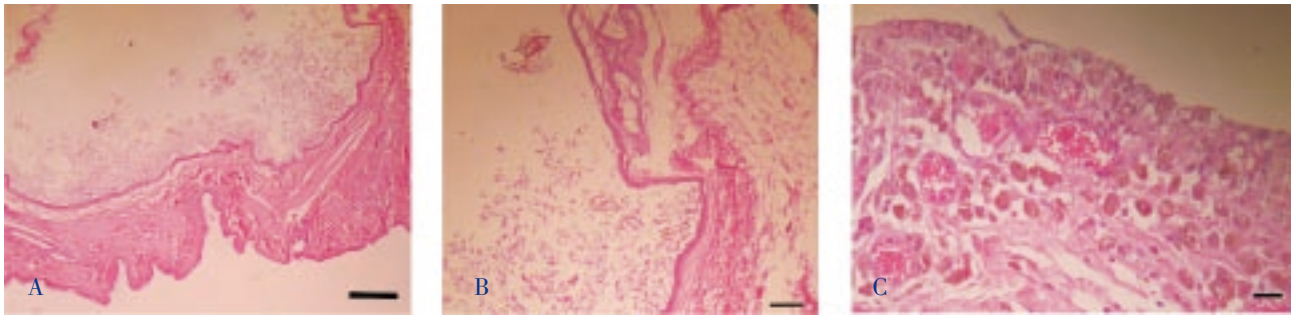

Figure 2. A) The cyst are lined by flattened stratified squamous epithelium and filled with keratinous material. HE. Bar=200 μm; B) Sebaceous and apocrine glands within the cyst wall are seen. HE. Bar=100 μm; C) Proliferation of fibrovascular tissue and histiocytic infiltration contained ceroid pigment in the cyst wall. HE. Bar=25 μm.

histiocytic infiltration contained ceroid pigment attached to the cyst wall was observed (Figure 2C). No evidence of malignancy was seen in different areas of this mass.

Based to histological findings, the mass was diagnosed as dermoid cyst. As the animal was in the immunocompromised status, the incision was not healed routinely and the tail was docked from the upper point of the excision. No further problems have been reported by the owner in fallowing check ups.

3. Discussion

Follicular tumors and tumor-like lesions together represented 10.4 per cent and 8.1 per cent of all skin tumors in the dog and cat, respectively[11]. Cutaneous dermoid cysts or sinuses are tumor like lesions which have been described as structures arising on the dorsal midline of dogs as a result of failure of the skin to separate from the neural tube[10,12]. Cutaneous or subcutaneous cysts of all types are considered rare in cats and literature search have been yielded two reports of cutaneous dermoid cysts in cats[5]. Dermoid cysts are usually solitary masses which appear clinically similar to follicular cysts throughout the body and are either congenital or acquired but only 10% of these tumor like lesion are believed to be acquired due to the trauma[12]. Considering the middle age of the affected cat, dermoid cyst was not a congenital disorder in this case but there was no history of previous injury or trauma.

Increased incidence of this tumor was reported between selected dog breeds and considered to be inherited as a simple recessive trait in Rhodesian Ridgebacks dogs[9].

Based on limited cases in feline medicine no breed predilection was documented in cats but the mentioned case and the two other reported cotaneous dermoid cases were all occurred in domestic short hair breed[5].

Differential diagnosis including trichofollicoluma, follicular infundibular cyst and folliculosebaceaous hamartoma should be considered in histopathological evaluation[4,14]. A small dermoid cyst like the mass which was presented in this report may resemble a trichofolliculoma with predominantly mature secondary follicles, particularly if hair shafts and sebaceous glands are present. The major criteria for differentiation of theses tumors are more numerous follicles with secondary branching that radiate from the central cyst of a trichofolliculoma. On the other hand, the central cyst of a trichofolliculoma may contain epithelial segments resembling isthmus and/or matrical portions of a hair follicle, while the central cyst of a dermoid cyst is lined entirely by epidermal-type squamous epithelium which completely observed in this case[10].

Although most of dermoid cases present at birth, but they are usually asymptomatic and may not be noticed until they become distended or infected in an older animal[2,15]. Dermoid cysts have been classified according to depth of penetration of the sinus. Class I cysts extend from the skin to the supraspinous ligament, class II cysts do not extend as deeply but are connected to the supraspinous ligament by a fibrous band, and class III cysts are similar to class II cysts but have no connecting band to the ligament. A fourth class has been proposed, in which the cyst extends to the spinal canal and is attached to the dura mater. This class is analogous to the pilonidal sinus of human beings, which usually occurs in the coccygeal region. The term pilonidal cyst, which by definition means any cyst containing a tuft of hair, is usually used synonymously with the term dermoid cyst in veterinary medicine[16,17]. Based to this grading system the mentioned tumor was classified in class III.

Fortunately in the present case because the tumor was not communicate with the spinal canal, the cyst posed no potential danger to the animal and just healing disorder was observed due to immunocompression caused by FIV infection. Furthermore, the reported dermoid cyst was different from the other feline cutaneous cases because it occurred in dorsal midline in tail whereas others occurred in the flank area.

Conflict of interest statement

We declare that we have no conflict of interest.

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