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First Case of Degenerative Mucinotic Mural Folliculitis in Brazil

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Abstract

The purpose of this report is to describe the first case of degenerative mucinotic mural folliculitis (DMMF) in Brazil. This dermathopathy has been described as a rare cause of alopecia and hyperkeratosis in cats. Severe forms have been linked to infection with Feline Immunodeficiency Virus (FIV). A 10-year-old neutered male Siamese cat was referred with a 40 days history of progressive hair loss. The cat had initial alopecia on the head, subsequently spreading to the neck, torso and limbs. The skin biopsy revealed degenerative mucinotic mural folliculitis. Distinct seropositive reaction against FIV. antigens was demonstrated by enzyme-linked immunosorbent assay and immunohistochemistry. Therapeutic response to glucocorticoid medication, immunomodulators and antibiotics was poor and the patient died from undetermined causes. DMMF should be included in the differential diagnosis of feline exfoliative dermatitis and alopecia. Early diagnosis through histopathological and immunohistochemical tests is extremely important in determining the prognosis and the best treatment.

Keywords: Dermatology; Alopecia; Mucinosis; FIV; Chronic dermatitis

Introduction

Degenerative Mucinotic Mural Folliculitis is a rare disease that affects cats and is characterized by inflammation of the hair follicle, which leads to atrophy, degeneration and mucin production. It is an inflammatory reaction which takes place on the follicle wall, primarily affecting the external sheath of the hair above the follicular isthmus [1,2]. In some cases it can also affect the infundibulum or the bulbar portion of the hair follicle [3].

The disease was first described in middle-aged or older animals, aged between four to ten years, with no breed predilection, although it seems that males are more often affected. First clinical manifestations are alopecia, especially in the face, head and neck, although it soon spreads to the limbs and the rest of the body. Usually there is an absence of itching or mild itching, but one case of severe pruritus has been reported [3].

Feline Idiopathic Mural Folliculitis is a new and poorly understood syndrome and it can represent a group of diseases with various etiopathogenesis, but with similar histopathological changes. Some severe forms of mural folliculitis have been linked to infection with feline immunodeficiency virus. Diagnosis is normally conducted through biopsy and histopathological examination [3]. We report a case of feline degenerative mucinotic mural foliculliculites FIV-associated detected by immunohistochemistry and immunoassay testing and describe clinical and histopathological findings.

Case Study

A 10-year-old neutered male Siamese cat was referred with a 40 days history of progressive hair loss. The cat had initial alopecia on the head, subsequently spreading to the neck, torso and limbs (Figure 1A). There was no history of pruritus or presence of parasites in the last months. The animal was adopted from the street by the owner one year before starting the clinical signs. Since then, the cat was regularly dewormed and had only been vaccinated against rabies. He was mainly fed on balanced commercial food for cats.

Physical examination revealed enlargement of submandibular and popliteal lymph nodes. During pulmonar auscultation, inspiratory wheezing was observed probably due to stenosis caused by nasal edema (Figure 1B).

The head, especially the chin, periocular, nasal plane and pinnae regions, showed alopecia, dryness, scale and erythema. The cat also had hyperkeratosis mainly on the head, dorsal-lumbar and cervical region.

An incisional biopsy was performed and three fragments were taken from different skin sites. Samples were fixed in neutral-buffered 10% formalin and processed for histologic examination. Fur and crusts samples were collected for fungal culture but result was negative. Blood samples were taken in order to assess complete blood count, serum creatinine, BUN, serum activities of Alanine Aminotransferase (ALT) and Alkaline Phosphatase

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(ALP), total T4 and glucose testing. All results were within the normal range for the species. It was also requested and enzyme immunoassay testing for the detection Of Feline Leukemia Virus Antigens (FeLV) and antibodies To Feline Immunodeficiency Virus (FIV). Results were positive for FIV.

On histopathologic evaluation, the epidermis showed regular hyperplasia, spongiosis and hydropic degeneration of the basal layer. It was also observed pigmentary incontinence and mixed perivascular inflammatory infiltrate in the superficial dermis and an intense mixed inflammatory infiltrate with a large number of lymphocytes, histiocytes, neutrophils and mast cells displaying a perifollicular pattern. Almost all hair follicles showed lymphocyte infiltration of the follicular epithelium of the isthmus indicating a mural folliculitis (Figure 2A). These lesions showed no signs of atypia. There was no evidence of follicular parasites. There was also a slight presence of mucin deposition displaying a perifollicular pattern and in the follicular epithelium evidenced by Alcian Blue stain (Figure 2B).

For Immunohistochemical Assay (IHC) for FIV and Feline Leukemia Virus (FeLV) it was used the method streptavidin-biotin linked to alkaline phosphatase. For both, antigen retrieval was performed using citrate buffer 96°C for 40 minutes. Sections were then incubated overnight at 4°C with the primary antibodies against FIV (Serotec) at 1:200 dilution and FeLV (Serotec) at 1:500 dilutions. Negative controls included buffer alone. Specific labeling was detected with biotinylated secondary antibodies bound to streptavidin-biotin (LSAB kit-AP, DakoCytomation). The color reaction was developed with Permanent Red chromogen (Dako) for 15 minutes.

The follicular and superficial epithelium showed an intense nuclear expression of FIV (Figure 2C-F). In superficial dermis there was an intense nuclear and cytoplasmic expression of FIV in the inflammatory cells mixed perifollicular, perivascular and endothelial cells. It was not observed any immunostaining against FeLV.

Treatment consisted of methylprednisolone (20mg/ kg IM) every 15 days and Human Interferon α-2b (30 IU, VO), every 24 hours, for every other week. Approximately 40 days after, the animal showed clinical improvement, with a reduction of hyperkeratotic lesions. Nevertheless, there was significant weight reduction (500 g), although the patient maintained his appetite. The cat was then submitted to radiography of the chest which showed no evidence of intra-thoracic neoplasm.

After 60 days of treatment, the cat returned to the clinic in a worse state, presenting evident cachexia and a fistulated abscess in the region of the left mandible. Antibiotic therapy was prescribed with the use of cefovecin sodium (8.0 mg/ kg) administered subcutaneously every 14 days, and the introduction of a hypercaloric and hyperproteic diet. The animal died after 40 days, with severe cachexia, lethargy, dullness and signs of acute enteritis with severe diarrhea. Owners did not authorize the necropsy of the animal.

Discussion

The clinical history and symptoms in the affected cat were the same as the eight cases of feline idiopathic mural folliculitis described in the literature, displaying generalized alopecia, erythema, crusting, hyperkeratosis and scarification of the face, pinnae, neck, and sequentially the trunk and limbs, as well as emaciation and apathy [3-5]. The histopathological changes and also the mucin accumulation observed in the biopsies are consistent with the previous reported cases [3]. On histopathological examination, sebaceous glands remained unchanged, which ruled out the possibility of feline sebaceous adenitis [6]. Also, no atypia were identified in lymphocytic sequential histopathological examination, ruling out feline epitheliotropic lymphomas [1]. No follicular parasites were detected and dermatophytosis was not found in fungal culture and with special staining for fungi performed during histopathology (PAS c/d). These findings are in accordance with other cases of feline idiopathic mural folliculitis described in literature [3,7].

Chest radiography showed no mass or changes suggestive

Figure 1: (A) A 10-year-old male Siamese cat showing alopecia in the face, muzzle and pinnae region, neck, torso and limbs. (B) Presence of row crop cultivators, erythema, alopecia and severe facial edema.

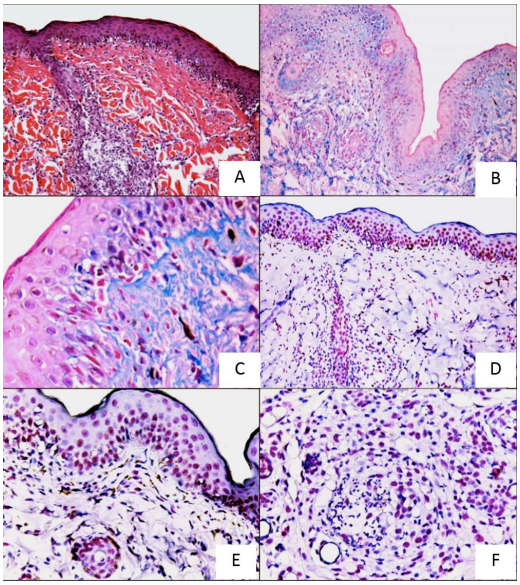

Figure 2: Representative figures of the skin biopsy of feline presenting degenerative mucinotic mural folliculitis. (A): intense mixed perifollicular inflammatory infiltrate rich in lymphocytes, histiocytes, neutrophils and mast cells. H&E, 10X. (B): Evidence of mucin (blue) deposited near the surface and follicular epithelium. Alcian blue stain, (PAS, 10X). Positive FIV immunostaining in the superficial epithelium nucleus and follicular cytoplasm and nucleus of a mixed inflammatory infiltrate perifollicular and perivascular., 20X (C, D) and 40X (E, F).

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of thymoma, which is a differential diagnosis for non-pruritic exfoliative dermatitis, with histopathological presentation of symptoms of lymphocytic mural folliculitis [8].

The animal examined in this case study was found to be positive in the ELISA test for the detection of antibodies against feline immunodeficiency virus, which may explain the severity of the case and the rapid deterioration of his clinical condition. The intense nuclear and cytoplasmic immunostaining of epithelial cells and mixed inflammatory infiltrate in the dermis and epidermis, the immunohistochemistry anti-FIV, strengthens the relationship of the disease with feline immunodeficiency virus. The cause of mucinotic mural folliculitis is still not clear. FIV should be investigated as a possible cause or comorbidity, given the severity when associated with this disease. Moreover, FIV infection has been reported in 3/7 cats with this disease [3].

Conclusions

Degenerative Mucinotic Mural Folliculitis should be included in the differential diagnosis of feline exfoliative dermatitis and alopecia. Early diagnosis through histopathological and immunohistochemical tests is extremely important in determining treatment, given the severity of the clinical condition. Sequential exams, including biopsies, X-rays and ultrasounds are required to follow the course of the disease, as well as to rule out other possible causes of mural folliculitis associated to cancer and parasitic infections.

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