CASE REPORT

Plasma Cell Pododermatitis in a Cat

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Summary

Plasma cell pododermatitis, an uncommon disease of unknown etiology, is described in a six year old male domestic short-haired cat. The cat was referred with a history of lameness associated with swelling, softness and ulceration of the foot pads. The history suggested a seasonal occurrence of the condition. The dermis and subcutis of the foot pads were infiltrated by inflammatory cells which were mainly plasma cells. The large number of plasma cells present in the lesions suggests an immunological basis for the condition.

Key words: Cat, plasma cell pododermatitis, foot pad swelling and ulceration.

Résumé

Pododermatite à plasmocytes, chez un chat

Cet article décrit un cas de pododermatite à plasmocytes, maladie rare et d'étiologie indéterminée, qui affectait un matou domestique, âgé de six ans. L'anamnèse mentionnait une boîtierie qui s'accompagnait d'une tuméfaction molle et d'une ulceration des coussinets plantaires; elle suggérait aussi une apparition saisonnière de la condition. Le derme et le tissu sous-cutané des coussinets plantaires affichaient une infiltration par des cellules inflammatoires où prédominaient les plasmocytes, particularité qui permit de soupçonner une base immunitaire pour cette pododermatite.

Mots clés: chat, pododermatite à plasmocytes, tuméfaction et ulceration des coussinets plantaires.

Introduction

Plasma cell pododermatitis is an uncommon disease of cats characterized by swelling, softness and ulceration of the foot pads (1-3). The etiology of the condition is unknown but an immunological basis has been suggested (1). Biopsy of the affected foot pads typically reveals marked infiltration of the dermis and subcutis by inflammatory cells mainly represented by plasma cells (1,2). This report describes the clinical and postmortem findings in a cat with plasma cell pododermatitis.

History and Clinical Findings

In late August, a six year old, male, domestic short-haired cat, was referred with a history of lameness of six months duration.

The owner also reported that during the previous year, the cat had the same problem, but that it had resolved spontaneously in the winter.

On referral, the cat was emaciated, the rectal temperature was 39.5°C and the heart and respiratory rates were within the normal range. Catarrhal conjunctivitis and infestations with fleas and ear mites were found. Lesions compatible with "stud tail" were also noted on the dorsal aspect of the tail. The popliteal lymph nodes were slightly enlarged.

All four central foot pads were swollen and soft. The left central metatarsal pad contained a 1 cm centrally located ulcer with a reddish granulation tissue protruding. The right metacarpal and metatarsal central pads also had small ulcerations, without gross evidence of granulation tissue. The epidermis of the left central metacarpal pad was intact. The digital pads of all four feet were not involved.

A diagnosis of contact dermatitis or autoimmune dermatosis was made. At the request of the owner, the cat was euthanized and a complete necropsy was performed.

Pathological Findings

At necropsy the cat was found to have essentially the same gross findings that were observed on clinical examination; lesions were not found in the internal organs.

Histological sections of the foot pads were examined. The findings were very consistent. The dermis and subcutaneous adipose tissue were heavily infiltrated by densely packed sheets of inflammatory cells which were mainly plasma cells (Figure 1). Lymphocytes were also present, but to a lesser extent. The cytoplasm of a small number of the plasma cells contained several large homogeneous eosinophilic inclusions (Russel bodies). Macrophages and mast cells were also scattered throughout the inflammatory infiltrate. Eosinophils were not found in any of the lesions, but neutrophils were present in variable numbers in the three ulcerated foot pads of the left central metatarsal pad.

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pads corresponding to the degree of ulceration.

In the severely ulcerated left central metatarsal pad, the epidermis was replaced by exuberant granulation tissue with a necrotic surface. Edema was also prominent in the subcutis of this pad. A small circumscribed focus of necrosis and hemorrhage was present deep in the subcutaneous inflammatory infiltrate of the right central metacarpal pad.

Gram, periodic-acid Schiff and acid-fast stained sections of the non-ulcerated pad failed to reveal the presence of bacterial or fungal agents.

The following lesions were present in internal organs: There was a moderate bilateral, multifocal chronic interstitial nephritis. The spleen showed few reactive lymphoid nodules and the granulocytic cell line of the bone marrow was slightly hyperplastic. The popliteal lymph nodes were slightly edematous. The thyroids, trachea, myocardium, lung, liver, pancreas, stomach, intestines and skeletal muscle of the legs were histologically normal.

Microbiology Findings

Bacterial growth was not obtained from aerobic culture of the left central metacarpal pad. Electron microscopic examination of the same pad was negative for the presence of viral particles, bacteria or other infectious agents.

Discussion

Few references to plasma cell pododermatitis or similar conditions in cats were found in the literature (1-5). According to the report of five cases by Gruffydd-Jones et al (1), the condition begins as a soft swelling of the foot pads, which may evolve to ulceration, often associated with protruding granulation tissue. These findings suggest that ulceration is likely a sequela to the inflammation, rather than the cause of it. In our cat, the presence of a dense infiltrate of plasma cells in the left central metacarpal pad (nonulcerated) would also be consistent with that hypothesis.

In the present case, lesions were found in the central foot pads only, which appears to be the usual situation (1,3). However, involvement of the digital pads has also been reported in a few cats affected with plasma cell pododermatitis (1,5). Lameness, as observed in this case, appears to be uncommon in cats affected with the condition; in most instances, the lesions were not associated with pain, pruritis or lameness (1,2,5). However, in one of the five cases reported by Gruffydd-Jones et al. the cat was reluctant to walk or to put pressure on its feet (1).

No age, breed or sex predilections have been found (3). In all reported cases including ours, there is no evidence of an infectious agent as the cause of the syndrome. Based on the common occurrence of lymphocytosis and hyperglobulinemia, and the large number of plasma cells in the biopsy specimens, an immunological basis has been suggested for the condition (1). The seasonal occurrence and the spontaneous regression of the condition at winter time, as observed in this case, is of interest. Both spontaneous regression and reoccurrence of the condition have been reported but, except for one case, no particular time of the year was mentioned (1,3). This one cat had had a history of seasonal occurrence (summer) with spontaneous regression at winter time as observed in our case (1). At this time, there is no explanation for this phenomenon.

The differential diagnoses for plasma cell pododermatitis should include infections, neoplasia, the eosinophilic granuloma complex and the autoimmune dermatoses such as pemphigus, pemphigoid and lupus erythematosus (3). None of the above mentioned conditions is consistent with the histopathological findings in this case.

The collection of additional clinical, pathological and epidemiological data are necessary to define the etiology and pathogenesis of this condition.

References