Feline plasma cell pododermatitis: a clinical case and literature review

M.C. CADIERGUES, M. DELVERDIER and M. FRANC

SUMMARY

Plasma cell pododermatitis is a rare disease of cats, with an unknown cause and pathogenesis; but the plasmocytic infiltrate, the frequent hypergammaglobulinemia and the good response to an immunomodulative therapeutic suggest an immune origin. It has only been described in cats and it is characterized by swelling and softening of multiple footpads with ulceration sometimes developing. The clinical case of a 2-year-old neutered female domestic shorthair cat is described. The referred feline had an approximately 9-month history of a quadrupodal pododermatitis which concerned only metacarpal and metatarsal footpads. Histologically, lesions confirmed the plasma cell pododermatitis with a plasmocytic infiltrate. Hypergammaglobulinemia was also present. This cat had a good response to an immunomodulative therapeutic with prednisolone associated with an antibiotherapy and vitamin E.

KEY-WORDS: plasma cell pododermatitis - cat.

RÉSUMÉ

La pododermatite plasmocytaire féline : étude d’un cas et synthèse des données actuelles. Par M.C. CADIERGUES, M. DELVERDIER et M. FRANC.

La pododermatite plasmocytaire féline est une affection rare du chat probablement d’origine immune. Elle se caractérise cliniquement par l’atteinte des coussinets métacarpo- et/or métatarsaux qui sont augmentés de volume, de consistance ramollie, parfois de couleur violacée. Dans certains cas, une ulceration avec hémostagie et secondairement une surinfection bactérienne peuvent apparaître. Le cas d’une chatte européenne ovariectomisée, âgée de 2 ans et présentant une pododermatite quadrupodale concernant les coussinets centraux est décrit. Le diagnostic repose sur l’examen histopathologique révélant une infiltration plasmocytaire massive. Une hypergammaglobulinémie plasmatique est fréquemment associée. La réponse à la corticothérapie à forte dose est habituellement satisfaisante. Dans les cas défavorables, l’exérèse chirurgicale des coussinets concernés peut être envisagée.

MOTS-CLÉS : chat - pododermatite - plasmocytaire.

Introduction

Plasma cell pododermatitis is a rare disease of cats, with an unknown cause and pathogenesis; but the plasmocytic infiltrate, the frequent hypergammaglobulinemia and the good response to an immunomodulative therapeutic suggest an immune origin. It has only been described in cats and it is characterized by swelling and softening of multiple footpads with ulceration sometimes developing.

History

A 2-year-old neutered female domestic shorthair cat was referred with an approximately 9-month history of a quadrupodal pododermatitis which concerned only metacarpal and metatarsal footpads. In a first phase, only posterior paws were affected, then very quickly all paws were attacked. The animal spent most of its time inside, its vaccinal status was correct and the cat was FeLV negative. Antibiotics (cefalexin 15 mg/kg twice daily : Rilexine® 75 mg, Laboratoires Virbac) and corticotherapy (prednisone 1 mg/kg once daily, Cortancyl® 5 mg, Laboratoires Roussel Diamant) for a week did not improve the animal, neither did a topical application of vitamin A and tyrothricin (A 313® pommade, Pharma Développement).

Clinical examination

On examination, the cat appeared to be in good general health and bodily condition (4.5 kg). Owners reported no digestive problems.

Body temperature, respiratory and heart rates were normal. Mucous membranes were quite congestive. Oral cavity examination revealed no abnormalities. The popliteal lymph nodes were quite enlarged.

All four metacarpal and metatarsal pads were soft and swollen with violet discoloration. There was also a large and
whitish scaling, one pad was fissured. Licking was frequent and the cat seemed to be disturbed when walking. Other pads were normal (figures 1 & 2).

Case history and clinical examination were highly suggestive of a plasmocytic pododermatitis. To confirm this hypothesis, biochemical analysis with protein electrophoresis, haematology and a biopsy of a pad were performed. Waiting investigational results, a topical application of hydrocortyloic tincture and natural essential oils (Cothivet®; Vétoquinol S.A.) was administered on the biopsy site.

**Laboratory tests**

Complete blood count and blood chemistry analysis revealed monocytosis (1 x 10^9 L^-1, normal range 0.1 - 0.9 10^9 L^-1); increased total protidemia (82 g/l, normal range 55 - 71 g/l) with hypoalbuminemia (24.8 g/l, normal range 28 - 42 g/l) and hypergammaglobulinemia (32 g/l, normal range 13 - 22 g/l).

Histopathologic examination revealed a nodular pattern with an infiltrate composed almost entirely of plasma cells, some of which showed the eosinophilic globules of retained immunoglobulin known as Russel bodies (figures 3 & 4).

In this appropriate clinical setting, histopathological lesions are indicative of a plasma cell pododermatitis [10].

**Treatment and response to therapy**

An immunomodulative therapy with prednisolone (Dermipur®; Laboratoires Sepval-Sogeval) at a dosage of 2.2 mg/kg, PO, q 24 h for 15 days then 3.3 mg/kg, PO, q 48 h for 15 days associated with an antibiotic therapy with marbofloxacine (Marbocyl® 20, Vétoquinol S.A.) at a dosage of 2 mg/kg, PO, q 24 h for 20 days and vitamin E administration (Ephynal®, Produits Roche, 50 mg, PO, q 24 h) were initiated. Topical application of Cohiivet® was continued.

On day 30, pads had recovered a normal aspect: they were the same color as the digital pads, with normal consistency and only a light scaling seen (figure 5). The metatarsal pad which had been biopsied, revealed a small wound (3 mm in diameter) (figure 6). Glucocorticoid therapy administered on alternate days with gradual reduction of the dosage was carried out over a 3-month period. A twice daily topical application of sulfapyridine and Peru balsam (Sulmidol®, Intervet) resulted in complete cicatrization.

Six months after starting the treatment, pads were completely normal (figures 7 & 8).

**Discussion**

Plasma cell pododermatitis was reported only in cats. No age, breed, or sex predilections were apparent. Most cats were presented with asymptomatic swelling and softening of multiple footpads (principally metacarpal/metatarsal pads) on multiple paws [2, 3, 8]. Recurrent haemorrhages from ulcerated or nodular areas of a pad can occur as well as secondary bacterial infection [9]. In a minority of cases, cats also have plasma cell stomatitis with bilateral, proliferative, ulcerative lesions in the corners of the oral cavity [6]. An immune-mediated glomerulonephritis or renal amyloidosis was described in one case [7].

The differential diagnosis should include other immune-mediated diseases, such as pemphigus foliaceus or vulgaris, or lupus erythematosus which are less likely to be restricted to the central pads, and are usually associated with increased scaling and crusting. Chemical or physical traumas should also affect digital pads and surrounding skin. Infectious or sterile pyogranulomas and neoplasia are possible but should not affect all paws simultaneously. Eosinophilic granuloma complex, hepatic, renal or endocrine disorders and FeLV/FIV status should be investigated.

Clinical management is usually performed with an immunomodulative therapy using systemic glucocorticoids (prednisolone administered orally at 4.4 mg/kg q 24 h or if ineffective triamcinolone, 0.4-0.6 mg/kg q 24 h, or dexamethasone 0.5 mg/kg). Once a good response has been obtained, doses are gradually reduced, with several months usually being necessary. When secondary bacterial surinfection is present, antibiotherapy should be indicated. In some cases, vitamin E has been succesfully used [4] as well as cryotheraphy [5]. Doxycyclin administered orally at 10 mg/kg q 24 h gave interesting results [1].

**Acknowledgements**

The authors would like to express their gratitude to Pr. P. BÉNARD for his assistance in the preparation of the manuscript.

**References**

FELINE PLASMA CELL PODODERMATITIS: A CLINICAL CASE AND LITERATURE REVIEW

Figure 1. — Day 0: metacarpal pads with softening, swelling and scaling, digital pads were normal.

Figure 2. — Day 0: metatarsal pads with softening and swelling, the violet discoloration should be noted.

Figure 3. — (hemalun-eosin, x 100): massive dermal infiltration by a population of mononuclear cells.

Figure 4. — (hemalun-eosin, x 400): most of the inflammatory cells are plasmocytes; a few of them show Russell bodies (arrow).

Figure 5. — Day 30: quite normal aspect (light scaling can be seen).

Figure 6. — Day 0: ulceration on the metatarsal pad which has been biopsied.

Figure 7. — Day 180: normal aspect of metacarpal and digital pads.

Figure 8. — Day 180: normal aspect of metatarsal and digital pads.