Cutaneous normolipaemic xanthogranulomatous disease in a cat

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A seven-year-old domestic shorthaired cat was diagnosed with cutaneous xanthoma with normal serum cholesterol and triglyceride levels. The cat was initially presented for pruritic skin disease of several years duration which had been treated with oral prednisolone, injectable dexamethasone and most recently 3-4 months of oral cyclosporine. Pruritus was most evident affecting the pre-auricular regions, legs, feet, axillae and ventral abdomen. Concurrent atopic dermatitis, adverse food reaction and flea bite hypersensitivity were diagnosed based on consistent history, clinical signs, response to a flea control trial and home-prepared elimination diet with subsequent rechallenge, and intradermal test results (strong reactions to privet, pine, flea and moth). The cat’s pruritus was initially successfully managed with cyclosporine, allergen-specific immunotherapy (ASIT), topical flea control and dietary modification (avoiding chicken, including Hill’s z/d dry food).

Five months after initial presentation the cat developed a persistent poorly-defined nodular area in the right axilla, with a central well-demarcated ~ 1cm diameter area of ulceration and serous to haemorrhagic discharge. Non-regenerative anaemia, subsequently diagnosed as immune-mediated haemolytic anaemia (IMHA) was identified on routine blood work performed prior to an intended general anaesthetic for skin biopsy. Fine needle aspirates of the nodular area at the time revealed abundant cholesterol crystals surrounded mostly by large macrophages, multinucleate giant cells and smaller numbers of neutrophils and lymphocytes. The IMHA resolved with prednisolone therapy in addition to cyclosporine and ASIT continued for management of atopy, and the axillary lesion healed after ~2 months, with no further diagnostic evaluation performed.

Four months after the onset of the IMHA (~ 12 months after initial presentation) the cat’s pruritus and IMHA remained stable on ASIT (35 units weekly), cyclosporine (25mg daily) and prednisolone (5mg once weekly). The pruritus consistently returned when attempts were made to stop the prednisolone. Five months later the cat developed an extensive abscess and all immunosuppressive therapies and ASIT were stopped by the local veterinarian. The abscess resolved however the pruritus relapsed, and was poorly responsive to recommenced prednisolone therapy. ASIT was recommenced two months after initial cessation. Four months later the owners reported recurrence of the draining lesion in the right axilla, at which time treatment included ASIT, prednisolone (5mg every third day) and antihistamines (loratadine or cetirizine).

Over the next four months the cat gradually developed bilateral complete alopecia of the ventral thorax and abdomen, circumferentially around both forelimbs at the level of the elbows and axillae, and three discrete ~ 1cm diameter areas of ulceration overlying irregular nodular swelling in both axillae and on the medial surface of the left forearm. The alopecic areas had thick, yellowish overlying skin. The cat groomed the ulcerated areas notably, however other areas previously affected with the hypersensitivities remained apparently non-pruritic and non-lesional. A body suit worn to prevent self traumatisation did not improve the ulcerated and draining regions. Repeated cytology revealed low numbers of intracellular bacteria (cocco and/or rods); however there was no response to sustained antibiotic therapy (amoxicillin clavulanic acid; clindamycin). Biopsies of the affected skin and nodular regions were collected under general anaesthesia, at which time thickened yellowish skin was evident on clipped medidd hind limbs in addition to alopecic sites, obscuring normal superficial vasculature on all limbs.

Skin histopathology from affected areas was characterised by marked diffuse infiltrate of the deep dermis, panniculus and subcutaneous area with sheets of xanthomatous histiocytes and multinucleated giant cells surrounding large cholesterol deposits consistent with cutaneous xanthoma. Special stains including Ziehl-Neelsen and Fite’s Ferraco did not reveal any infectious organisms. Fasting and post-prandial serum cholesterol and triglyceride levels were normal.

Cutaneous xanthomas are reported as rare discrete papular to nodular lesions in cats, dogs, reptiles and birds that typically occur in association with high serum cholesterol and/or triglyceride levels, although occasionally have been reported as idiopathic.1,2 Previous reports in cats are of discrete papular to plaque lesions predominantly occurring on the head, extremities or bony prominences.3 Similarly cutaneous xanthomas in humans are described as plaque-like to nodular lesions consisting of abnormal lipid deposition
and foam cells. A variety of clinical forms occur, including eruptive, tuberous, tendinous, and planar xanthomas, with the latter presenting a more diffuse lesion. All forms may occur associated with a range of lipoprotein disorders or may arise without an underlying metabolic effect. Normolipaemic cutaneous xanthomas have been classified into three types: Type I associated with altered lipoproteins, Type II with lymphoproliferative diseases (e.g. myeloma), and Type III with local tissue alterations.

The clinical forms of cutaneous xanthoma reported in humans, and previously reported forms in cats do not appear consistent with the presentation in this cat, where diffuse poorly demarcated infiltration over extensive ventral body areas occurred. Necrobiotic xanthogranuloma in humans is a xanthoma-like disease involving extensive lipid deposits in the dermis and subcutaneous tissue with normal circulating triglyceride and cholesterol levels. The periorbital area is a site of predilection in humans, involved in 85% of cases; however lesions also occur on the trunk and extremities. Typical early lesions are indurated papulonodules varying in colour from red-orange to violaceous or yellow, and involving the dermis and subcutaneous tissues. Lesions slowly enlarge into plaques with well-demarcated edges, ranging in diameter up to 25cm, and there are areas of central atrophy with telangiectasias or areas of ulceration. Most cases are asymptomatic, with no associated pain or pruritus. In some humans this disease has been associated with underlying malignancies such as multiple myeloma or lymphoproliferative disorders. Systemic involvement has been reported, with the respiratory tract reported as the most common extracutaneous site of xanthoma formation. Other affected sites include the heart, spleen, lacrimal gland, bone marrow, cerebrum (frontal lobe) and skeletal muscle. Other patients have no other related physical abnormalities.

No associated disease process was subsequently identified in this cat on haematology and biochemistry profiles, protein electrophoresis, abdominal ultrasound and thoracic radiographs; although pancreatic enlargement and splenomegaly were noted ultrasonographically. Percutaneous aspirates of the spleen and pancreas did not reveal any further abnormalities.

Treatments reported for necrobiotic xanthogranuloma or normolipaemic forms of cutaneous xanthoma in humans are varied and often unsuccessful. These diseases often have a chronic progressive course, with continued development of new lesions and ulcerations. The prognosis is difficult to predict, although depends on extra-cutaneous involvement. Systemic corticosteroids, alkylating agents and excision of localised lesions have been the most common treatments, all with varying response.

In this cat, excision of the chronic ulcerated areas with draining tracts in the axillary region was discussed with the owner, however the owners elected not to proceed with surgery as they did not perceive the lesions problematic to the cat. Ten months later, in early summer, pruritus increased again on the face and neck and was treated by the local veterinarian with oral prednisolone (1mg/kg sid for three weeks), and injectable cefovecin (repeated every two weeks). The cat remains stable 6 months later on oral prednisolone (0.5mg/kg sid), and continued antibiotic therapy. Attempts are being made to reduce the prednisolone dose, however pruritus increases. The owner reports no obvious change to the alopecic or ulcerated draining regions. No new ulcerated lesions or signs of other disease have developed.

This may represent the first report of normolipaemic cutaneous xanthoma in a cat, with some similarities to necrobiotic xanthogranuloma in humans.

References