



## CASE OF INTEREST

### A Case of Feline Disseminated mycobacteriosis

By Richard Fox, Veterinary Pathologist

A nine-year-old male, neutered, domestic long haired cat developed firm intradermal masses, which became alopecic and ulcerated. Concurrent bilateral submandibular lymphadenomegaly was also present. These lesions developed over a period of several weeks (figure 1).



Figure 1. A photograph of a typical lesion highlighting an area of cutaneous ulceration and alopecia (area of the calcaneon tenon). (Supplied by Danielle Gunn-Moore, Feline Unit, Edinburgh University)

Radiography revealed diffuse miliary opacities through all lung fields and ultrasonography identified multifocal hyperechoic areas within the spleen. Surgical biopsy (excisional) of one of the submandibular lymph nodes and a cutaneous lesion was performed. Histological examination revealed effacement of the superficial to deep dermis and subcutis by large numbers of macrophages and neutrophils arranged in coalescing nodules, with small foci of coagulation necrosis. There was extensive ulceration (not shown).

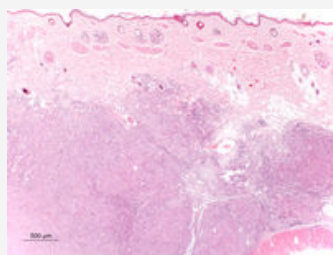


Figure 2. Histological section of skin displaying multifocal to coalescent areas of dermal and subcutaneous pyogranulomatous inflammation (x2 obj.). HE Stain.

The granulomas were composed of an admixture of neutrophils and epithelioid macrophages, peripherally located plasma cells and fewer lymphocytes, all supported by proliferate fibrovascular stroma (figure 2 & 3).

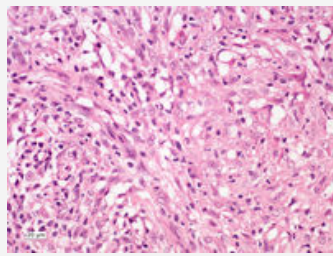


Figure 3. High power image of macrophages and neutrophils separated by fibrovascular supporting stroma (x40 obj.) HE stain.

Ziehl-Neelson (ZN) staining revealed moderate numbers of acid-fast intrahistiocytic rod-shaped bacteria (approximately 3µm in length)(figure 4).

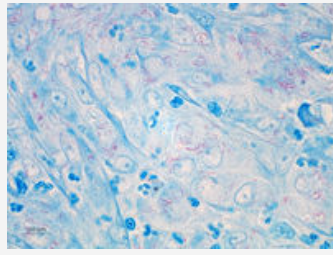


Figure 4. Image of intrahistiocytic acid-fast bacteria taken under oil immersion (x100 obj.) ZN.

After indicating probable Mycobacterial infection tissue is now being cultured by the Veterinary Laboratory Agency in Weybridge. The presence of *Mycobacterium bovis* in pet mammals is now a notifiable disease in the UK (only when confirmed whilst culturing for bacteria or from a suspicion in a carcass at present!). Other species, however, are involved i.e. *M. avium avium* or *M. microti*. Some other species of mycobacteria have been found to be zoonotic but often in patients which are already naturally or chemically immunosuppressed. Mycobacterial syndromes seen in cats therefore include tuberculosis, feline leprosy and opportunistic mycobacteriosis.

Other potentially pathogenic mycobacteria include *M. lepraemurium*, which causes leprosy in rats, and a similar, or possibly the same, organism which may be one of the cause feline leprosy. Opportunistic mycobacteria are usually saprophytic, but a number of species have been reported to cause disease in cats. These include *M. chelonae-abscessus*, *M. fortuitum / peregrinum* group, *M. smegmatis*, *M. phlei*, *M. genavense*, *M. simiae*, *M. thermoresistible*, *M. flavescens*, *M. xenopi* and *M. terrae* complex.

In this case systemic infection was suspected due to the changes evident within the lung fields radiographically and the spleen ultrasonographically. The majority of cases however seem to present as a non-healing mass often with ulceration without systemic signs, presumably indicating these may be localised or relatively recent infections. If drug therapy is sought its application should be taken in context with culture results, owner compliance and the extent of the disease. For more information please read the Feline TB notes in the download section of our [website](#) or on the Feline Advisory Bureau's website [here](#).

With regard to Bovine Tuberculosis the evidence would suggest that cats become infected by exposure to infectious material from tuberculous cattle or badgers (or other maintenance hosts of *M. bovis*). Cats are therefore considered spillover hosts of *M. bovis* and, indeed, removal of the source of infection in cattle or wildlife would be expected to result in a reduction in the incidence of bovine TB in cats. However, cats are not true end hosts, as the disease presentation makes them (at least theoretically) capable of infecting other cats and other mammals, including humans.

Bacteriological culture is the only available method to confirm a presumptive diagnosis of *M. bovis* infection. A PCR assay is available from the VLA for cases in which fresh tissue is not available but is not free and only able to confirm the presence of the Mycobacterial genus only. Therefore, veterinary practices and referral laboratories should submit the whole carcass to the nearest VLA regional laboratory. Fresh (unfixed) tissue samples or a swab should be sent directly to the TB Diagnosis Laboratory at VLA – Weybridge. Any material submitted should be accompanied by a full case history as well as the name, address and postcode of the owner.

Mr. Keith Jahans, Veterinary Laboratories Agency (DEFRA), Weybridge, UK .  
Telephone number: 01932 357280

Acknowledgments:

Thanks to Danielle Gunn-Moore (for the gross image presented here) ,Feline Unit , Edinburgh University.

References:

1. GUNN-MOORE, D. A. & SHAW, S. (1997) Mycobacterial disease in the cat. In Practice 19, 493-501.
2. MONIES, R. J., CRANWELL, M. P., PALMER, N., INWALD, J., HEWINSON, R. G. & RULE, B. (2000) Bovine TB in domestic cats. Vet Rec 146, 407-408.
3. MONIES, R. J., de la RUA R., JAHANS K. (2006) Bovine tuberculosis in cats. Vet Rec. Apr 8;158(14):490-1.
4. Infectious Pyogranulomatous Inflammatory Disorders. In: Skin Diseases of the Dog and Cat, 2nd edition (2005), Gross, Ihrke, Walder and Affolter pp. 278-288.

## In this issue:

- [Latest news](#)
- [Case of interest](#)
- [Our Details](#)
- [Biopsy tips](#)
- [Side Story](#)
- [Journal Articles](#)
- [Site Downloads](#)
- [Our Publications](#)

## JOURNAL Articles(with e-links)

1. Mooney CT, Shiel RE, Dixon RM. Thyroid hormone abnormalities and outcome in dogs with non-thyroidal illness. J Small Anim Pract. 2008 Jan;49(1):11-6. [Link](#)

The study objective was to document thyroid hormone abnormalities in dogs with non-thyroidal illness and identify markers of prognostic value. Circulating total and free thyroxine, total triiodothyronine and thyrotropin concentrations were measured in 196 dogs with non-thyroidal illness. Clinical signs, previous medications and outcome were recorded in each case. Data were analysed to determine endocrine prognostic factors, and to document the prevalence of thyroid hormone abnormalities. Total triiodothyronine, and total and free thyroxine concentrations were decreased in 75.9, 34.7 and 4.5 per cent of cases, respectively. Dogs which were euthanased had significantly decreased total triiodothyronine, and total and free thyroxine concentrations compared with those which made a full recovery. Total triiodothyronine concentrations were significantly lower in dogs that were euthanased compared with those which made a partial recovery. Thyroid hormone concentrations may be used as prognostic indicators in dogs with non-thyroidal illness. Low triiodothyronine syndrome may be more common in dogs than previously recognised.

2. Little L, Patel R, Goldschmidt M. Nasal and nasopharyngeal lymphoma in cats: 50 cases (1989-2005). Vet Pathol. 2007 Nov;44(6):885-92. [Link](#)

Lymphoma is the most common nasal cavity tumor in cats, yet few reports specifically address the anatomic, immunohistologic, and cytologic features of this neoplasm.

Fifty cats were diagnosed with lymphoma at necropsy, via biopsy or by cytology alone. Ten cats displayed multiorgan involvement, and in 2 of these the involvement was limited to the cerebellum and frontal cortex, respectively. Of the tumors, 41 of 50 (82%) were classified as nasal lymphoma, 5 of 50 (10%) were classified as nasopharyngeal lymphoma, and 4 of 50 (8%) involved both nasal and nasopharyngeal tissue. Histologically, all were considered diffuse lymphoid neoplasms and no cats displayed features of follicular lymphoma. Of the 44 cases available for slide review by the pathologist, 40 of 44 (91%) were classified as immunoblastic lymphoma, 2 of 44 (5%) as diffuse large cell, and 1 as diffuse mixed; 1 was unclassified. Of the 45 cats for which immunohistochemical stains were available, 32 were uniformly positive for CD79a, 7 were uniformly CD3 positive, and 6 had a mixed population of CD79a and CD3 cells. Epitheliotropism was exhibited in 4 of 5 (80%) cats in which there was sufficient epithelium present for evaluation. Of those 4, 3 were B-cell and 1 was a granulated T-cell lymphoma. In the 21 cats which nasal cytology was performed, 15 were cytologically diagnosed with lymphoma; the diagnoses in the remaining five cats were inflammatory (n = 4), normal lymphoid tissue (n = 1), or non-diagnostic (n = 1). The most common biochemical abnormalities were panhyperproteinemia in 26/46 (57%) of cats and hypocholesterolemia in 11/46 (24%) of cats.

3. Lu YF, McEwan NA. Staphylococcal and micrococcal adherence to canine and feline corneocytes: quantification using a simple adhesion assay. Vet Dermatol. 2007 Feb;18(1):29-35. [Link](#)

In this paper a simple adhesion assay suitable for the assessment of bacterial adherence to both canine and feline corneocytes is described. Using this assay *Staphylococcus intermedius*, *Staphylococcus aureus* and *Staphylococcus chromogenes* were shown to adhere well to both canine and feline corneocytes. The numbers of adherent bacteria were, however, generally lower for feline corneocytes. Both *Staphylococcus hominis* and a *Micrococcus* species adhered poorly to canine and feline corneocytes. This is the first report documenting bacterial adherence to feline corneocytes.

## LATEST NEWS

### Immunotherapy of equine sarcoid: dose-escalation trial for the use of chimeric papillomavirus-like particles. (abstract)

Equine sarcoids are fibrosarcoma-like skin tumours with a prevalence of approximately 1-2 %. Strong evidence exists for a causative role of bovine papillomavirus (BPV) type 1 or type 2 in the development of sarcoids. No effective licensed treatment of equine sarcoid is available and after surgical excision relapse of the tumours is very frequent.

A chimeric virus-like particles (CVPs) of BPV 1 L1-E7 for the immunotherapy of equine sarcoid has been developed. In a phase I clinical trial 12 horses suffering from equine sarcoid with an average number of more than 22 tumours per animal were vaccinated in a dose-escalation setting.

Two animals showed a clear improvement of the clinical status after treatment, i.e. the number of the tumours per horse was reduced. In another horse regression of five sarcoids was observed; three of them relapsed during the study. Two animals showed tumour regression as well as growth of new sarcoids. In two horses the clinical status remained unchanged, in another two horses growth of existing tumours or growth of additional tumours was observed. The remaining three animals showed simultaneous regression and growth of existing tumours.

Additional info: [External Link](#)

## OUR RECENT PUBLICATIONS

Hill PB, Boyer P, Lau P, Rybnicek J, Hargreaves J, Olivry T. **Epidermolysis bullosa acquisita in a great Dane.** J Small Anim Pract. 2008 Feb;49(2):89-94. Epub 2007 Sep 3.

Cave TA, Evans H, Hargreaves J, Blunden AS. **Metabolic epidermal necrosis in a dog associated with pancreatic adenocarcinoma, hyperglucagonaemia, hyperinsulinaemia and hypoparathyroidism.** J Small Anim Pract. 2007 Sep;48(9):522-6.

Niessen SJ, Voyce MJ, de Villiers L, Hargreaves J, Blunden AS, Syme HM. **Generalised lymphadenomegaly associated with methimazole treatment in a hyperthyroid cat.** J Small Anim Pract. 2007 Mar;48(3):165-8.

## SIDE STORY

### Reappearance of atypical myopathy

ATYPICAL myopathy or myoglobinuria of unknown aetiology made a reappearance in the UK in autumn/winter 2007. The condition, first noted in the UK in 1939 and first reported in 1942, was identified again in 1985 and 1986 as the cause of multiple deaths in grazing horses in the UK (Hosie and others 1986, Whitwell and others 1988). Since then it has only been seen very sporadically in the UK.

It has also been recognised in European countries: Germany in 1995, Belgium in 2000 and France in 2002. Some of these countries experienced large numbers of deaths from atypical myopathy. Atypical myopathy is more common in young horses and is associated with inclement weather.

Read More : [External Link](#)

## BIOPSY TIPS - Muscle

- Choose an area which has not been previously biopsied or had previous unrelated disease and the biopsy should be taken from the central body of the muscle where possible to avoid the collection of too much fibrous connective tissue .
- Multiple biopsies are preferable to a single biopsy especially if the disease is multifocal, generalised or symmetrical.
- Muscle should be pinned to a piece of card at each end without stretching and fixed in 10% formalin and held for at least 1 hour before being transported.

## OUR NEWS

### New Client Pack Available:

We have produced a new client pack aimed mostly for new clients but if you wish to get one please contact us [Link](#).



### AVS RSS new feed:

We have our own RSS news feed to keep up to date with news on AVS services.

## OUR DETAILS

Abbey Veterinary Services  
89 Queen Street  
Newton Abbot  
Devon  
U.K.  
TQ122BG

[admin@abbeyvetservices.co.uk](mailto:admin@abbeyvetservices.co.uk)

Tel: +44 (0)1626 353598  
Fax: +44 (0)1626 335135

Where we are: [Multimap Link](#)

## DOWNLOADS

- [Submission Forms](#)
- [Postal Labels](#)