



Abbey Veterinary Services

DIAGNOSTIC HISTOPATHOLOGY AND CYTOLOGY

Clinicopathological Newsletter

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CASE OF INTEREST

A case of T-Zone lymphoma in a crossbred dog.

By Richard Fox, Veterinary Pathologist

Case donated by Judith Hargreaves, Veterinary Pathologist.

A nine year old crossbred dog presented with moderately enlarged submandibular and minimally enlarged popliteal lymph nodes. Initially, four months previously, only the submandibular lymph nodes were enlarged. The dog was otherwise clinically well.

Fine needle aspiration (FNA) was performed on both submandibular lymph nodes and the left popliteal lymph node. Cytopathological examination was performed. The preparations had a good cell harvest and good cellular preservation. Preparations were composed mostly of medium sized monomorphic lymphocytes with only a minimal population of small well differentiated lymphocytes and large lymphocytes/lymphoblasts. Cells had a small amount of basophilic, granular cytoplasm. Nuclei were round and monomorphic with a size of one and a half times the diameter of an erythrocyte (10µm). Nuclei were non-cleaved and lacked distinct nucleoli (Figure 1). Findings represented a relatively pure population of cells which suggested the presence of lymphoma and given the cell size and lack of mitoses, suggested a low or intermediate lymphoma. Surgical biopsy was then advised to confirm the cytopathologic interpretation.

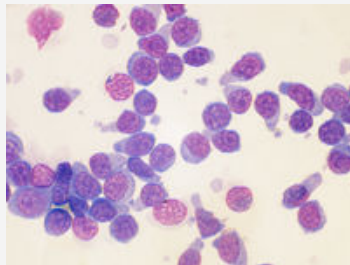


Figure 1. Cytopathological preparation identifying a monomorphic population of medium sized lymphocytes and rare small lymphocytes. Cells have moderate amounts of basophilic cytoplasm (x40 obj.). Rapid Romanowsky Stain.

Surgical excision of the left popliteal lymph node was performed and submitted for histopathological examination. Histologically the normal lymph node architecture was disrupted but largely preserved. The subcapsular and medullary sinuses were markedly dilated. The medullary parenchyma was markedly reduced. In the cortex, occasional residual follicles were present with fading germinal centres. Many of these were peripheralised and lay directly beneath the capsule. The paracortex was expanded by a monomorphic population of lymphocytes. These were medium sized (approximately 13µm in diameter) and had round or indented nuclei (approximately 10µm in diameter) with single or multiple small chromocentres. They had moderate amounts of basophilic, granular cytoplasm. The mitotic index was 1. A diagnosis of indolent lymphoma was made and the morphology was consistent with T-Cell Zone lymphoma.

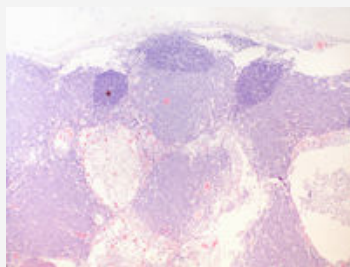


Figure 2. Histological section of lymph node, under low magnification, identifying dilated medullary lymphatic sinuses and peripheralised atrophic (subcapsular) lymphoid follicles with the cortex replaced by sheets of monomorphic lymphocytes (x5 obj.). HE Stain.

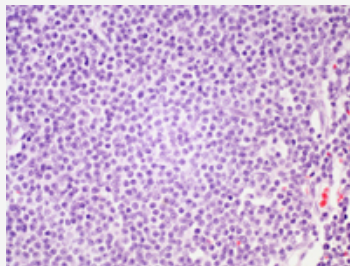


Figure 3. Histological section of the monomorphic lymphoid population. (x10 obj.). HE Stain.

Immunohistochemistry was performed on surgical biopsy material with antibodies specific for T-cell (CD3) and B-cell markers (CD79a and PAX-5). Results indicated that the monomorphic lymphocyte population expanding the paracortex were negatively stained for CD79a and PAX-5 and displayed strong peripheral (membranous and peripheral cytoplasmic) staining for CD3. A diagnosis of T-Zone lymphoma was made.

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JOURNAL Articles (with e-links)

1. Duclos *et. al.* Pathogenesis of canine interdigital palmar and plantar comedones and follicular cysts, and their response to laser surgery. *Veterinary Dermatology* (2008) Volume 19; pp. 134-141. [Link](#)

This paper takes a fresh approach to interdigital pododermatitis and proposes a new pathogenesis as well as successful treatment for the condition. Although anecdotally cysts have often been implicated, in practice, they are seldom identified in surgical biopsies. This paper suggests that the wrong biopsy sites have been selected: the problem initially starts on the ventral surface with follicular dysplasia and cyst formation and leads to draining sinuses erupting on the dorsal surface to which more attention is paid than the underlying ventral problem. The article is lucid and is well illustrated with a very elegant diagram.

Labradors appear to be predisposed to develop this condition, possibly a factor of their body weight and paw conformation. Front paws were more commonly affected than hind paws. Studies suggest they bear more weight. Laser surgery cured the majority of dogs although in some cases 2 or 3 surgical procedures were necessary and 2 dogs had recurrent problems.

The authors do stress that this is a specific subtype of recurrent interdigital dermatitis and that a clear diagnosis of this condition should be made before invasive surgery is considered.

Reviewed article by J. Hargreaves

2. Bomhard *et. al.* Cutaneous neoplasms in pet rabbits: a retrospective study. *Veterinary Pathology* (2007); 44: 579-588 [Link](#)

Reports of rabbit tumours in the literature are few and far between and many relate to laboratory populations or are individual case reports. Given the increasing popularity of the rabbit as a pet and the increasing number of biopsy submissions from them, this paper is to be greeted as a welcome addition to available literature.

The cases were all submitted to the University of Pennsylvania and therefore have a geographical bias. Virally induced Shope fibroma, which featured heavily, has a restricted distribution worldwide, as does Shope papilloma virus. The remaining tumours occurred at incidences comparable with AVS records. Trichoblastoma, lipoma, melanoma and an assortment of sarcomas were most commonly diagnosed along with collagenous hamartoma which is considered non-neoplastic.

Immunocytochemistry was used to identify anaplastic tumours and to subdivide sarcomas. It should be noted that as immunocytochemical antibodies are often raised in rabbits the utility of this as a routine diagnostic tool may be reduced. In this study all the antibodies were raised in the mouse.

Retrospective studies do have the disadvantage that it can be difficult to obtain follow-up information. In general where information was available tumours tended to behave as would be expected from their morphology (benign versus malignant) and extrapolating from other species. Cutaneous melanoma appeared to have a malignant course in most cases and this is also our experience.

Reviewed article by T. Whitbread

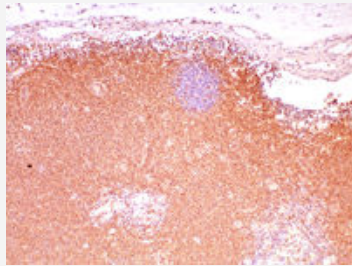


Figure 3. Histological section of lymph node stained immunohistochemically for the T-cell marker CD1. Note the negatively stained pre-existing lymphoid follicle (B-cells) (counter stained with Papanicolaou's) (x10 obj.).

3. Haney SM, Beaver L, Turrel J, Clifford CA, Klein MK, Crawford S, Poulson JM, Azuma C. Survival analysis of 97 cats with nasal lymphoma: a multi-institutional retrospective study (1986-2006). J Vet Intern Med. 2009 Mar-Apr;23(2):287-94. [link](#)

Feline nasal lymphoma (NLSA) is a condition for which no standard of care exists. The hypothesis tested in this article was to assume there was no difference in survival times of cats with NLSA treated with single or multi-modality therapy. The records from 97 cats diagnosed with NLSA were examined. The purpose of this retrospective study was to compare the survival times of cats with NLSA treated with radiation therapy (RT) alone, chemotherapy alone, or RT + chemotherapy and identify potential prognostic variables that affected survival.

Cats were grouped according to therapy: RT + chemotherapy (n = 60), RT alone (n = 19), or chemotherapy alone (n = 18). The survival was calculated by 2 methods. The 1st survival analysis (method A) included all cats, but counted only deaths caused by progressive NLSA. The median survival time (MST), regardless of therapy modality, was 536 days.

The 2nd survival analysis (method B) also included all cats and counted all deaths, regardless of cause, as events. The overall MST calculated for all deaths was 172 days. A negative independent prognostic variable identified was anemia (P < .001), and positive independent prognostic variables were a complete response to therapy (P < .001) and total radiation dose >32 Gy (P = .03).

The paper concluded there were no significant differences in survival times among the 3 treatment groups but these results suggest that the addition of higher doses of RT to a cat's treatment protocol may control local disease and therefore influence survival.

Indolent lymphomas arise on a background of follicular lymphoid hyperplasia, and include follicular, mantle cell, and marginal zone lymphomas (MZL) of B-cell type, and T-zone lymphoma of T-cell type (TZL). The indolent lymphomas of B- and T-cell types share a low mitotic rate and slow rate of clinical progression. Indolent lymphomas in advanced stages retain the same cytomorphic features, but lose the follicle-related architecture, without which their indolent nature may not be apparent on histologic examination. These lymphomas usually arise after a long period of benign hyperplasia and tend to contain capsular and medullary sclerosis.

T-Zone lymphoma (TZL) is characterized by cellular proliferation between fading follicles, rather than surrounding them, as in MZL. Cytologically, TZL is composed of homogeneous population of CD3+ small lymphocytes that have sharp, shallow nuclear indentations, inapparent nucleoli, and a moderate volume of pale cytoplasm. In contrast, T-Zone hyperplasia consists of a heterogeneous population of small lymphocytes, macrophages, and dendritic cells, which imparts a moth-eaten appearance at low magnification.

The small number of reported cases have generally involved peripheral lymph nodes but one involved a mesenteric node. It is a type of lymphoma that is relatively common in the dog but rare in other species. Usually one or two lymph nodes are initially involved and found incidentally on examination. The dog is invariably in good health with normal appetite and activity. No tissues, apart from lymph nodes are known to be involved. Generalized lymph node involvement ensues but greatly enlarged nodes often retain their zonal architecture. Conservative therapy is recommended as owners perceive the dog to do as well without chemotherapy. Apparent long survival times have been noted but little prognostic data is available.

References:

1. Valli VE, Vernau W, de Lorimier LP, Graham PS, Moore PF. Canine indolent nodular lymphoma. Vet Pathol. 2006 May;43(3):241-56.
2. Mature (Peripheral) Nodal T-Cell (T-Zone) Lymphoma. in Veterinary Comparative Hematopathology, 1st edition (2007), Victor E. Valli pp. 295-302.

LATEST NEWS

Soy May Aid In Treating Canine Cancers

Researchers have found that a commercially available form of genistein called GCP was effective in killing canine lymphoid cells in a laboratory setting, and that GCP is "bioavailable" in canines - meaning it is absorbed into the bloodstream where it can affect cancer cells in the body. The researchers hope that their findings will lead to the use of GCP for their canine patients in conjunction with traditional cancer treatments like chemotherapy.

"Humans have been using soy in conjunction with traditional chemotherapy for some time as a chemo potentiator," Dr Suter says. "This means that the GCP makes the chemotherapy work more efficiently and faster, which translates to less stress on the patient and less money spent on chemotherapy."

The researchers' findings were published in [Clinical Cancer Research](#).

SIDE STORY

ProLabs Launches USDA-Approved LTCI To Aid In Treatment Of FeLV And FIV

LTCI (Lymphocyte T-Cell Immunomodulator) is an approved treatment aid for cats infected with Feline Leukemia Virus (FeLV) and/or Feline Immunodeficiency Virus (FIV) and the associated symptoms of lymphopenia, opportunistic infection, anemia, granulocytopenia, and thrombocytopenia.

The long-term benefits of treatment have not been clinically established. However, several animals in the field trial that received monthly or bimonthly injections have remained symptom free for long periods. Two patients in the trial also became negative for virus by PCR analysis of bone marrow aspirate.

Lymphocyte T-Cell Immunomodulator has received a conditional license from the United States Department of Agriculture. Additional efficacy and potency studies are in progress.

For further information on this topic visit: www.prolabsanimalhealth.com.

CYTOLOGY TIPS

We encourage our clients to obtain several cytology preparations and stain at least one for client side examination. The remainder will then be stained, on receipt, to our preferred protocol. The following may however be of use:

Avoiding the most common staining problems - quick tips

- Use new fresh slides, fresh, well FILTERED staining solutions and change then frequently if under heavy use. Container should be kept in an air tight container when not in use to prevent evaporation.
- Stain Cytologic preparations immediately after AIR DRYING.
- Take care not to touch the slide surface or smear at anytime. and try and use powder free gloves to prevent squame, bacterial or fungal contamination.

MESSAGES

SEMINARS

We have recently been asked to give clinicopathological and pathological seminars by groups of practices and specialist groups.

If you have a request for us to give a talk on a particular subject, especially if you have a specialist interest or are a member of a specialist referral centre we would like to hear from you.

We have a team of very experienced pathologists with a broad knowledge of disease in a wide variety of animals. Many of our pathologists are accustomed at presenting talks. Just Let us know!

OUR DETAILS

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