SENSITEST
CANINE LYMPHOMA BLOOD TEST (cLBT)

LYMPHOMA REMISSION MONITORING

INNOVATION IN ANIMAL HEALTHCARE
CANINE LYMPHOMA

Lymphoma is the most common malignancy affecting dogs, accounting for approximately 20% of all canine tumours and having an estimated annual incidence of approximately 25 per 100,000 dogs. The occurrence of lymphoma increases with age, having a median age of onset around seven years old. It can be seen in any dog, although some breeds show a particularly high incidence including Golden Retrievers, Boxers, German Shepherds and West Highland Terriers. It is well established that lymphoma is one of the more treatable cancers and that earlier diagnosis and treatment will give a better prognosis.

DIAGNOSIS OF CANINE LYMPHOMA

The Canine Lymphoma Blood Test (cLBT) simply requires serum from 2ml of whole blood. The test measures the levels of C-reactive Protein (C-RP) and Haptoglobin (HAPT) using an ELISA assay and colourometric assay respectively, then combines these readings with the age, sex and presence of lymphadenopathy with a unique algorithm.

It is a minimally invasive procedure that can be used as a precursor to histological diagnosis of the disease. Many vets use the cLBT in conjunction with, or as an alternative to a fine needle aspirate and it can be utilised in diagnostic workup when lymphoma is suspected due to a wide range of presenting conditions. The test can also be used to monitor confirmed lymphoma patients during treatment and remission.

Due to the high risk of recurrence and consequent problems, close monitoring of dogs undergoing chemotherapy is important. The same is true for dogs that have entered remission and ceased treatment. It is believed that re-induction or rescue therapy may be more effective when recurrence is detected in its early stages. Monitoring for disease remission/recurrence is usually performed by palpation of peripheral lymph nodes. However, this can be a very subjective procedure which is only capable of detecting gross changes in peripheral lymph nodes. Biochemical methods which look for circulating biomarkers of the disease have the potential to provide greater objectivity whilst also detecting changes which precede peripheral lymphadenopathy.

The canine Lymphoma Blood Test has therefore been developed to assist veterinarians in the diagnosis and monitoring of lymphoma for both remission status and early detection of disease recurrence.

REMISSION MONITORING

A blinded retrospective study was conducted to investigate the remission and recurrence responses of dogs being treated for lymphoma with chemotherapy*. The objective of the study was to compare clinician’s assessment using palpation to a multivariate serum biochemical test based on acute phase proteins (APPs), Haptoglobin and C-reactive protein.

- Canine population: 57 (33 Female, 24 Male)
- Period of sample collection: 2008-2012
- Age Range: 2.5 – 14 years, median: 8 years


“I thought the cLBT test was a great test for monitoring levels and would highly recommend it”

Helen McCrorie - Holly Bank Veterinary Centre, Cheshire
**REMISSION STATUS OF PALPATION VERSUS cLBT**

Percentage of samples from the total of 57 dogs showing remission status (expressed as partial remission - PR) or progressive disease (PD) status as assessed by the veterinarian at the time of sampling to the cLBT score at the same time point for each dog. Below each time period is the number of samples assessed at that point. Error bars illustrate 95% confidence intervals.

**TIME TO PROGRESSION ON B-CELL AND T-CELL LYMPHOMA**

Kaplan Meier graph of survival of the studied canine population whether a dog was diagnosed with B or T cell lymphoma.

**IN REMISSION PRE-RELAPSE SAMPLES WITH cLBT VERSUS APPEARANCE OF PERIPHERAL LYMPHADENOPATHY**

Mean cLBT scores obtained at time points prior to the appearance of peripheral lymphadenopathy. Green indicates complete remission status with cLBT <1.93, amber indicates partial relapse with 1.93 ≤ cLBT <3.29 and red indicates progressive disease with cLBT ≥3.29.
Dogs showing very high cLBT values at the time of diagnosis lived for significantly shorter times than those dogs that had lower week 0 cLBT values.

The lower the cLBT value achieved during treatment, the greater the survival time. Dogs which achieved a minimum cLBT value of <1.93 lived approximately three times longer (54.9 weeks mean survival time) compared with those that did not achieve a cLBT value below this “complete remission” threshold. Furthermore those that achieved complete remission with a very low cLBT score of <0.83 survived 62.5±11.4 weeks.

**CONCLUSIONS AND ADVANTAGES**

- In remission patients that gave a low cLBT score during treatment of lymphoma show significantly increased median survival times
- cLBT may be useful as a prognostic tool before treatment
- cLBT could help support vets with less experience in monitoring chemotherapy patients
- A simple blood test
- Early relapse detection
- No sedation required
- Remission monitoring package now available providing a 22% discount on the combined purchase of 3 tests.

“After a dog completes chemotherapy, routine monitoring is recommended. But if a dog has a long remission, the owner can get tired of coming back every month for recheck exams and monitoring for relapse. Unfortunately clients often book a recheck visit when the relapse is advanced and the dog is feeling unwell. The cLBT is a useful test to keep a closer eye on these cases; we can then proactively schedule a recheck appointment sooner if the test is positive. I have had cases where the cLBT precedes the enlarged lymph nodes and the clinical relapse, allowing me to recommend a recheck sooner and confirming relapse earlier than I could without the test”.

Sue Ettinger, DVM, Diplomate ACVIM (Oncology) - New York, USA.
SAMPLE COLLECTION

• Take 2ml of whole blood in a serum gel tube and allow to clot at room temperature.

• Centrifuge sample to obtain 1ml serum, and place into an appropriate transport tube (plain serum or serum gel tubes preferred).

• Wrap in cotton wool, insert into a bio-hazard bag and place in a SENSITEST submission box or other protective packaging. Sample can be chilled but not frozen.

• Send by post using the freepost envelope provided within the submission box (UK only).

RESULTS

Results will be made available by email (or facsimile/post if requested) within 24 hours of receiving the sample. The cLBT ranks the remission status from 0 to 5, where 0 indicates complete remission and 5 equates to out of remission. For each sequential sample we will provide you with an updated graph. An example of a canine lymphoma test result is shown below. For more information on results interpretation, please see our ‘Guidance notes for the SENSITEST® canine lymphoma blood test for remission monitoring’. Our customer services team are on hand to respond to any enquiries by telephone or email.

NOW AVAILABLE
REMISSION MONITORING PACKAGE
PACK OF THREE TESTS £89
(SINGLE TEST PRICE £38)

For more information contact our customer services team.

“Any test which helps further predict survival and remission times will be of great benefit to our clients. Also, being able to more accurately assess remission status and early relapse may help us devise patient specific chemotherapy regimes in the future.”

Simon Tappin, MA VetMB CertSAM DipECVIM-CA MRCVS – Dick White Referrals, UK.
A BETTER LEVEL OF CARE

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