FINAL REPORT

Evaluating Imaging Technique for Head and Neck Tumors

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RESULTS: Novel imaging successful at determining lymph node metastasis for most head and neck tumor types in dogs.
Morris Animal Foundation-funded researchers from Colorado State University found that lymphotropic nanoparticle enhanced magnetic resonance imaging (LNMRI) is a clinically relevant method for diagnosing cancer spread to lymph nodes in dogs with head and neck tumors.

When people or animals are diagnosed with cancer, prior to developing a treatment plan, it is important to determine if the cancer has spread. One of the most common sites for cancer spread is the local lymph nodes. Lymph node metastasis often means a worse prognosis and/or may require a more aggressive treatment plan for the patient.

In this study, the Colorado State team compared LNMRI to other noninvasive methods for diagnosing cancer spread to the lymph nodes. Twenty-four dogs diagnosed with various head and neck tumors were enrolled in the study. The team found for most neck and head tumor types, LNMRI performed better than many other noninvasive diagnostic methods in the study dogs.

The one tumor type of which LNMRI couldn't reliably detect lymph node metastasis was mast cell tumors. This may be attributed to how mast cell tumors metastasize to lymph nodes. Unlike other tumors, mast cell tumors infiltrate into the channel of the lymph node initially, then in the later stages start to destroy larger lymph node sections. Most other head and neck tumor types will efface or destroy all or part of the affected lymph node early in the course of the disease. Because of mast cell tumor cancer behavior, LNMRI did not accurately detect early stages of metastasis, giving a false impression that the lymph node was normal.

Findings from this study identified an additional way of determining if a cancer has spread to local lymph nodes for many head and neck tumor types in dogs, excluding mast cell tumors. Researchers hope LNMRI will be a valuable new tool for veterinary oncologists to help guide prognostic and therapeutic decisions for canine cancer patients with lymph node metastasis.

PUBLICATION PENDING
Lymphotropic Nanoparticle MRI for the Diagnosis of Lymph Node Metastasis (*Veterinary Comparative Oncology*, in review)

Thanks to the generous sponsors of this study!