



Assessing How a Protein Helps Hemangiosarcoma Cells Survive Erin B. Dickerson, PhD, University of Minnesota

Hemangiosarcoma, a highly metastatic and incurable cancer, can affect dogs of any age and breed, though its prevalence is particularly high in Golden Retrievers, Portuguese Water Dogs and German Shepherd Dogs. This cancer is particularly devastating because small ruptures may occur in growing tumors causing blood loss. Often, related clinical signs, such as lethargy and weakness, are so subtle that they may go unnoticed by owners. Eventually, larger or rapidly growing tumors may rupture, resulting in severe bleeding, collapse, shock and death. Despite many attempts to find effective treatments, the survival rate for dogs with hemangiosarcoma has remained relatively unchanged for the past three decades. Current treatments, including surgery followed by chemotherapy, rarely extend life beyond 6 or 7 months from the time of diagnosis.

Recent evidence suggests that populations of cancer stem cells in hemangiosarcoma and other cancers give rise to tumors, promote tumor growth and are the main culprits behind drug resistance and disease recurrence. 2Funded by Morris Animal Foundation, researchers at the University of Minnesota are examining how CSF-1R, a marker present on the surface of some hemangiosarcoma stem cells, may contribute to the maintenance and survival of these cells in tumors. Researchers have found two subpopulations of CSF-1R, one of which appears to store the chemotherapy drug doxorubicin. This may explain why it is also more resistant to doxorubicin. They have also found that the two marker subpopulations may depend on each other for survival.

The next phase of this study will involve further evaluation of the two subpopulations of CSF-1R, including how they depend on each other and the drug sequestration properties they display. This information could prove useful in developing therapeutic targets. The researchers will also begin to evaluate how a CSF-1R inhibitor affects survival of this devastating disease.

The development of new treatment strategies for hemangiosarcoma would be welcome to veterinarians and their patients suffering from this heartbreaking cancer. Studies such as these provide hope that survival rates can be increased, and that pets diagnosed might one day be offered the opportunity for prolonged good quality life with their families. (D13CA-062)