

Hemangiosarcoma

Scientists are looking for pre-disposing factors for hemangiosarcoma so that pet owners can screen those animals that have a higher risk of developing the disease.

by Erika Werne

A diagnosis of cancer is a frightening thing, whether you're receiving the information about yourself, or a loved one. When that loved one is your dog, it can be all the more confusing, since they can't tell you where it hurts. A recent poll of parent clubs determined that cancer in general is the greatest health concern for owners and breeders. That same poll listed hemangiosarcoma specifically as the second greatest health concern.

Hemangiosarcoma is a type of cancer that begins in the cells that

line blood vessels. Tumors usually develop in the spleen, heart, or liver, although they can also be found in the skin, bone, kidney, brain, and other locations. Hemangiosarcoma is almost always malignant, and tends to develop slowly, but spread rapidly, so that clinical signs are often not noticeable until the tumors have metastasized and/or ruptured, causing acute shock and collapse.

Clinical signs of hemangiosarcoma include loss of appetite, arrhythmias, weight loss, weakness, lethargy, collapse, pale mucous membranes, and/or sudden death. The most severe signs are caused from acute blood loss. These can vary from an enlarged abdomen due to hemorrhage to bleeding into the lungs or the pleural space (outside the lungs) that compromises breathing, to bleeding into the heart sac that prevents the heart from beating normally. Metastasis is most commonly to the liver, stomach lining, lungs, or brain.

The first line of treatment, whenever possible, is removal of the tumor with the affected organ, such as with a splenectomy. The standard of care includes chemotherapy as a follow-up to surgery. Unfortunately, visceral hemangiosarcoma (the type that

occurs in organs other than the skin) is most often fatal even with treatment, usually within weeks to months. However, approximately 10% to 15% of dogs have excellent response to treatment with durable remission and extended survival. We do not know why some tumors respond so well while most fail. Hemangiosarcomas of the skin may be successfully treated if the tumor hasn't metastasized to other internal organs.

In an effort to turn the tide in the outcome of this horrible diagnosis, the AKC Canine Health Foundation has approved nearly \$900,000 in grant funds to support research focused on three aspects of hemangiosarcoma. These different approaches to solving the hemangiosarcoma puzzle often overlap - which allows for a better chance of finding answers and letting our dogs live longer.

Investigators began by researching the biological behavior of hemangiosarcoma. This means that they looked at the tumors to see how they behaved under different circumstances. Knowing how a tumor behaves can provide insight into which treatments are most effective, and can also provide valuable information for the development of novel therapies

VITAL STATISTICS for HEMANGIOSARCOMA

- CHF currently has three active grants approved at more than \$210,000
- CHF has funded a total of 11 hemangiosarcoma grants for nearly \$900,000
- In a poll of AKC Parent Clubs, hemangiosarcoma was listed as the #2 health concern

that can target that specific tumor.

Genetic research of hemangiosarcoma looks for more than a “genetic cause” of cancer in a particular breed. Investigators also search for mutations in tumor suppressor genes (genes that prevent the division of cells or promote cell death) and/or oncogenes (genes that promote cell division and survival). These changes in genetic makeup can provide information on genetic risk factors (risk factors that have nothing to do with environmental triggers), early detection and diagnosis and effectiveness of treatments. Hopefully, this research will eventually lead to determining

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the prognosis or outcome of treatments, and potentially even treatments themselves.

Research into new, more effective therapies for hemangiosarcoma includes more than just treatment of the

actual tumors. Scientists are also looking for ways to prevent tumors from developing in dogs with a higher risk (a vaccine of sorts). Novel treatments in development also include gene therapies and immunotherapy. Gene therapy can be used when a mutation is known to exist. In most cases of genetic disease, the correct gene (without the mutation) is inserted into a cell or tissue to replace the mutant gene. Corrective gene therapy is unlikely to succeed in cancer because every cell in the tumor would have to be provided with the gene in a stable manner. So scientists are instead working to develop approaches that deliver genes to a restricted number of cells as a way to activate the immune system or to alter the local tumor environment as a way to control the disease. Immunotherapy is a strategy based on the concept of altering the patient’s immune system so that it fights cancer cells as it would a bacteria or virus. Targeted therapies use special delivery systems to specifically target the tumor cells only, thereby preventing damage to surrounding healthy cells.

Studies have already shown that there are certain breeds that are at higher risk for developing hemangiosarcoma. It can, however,

HEALTH FACTS and HEMANGIOSARCOMA

- Hemangiosarcoma affects dogs of all ages and breeds, including mixed breed dogs
- Hemangiosarcoma is malignant, and most often fatal, even with treatment
- Researchers are looking for better treatment options for hemangiosarcoma

affect any dog, purebred or mixed breed alike. Hemangiosarcoma is currently a fatal disease. By funding research, the AKC Canine Health Foundation hopes to provide owners and breeders with a means for earlier, more accurate diagnosis, more effective treatments, and ultimately prevention strategies. You can help by participating in clinical trials (visit the Veterinary Cancer Society website at <http://www.vetcancersociety.org> for a list of active trials) and/or providing financial support to the Canine Health Foundation efforts (visit www.akcchf.org to make a secure online donation).

If you would like additional information about the research the CHF is funding on hemangiosarcoma, visit our website at www.akcchf.org and click on “Research.”