

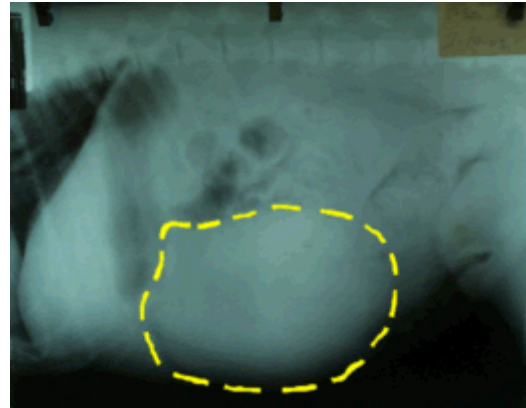
## INTRODUCTION

Hemangiosarcoma is one of the most malignant forms of cancer in dogs.

- It is a cancer of the cells that line the blood vessels (endothelial cells) and therefore can be found in any part of the body.
- The most common primary site for hemangiosarcoma is the spleen. When the primary tumor occurs in less typical locations of the body including the liver, heart, subcutaneous, or intramuscular tissue, these tumors typically behave similarly to splenic hemangiosarcoma. Survival rates, therapy options, and anticipated response rates to therapy are also comparable.
- Bleeding at any of these sites can be rapidly life threatening. All sites are associated with a high risk for spread to other parts of the body, with the exception of cutaneous tumors restricted to the dermis (top layer of skin).
- Splenic hemangiosarcoma is primarily found in older large breed dogs, with German Shepherds and Golden Retrievers being the most common breeds afflicted.

## CLINICAL SIGNS

- Splenic hemangiosarcoma is dangerous because there are very few signs of the cancer until either the spleen ruptures.
- Occasionally, this cancer may be spotted incidentally on a routine abdominal radiograph or ultrasound; however, on review of recent history, signs of transient lethargy/malaise and polyuria and polydipsia are frequently noted.
- In fact, many dogs that are diagnosed with splenic hemangiosarcoma present with an acute history of collapse, pale mucous membranes, and blood in their abdomen from a ruptured mass.
- At this point, emergent surgery is indicated to control the bleeding, remove the spleen, and biopsy any organs that may be affected (such as the liver).



## DIAGNOSIS/STAGING

- Splenic masses can sometimes be seen with abdominal radiographs, but are more often diagnosed with an abdominal ultrasound. In either case, once a splenic mass has been detected, it is in the patient's best interest to undergo further diagnostics to determine the extent of disease if stable.
- Chest radiographs are recommended to look for any evidence of pulmonary metastasis.
- Bloodwork is also recommended and consists of a complete blood count assessing the red and white blood cells and platelets, a chemistry panel to look at organ function, a urinalysis, and clotting times.
- New tests are being developed to look for signs of hemangiosarcoma early in the disease course; however, these tests are not available for commercial use at this time.

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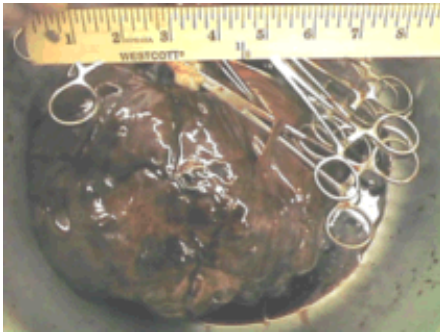
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## TREATMENTS

1. Surgery is the primary treatment for any bleeding splenic mass.
  - This is preferably done before the mass or masses rupture, when the patient is stable. Unfortunately, it often has to be done on an emergent basis after the spleen has ruptured and when the patient is in a critical state.
  - With surgery alone, the survival time with hemangiosarcoma is between 2 - 4 months.



2. Conventional Chemotherapy may be considered to improve outcomes and help to improve your pet's quality of life.
  - The primary chemotherapy drug used to treat hemangiosarcoma is doxorubicin (also known as Adriamycin).
  - We have empirically found that approximately 50% of dogs with splenic hemangiosarcoma will have disease recurrence within 1 month of surgery (unpublished finding). We therefore recommend re-staging 1 month after surgery to assess for disease spread. This assessment will then help provide an indicator of overall prognosis. We believe that 25% of dogs receiving chemotherapy will experience a treatment benefit from chemotherapy, resulting in a survival time of one year.
  - Doxorubicin has similar side effects to other chemotherapy agents but is also associated with allergic reactions, tissue necrosis if extravasated (given outside the vein), and can cause heart toxicity at higher, cumulative doses.

3. Metronomic chemotherapy (Low-Dose, Daily Chemotherapy): This involves two drugs (piroxicam and cyclophosphamide) that are administered daily and have been found to increase remission period in patients that are free of gross disease post splenectomy.
  - We generally recommend this therapy after your pet has finished the conventional chemotherapy described above or as a less aggressive, more cost-effective alternative.
  - There are minimal side effects (primarily gastrointestinal), which are reversible once these medications are discontinued or given less frequently.
  - We recommend regular rechecks with bloodwork, abdominal ultrasound, and chest radiographs to monitor for disease progression and treatment intolerance.

Due to the lack of highly effective therapies for this serious cancer, there is great interest in research for new drugs that may help to treat dogs with hemangiosarcoma. Hopefully these new therapies will provide longer survival times while also preserving a good quality of life. Though they are still in the testing phase, some seem to show promise in controlling the cancer.

## CONCLUSION

Hemangiosarcoma is an aggressive disease that is difficult to control. Fortunately, there are treatment options available to help extend your pet's life. Our main goal when treating your pet is to provide as much good quality time for all of you while providing you the highest quality of veterinary care.

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