

## BASIC INFORMATION

### Description

Hemangiosarcoma is a highly malignant tumor of blood vessels. It commonly arises in the spleen, an organ in the abdomen. Growth of a mass on the spleen may go undetected until it becomes quite large or ruptures, which may result in life-threatening bleeding into the abdomen. Hemangiosarcoma has a high propensity to spread quickly to other organs, such as the heart, lungs, and liver. Dogs at risk include middle-aged to older, large-breed dogs, especially the German shepherd dog, Labrador retriever, and golden retriever. Splenic hemangiosarcoma is quite rare in the cat.

### Causes

The reason this tumor develops is unknown. Hemangiosarcomas can form in any tissue that contains blood vessels. The most common sites include the skin, spleen, and heart. Less common sites include the central nervous system (brain and spinal cord), conjunctiva of the eyes, lungs, and liver.

### Clinical Signs

Clinical signs are usually related to internal bleeding that arises from rupture of the splenic mass. Signs may include depression, weakness or collapse, pale gums, abdominal distention, and elevated heart and respiratory rates from shock. If bleeding stops spontaneously (on its own), the signs may subside. However, signs often soon recur due to repeated episodes of bleeding. The bleeding can be life-threatening and can result in death if untreated.

### Diagnostic Tests

An abdominal mass may be discovered during a routine physical examination. Unexplained anemia found on a routine laboratory test may raise the suspicion of a hemangiosarcoma, especially in a dog of a compatible breed and age. X-rays and an ultrasound are often needed to confirm the presence of a mass and whether it involves the spleen, as well as to evaluate other abdominal organs for potential involvement or spread of the tumor.

Chest x-rays and an echocardiogram (heart ultrasound) may be recommended to check for evidence of tumors in the lungs and heart. Often, a biopsy is needed to confirm the diagnosis, since there are various tumors that may arise in the spleen, some of which are benign (such as hemangioma). It is not often possible to determine from routine tests whether the tumor is benign or malignant, so biopsies are commonly done at the time of surgery

to remove the mass. Further tests may be recommended to rule out other diseases that can cause anemia and clinical signs.

## TREATMENT AND FOLLOW-UP

### Treatment Options

If no evidence is uncovered that the tumor has spread, then removal of the mass and the spleen (splenectomy) may be a good treatment option to stop the bleeding episodes. The splenectomy is sometimes performed as an emergency procedure after the animal has been stabilized. Efforts to stabilize the animal usually require hospitalization and may include intravenous fluids and blood transfusions.

Surgery is not considered a cure for hemangiosarcoma, because it is a highly malignant disease and usually spreads to other sites in the body. If the mass is benign, surgery may be curative and eliminates the risk of ongoing blood loss.

Once a diagnosis of hemangiosarcoma is made by histopathology, chemotherapy may be considered to slow the spread of disease to other body systems. Current chemotherapy protocols include the drug, doxorubicin (*Adriamycin*), which is given intravenously every 3-4 weeks. Chemotherapy without surgical removal of the splenic mass is not usually done, because chemotherapy does not eliminate the ongoing risk of internal bleeding.

### Follow-up Care

Most animals are hospitalized for a few days after surgery. Some develop irregular heart rhythms (cardiac arrhythmias) after splenectomy, so careful monitoring and additional medications may be required. Laboratory tests are often repeated to ensure that the anemia is resolving.

Laboratory tests are also periodically done to monitor for recurrence of anemia, which may indicate the tumor has spread. X-rays and ultrasounds may be repeated to search for evidence of metastasis (spread) of the tumor. Laboratory tests are also needed to monitor the side effects of the chemotherapeutic agents used.

### Prognosis

Hemangiosarcoma is an aggressive cancer, with survival times of 1-4 months with surgery alone. Additional chemotherapy improves survival times over those achieved with surgery alone. Removal of the spleen spares the patient a sudden death from a bleeding episode, but almost all animals eventually succumb to the cancer.