HEMANGIOSARCOMA

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Hemangiosarcoma (HSA) presents in two distinct forms with very different biologic behaviors; cutaneous and non-cutaneous. Synonymous terms for HSA include hemangioendothelioma and angiosarcoma.

NON-CUTANEOUS HSA

Non-cutaneous HSA represents about 5% of all canine neoplasms but is rarely seen in the cat. Non-cutaneous HSA appears most commonly in the spleen, liver, right atrium, subcutaneous and intramuscular sites, but can arise anywhere, including bone. Over-represented breeds include the German shepherd and the golden retriever. Of all splenic masses, 75% will be tumor and of the tumor lesions, 75% will be HSA. In other words, 50% of all splenic masses will not be HSA and lend themselves to good disease control by splenectomy. The primary differential for non-tumor masses of the spleen is hematoma. Hemangiosarcoma is the most common heart-base tumor, most frequently associated with the right atrium or auricle. Hemangiosarcomas arise from vascular endothelium and often appear grossly as a hematoma with rupture and hemorrhage likely. Non-cutaneous HSA is highly metastatic with an estimated 70-80% having micrometastatic disease present at the time of diagnosis. Typical metastatic sites include lung, liver and brain.

Dogs with non-cutaneous HSA often present following a bleeding episode, or may present with an incidental finding of a palpable mass. Cases of liver or Splenic HSA may have a history of sudden collapse or weakness followed by recovery. This may represent acute hemorrhage (collapse) followed by autotransfusion (recovery). Heart base HSA will often present with clinical signs of cardiac tamponade due to hemorrhage into the pericardial sac. Aggressive staging of suspected cases of HSA is essential. Three-view chest radiographs, cardiac and abdominal ultrasound are recommended, specifically looking for metastatic lesions. Multiple metastatic lesions denote a poor prognosis, however, few or solitary lesions may warrant surgical exploration with removal or biopsy. Benign hepatic or splenic lesions can often exist in older patients with primary HSA and these can not be differentiated using ultrasound alone. Hemogram changes are common with HSA including anemia, thrombocytopenia, red cell fragmentation and indicators of disseminated intravascular coagulopathy. An effusion that does not clot may be supportive of HSA, but tumor cells are rarely seen. Aggressive treatment of highly suspect cases of HSA may be in the patients best interest, bypassing histologic confirmation. This is, of course, dependent on owner factors. If a biopsy is attempted, multiple sample submission is recommended as large portions HSA masses are often hematoma and can be difficult to definitively diagnose histologically with small samples.

Appropriate treatment for non-cutaneous HSA begins with surgical removal of the primary site. For splenic lesions, complete splenectomy is recommended. The clinician must be cognizant of the possibility of cardiac arrhythmias following splenectomy. These are generally self-limiting and rarely require intervention. Care must be taken during splenectomy to avoid tumor rupture (if it has not already occurred). HSA cells can implant within the peritoneal cavity. Suspected metastatic lesions should always be biopsied during surgery. Solitary metastases should be resected if possible, as this will improve overall disease control. Solitary hepatic HSA lesions may be resectable, although multifocal (non-resectable) disease is more commonly seen. Heart-base HSA lesions are rarely resectable and echocardiography may demonstrate degree of heart involvement. Primary auricular lesions may be resectable without demonstrable changes in cardiac function. Care must be taken to assure resection margins are within normal tissue as suturing or stapling through tumor will be of little patient benefit and can result in breakdown and sudden death post-operatively. Thoracotomy and exploration may be warranted in cases of heart-base HSA since pericardectomy can decrease occurrence of cardiac tamponade and palliate patients for a period of time. This also allows visual assessment of resectability. Newer techniques of thoracoscopy may be applicable in these cases for visualization and pericardectomy with decreased patient morbidity. Subcutaneous and intramuscular HSA lesions require aggressive local resection and often involve regional resections such as amputation, chest wall resection, etc.

If the patient can be rendered free of all gross disease surgically, adjuvant chemotherapy for micrometastasis can prolong survival for non-cutaneous HSA patients. Reports of successful use of doxorubicin as a single agent or combinations using doxorubicin, vincristine and/or cyclophosphamide have resulted in extending survival up to 10 months beyond surgery. For dogs not treated, those with widespread metastasis and those treated with surgery alone, even after complete removal of gross disease, the average survival is 2 months or less. A poorer prognosis has been associated with splenic and hepatic lesions which have already ruptured at the time of diagnosis compared to those that remain intact. For cases with unresectable lesions or those presenting with widespread metastasis, gross fractionated radiation therapy may be of palliative benefit. Twenty-four Gy divided into 3 or 4 large fractions to the primary site have been shown to control local disease and symptoms in a small number of cases. Too few cases of cardiac HSA with aggressive treatment have been reported to draw conclusions from. In general, reported survival times are less than 6 months. Survival in non-rectatable cases is dependent on the progression of disease resulting in cardiac tamponade or heart failure.

CUTANEOUS HSA

The skin is a common site for the formation of HSA lesions. Lightly pigmented dogs, especially those exposed to sunlight have an increased incidence of tumor formation, indicating ultraviolet light as a possible cause. Dogs usually present with a raised purple to red mass that may rupture and bleed. Cutaneous HSA differs from other sights in that it is typically non-invasive locally with a very low rate of metastasis. Aggressive staging is usually unnecessary and excisional biopsy will often result in long-term control if not cure. Occasionally, cutaneous HSA lesions will appear high grade, histologically appearing more consistent with non-cutaneous lesions. These lesions should be treated more aggressively, insisting on complete (histologic) resection. The benefit of adjuvant therapy in these cases remains to be determined. Dogs presenting with multiple cutaneous HSA can present a
treatment challenge. Complete surgical resection may not be feasible in these cases. Options include removal of lesions causing clinical problems, regional radiation therapy or potentially the use of retinoids (vitamin A derivatives) to decrease the occurrence of new lesions. The benefit of chemotherapy in these cases to treat standing lesions or as prevention for new tumor development is unknown.

REFERENCES