

Feline Hemangiosarcoma

A Retrospective Study of 19 Cases (2006-2015)

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INTRODUCTION

Hemangiosarcoma (HSA) is a malignant neoplasm derived from precursor vascular endothelial cells. HSA is an **uncommon** neoplasm in domestic animals, being more common in dogs than in cats. For that reason the information that we have about feline HSA is poor. (Johannes, *et al.*, 2007)

OBJECTIVES

Characterize the biological behavior, treatment outcomes, hematological and biochemical changes, prognostic risk factors and survival times of feline HSA.

MATERIALS AND METHODS

Selection of Case: feline cases were selected on the basis of a histological diagnosis of HSA.

Information obtained: data were collected from the medical records including age, breed, gender, tumor site, results of diagnostic test, treatment outcomes, surgical margins, survival time and cause of death. For continuous variables mean, standard deviation (SD), median and range were calculated.

Statistical analysis: the association of postulate risk factors with survival time was determined in a series of Kaplan-Meier product limit survival analyses. A level of significance of **value p <0,05** was used for all statistical tests.

RESULTS AND DISCUSSION

- Middle-aged to older animals (ages ranged from 7 to 17 years, mean was 11,42±2,91 and median was 12).
- No breed or sex predilection were observed.
- There are different types of HSA classified according to their location as cutaneous, subcutaneous, visceral, oral cavity and conjunctival. There is no agreement on the frequency of each form.
- There is no agreement about which are the most frequent cutaneous and subcutaneous HSA locations.
- Some studies and our own results support that the most frequent locations in visceral feline HSA are spleen, liver mesentery, small and large intestine (Clup, *et al.*, 2010; Ogilvie and Moore, 2001, Scavelli, *et al.*, 1985).
- Although right atrium is the third most common site of occurrence of HSA in dogs, primary cardiac HSA in the cat has been poorly reported (Merlo, *et al.*, 2002).
- Kraje *et al.* (1999) reported metastatic disease in animals with cutaneous and subcutaneous HSA, located in lung, lymph nodes, spleen, kidney and eyes. The locations of metastasis reported in our study were spleen, kidney and lung.
- Scavelli, *et al.* (1985) claims that 60% of the cats suffering from visceral HSA developed metastasis. Our results support that the most frequent metastasis sites in visceral HSA were: liver, small bowel, mesentery and colon.
- The treatment of choice is the complete surgical extirpation of the neoplasm. Benefits of intravenous chemotherapy is unclear.
- Comparisons of median survival time based on age, gender, **tumor site**, margins and biochemical changes were not statistically significant (Figure I and III). Comparison of median survival times based on the **presence of anemia instead of normal red blood cells count** was statistically significant (**value p = 0,03**) (Figure II).

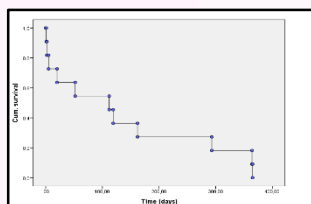


Figure I. Kaplan-Meier median survival time for cats with hemangiosarcoma.

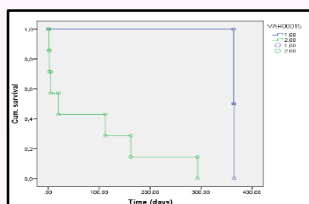


Figure II. Kaplan-Meier median survival time data comparing cats with normal red cells count (blue) and with anemia (green).

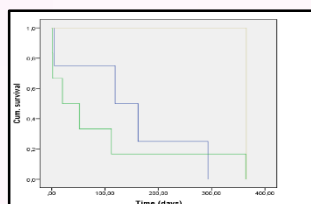


Figure III: Kaplan-Meier median survival time data comparing cats with visceral (green), cutaneous (blue) and other location (yellow) HSA.

Diagnostic test	Results
Hematology	Regenerative and non regenerative anemia. Polychromatic and hypochromatic erythrocytes, Howell-Jolly bodies, anisocytosis, macrocytosis, microcytosis, poikilocytosis, schistocytes and erythroblasts -
Blood smear	Neutrophilic leukocytosis, neutrophilia, leukopenia with neutropenia, leukopenia and lymphopenia. Thrombocytosis and thrombocytopenia.
Biochemistry	Hypoproteinemia, hypoalbuminemia, increased alanine aminotransferase (ALT), reduced and increased blood urea nitrogen (BUN), reduced and increased creatinine. Increased citrate prothrombin time and activated partial thromboplastin time (cit-PT and cit-aPTT)
Thorax and abdominal radiography	Effect Mass Pulmonary metastasis Ascites and pulmonary edema
Abdominal ultrasonography	Masses and metastasis
Cytology	Erythrocytes and exceptionally fusiform neoplastic cells.
Histology	Blood-filled vascular spaces lined by neoplastic endothelial cells.
Immunohistochemistry	Markers such as factor VIII-related antigen allow us differentiate non-well differentiated HSA from sarcomas and telangiectatic osteosarcomas.

Table I- Diagnostic test and results to expect in animals with HSA

CONCLUSIONS

- Most of the claims about feline HSA are controverted because all the information that we have about it comes from retrospective cases studies and published cases. There is discussion on some items. Release a prospective study could be warranted.
 - Cutaneous HSA in cats may have had more aggressive and metastatic behavior than previously thought, because some cats in this study have developed recurrence, metastasis and comparing median survival time based on tumor site showed no statistically significant difference.
 - The visceral HSA diagnosis usually is delayed. It may be the reason why often those animals suffer from metastasis at the time of diagnosis.
 - Anemia is a usual complication of HSA, caused by acute or chronic hemorrhage derived from primary or metastasis rupture and microangiopathic hemolytic disease.
 - Most of the biochemical alterations associated to HSA are caused by the tumor location, or by the hypotension derived from hemorrhage caused by primary or metastasis rupture
- } to perform additional test

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- References:**
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