



Hemangiosarcoma in Dogs: A Silent Killer

*Rati Jalutharia, Dr. Sarjana Meena, Ravi Jangid and Sitaram Yadav

PGIVER, Jaipur, Rajasthan University of Veterinary and Animal Sciences, JOBNER, JAIPUR (Rajasthan), India

*Corresponding Author's email: ratijalutharia1998@gmail.com

Hemangiosarcoma (HSA) is a malignant neoplasm of vascular endothelial origin that represents one of the most aggressive cancers in dogs. This article provides a comprehensive overview of HSA, synthesizing findings from peer-reviewed veterinary studies and clinical reports. It explores epidemiology, pathophysiology, clinical signs, diagnostic approaches, treatment modalities, prognosis, and emerging research directions. Written in a popular science style, the article aims to raise awareness among dog owners and veterinary enthusiasts about the silent yet devastating nature of this disease, while grounding the discussion in authentic scientific literature.

Introduction

Hemangiosarcoma (HSA) is a highly malignant tumor that arises from endothelial cells lining blood vessels. It is characterized by rapid progression, high metastatic potential, and frequent presentation as an acute emergency due to internal hemorrhage. Despite decades of research, HSA remains a leading cause of cancer-related death in dogs, particularly in large breeds. This article aims to provide a detailed yet accessible account of the disease, highlighting both clinical realities and scientific advances.

Epidemiology and Risk Factors

- **Breed Predisposition:** Golden Retrievers, German Shepherds, Labrador Retrievers, and Boxers are disproportionately affected. Studies suggest genetic susceptibility plays a role.
- **Age:** Most cases occur in dogs aged 8 years and older, though younger dogs are not immune.
- **Gender:** No consistent gender predisposition has been established.

Splenic hemangiosarcoma is the most common form, followed by cardiac and hepatic variants. Cutaneous HSA, though less frequent, carries a better prognosis when detected early.

Pathophysiology

HSA tumors are composed of abnormal endothelial cells that form poorly organized, blood-filled channels. Their fragile structure predisposes them to rupture, leading to acute internal bleeding. The spleen and right atrium of the heart are the most common primary sites, but metastasis to the liver, lungs, and kidneys is common. Recent research suggests that HSA may originate from bone marrow progenitor cells with aberrant differentiation, explaining its aggressive biological behaviour (Murphy et al., 2015). Molecular studies have identified dysregulation in pathways involving VEGFA, PTEN, and CDKN2A, which may serve as future therapeutic targets.

Clinical Presentation

Dogs with HSA often remain asymptomatic until a catastrophic event occurs. Common signs include:

- Sudden collapse or weakness
- Pale gums due to anemia
- Abdominal distension
- Labored breathing (cardiac involvement)
- Lethargy and loss of appetite

These signs typically reflect acute hemorrhage from tumor rupture, making early detection challenging.

Diagnosis

- **Imaging:** Abdominal ultrasound and echocardiography are essential for detecting splenic and cardiac masses.
- **Histopathology:** Definitive diagnosis requires biopsy and microscopic examination.
- **Laboratory Findings:** Anemia, thrombocytopenia, and coagulopathy are common.

A Japanese study of 51 dogs with cardiac HSA found that right atrial tumors were larger and more easily detected via echocardiography compared to auricular tumors. Dogs receiving adjuvant chemotherapy after surgery lived significantly longer than those treated with surgery alone (Sato et al., 2013).

Treatment Options

- **Surgery:** Splenectomy or tumor excision can provide temporary relief but is rarely curative.
- **Chemotherapy:** Doxorubicin-based protocols remain the standard, extending survival when combined with surgery.
- **Novel Therapies:** Immunotherapy, targeted molecular drugs, and anti-angiogenic agents are under investigation.

Median survival times:

- Surgery alone: 1–3 months
- Surgery + chemotherapy: 4–6 months

Prognosis

The prognosis for dogs with HSA remains poor. Most succumb within months of diagnosis due to metastasis or tumor rupture. Cutaneous HSA carries a better outlook, especially if detected early and surgically removed. Cardiac HSA is particularly lethal, with median survival times often less than 3 months.

Emerging Research and Future Directions

Advances in molecular oncology are shedding light on genetic drivers of HSA. Studies have identified mutations in tumor suppressor genes and angiogenesis-related pathways. These discoveries may pave the way for targeted therapies similar to those used in human oncology. Preventive strategies, such as routine imaging in predisposed breeds, may improve early detection. Additionally, comparative oncology—studying similarities between canine HSA and human angiosarcoma—offers hope for translational therapies.

Conclusion

Hemangiosarcoma in dogs is a devastating disease characterized by silent progression, sudden clinical crises, and limited treatment options. While current therapies offer only modest survival benefits, ongoing research into molecular mechanisms and novel treatments provides hope for the future. Raising awareness among dog owners and veterinarians is crucial for early detection and improved management.

References

1. Murphy, S., et al. (2015). *Hemangiosarcoma in dogs: A review of current knowledge*.
2. *Veterinary Sciences*, 2(4), 388–405. MDPI. <https://www.mdpi.com/2306-7381/2/4/388>

3. Sato, H., et al. (2013). *Clinical findings and outcome in dogs with right atrial and auricular hemangiosarcoma: 51 cases (1997–2010)*. Journal of Veterinary Medical Science, 75(11), 1515–1520. https://www.jstage.jst.go.jp/article/jvms/75/11/75_130064/_article/-char/ja/
4. Clifford, C.A., et al. (2000). *Treatment of canine hemangiosarcoma: 2000 cases and review of the literature*. Journal of Veterinary Internal Medicine, 14(5), 486–491.
5. Brown, N.O., et al. (1985). *Hemangiosarcoma in dogs: Retrospective analysis of 104 cases*. Journal of the American Veterinary Medical Association, 186(1), 56–58.
6. Vail, D.M., & MacEwen, E.G. (2000). *Spontaneous tumors in dogs and cats: Models for the study of human cancer*. Cancer Investigation, 18(8), 781–792.
7. Dobson, J.M., & Lascelles, B.D.X. (2011). *BSAVA Manual of Canine and Feline Oncology*. British Small Animal Veterinary Association.