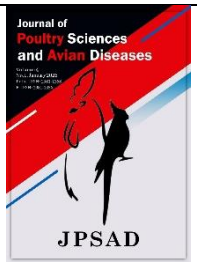
Journal of Poultry Sciences and Avian Diseases

Journal homepage: www.jpsad.com



First report of mixed-type hemangioma in a Yellow Fischer lovebird (*Agapornis fischeri*) in Iran

Yaser Kianfar[1], Morteza Nikzad[1], Pouneh Hajipour[1], Sara Shokrpoor[2], Seyed Mostafa Peighambari[1*]

[1] Department of Avian Health and Diseases, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran
[2] Department of Pathology and Clinical Pathology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran

*** Corresponding author email address**: mpeigham@ut.ac.ir

A r t i c l e I n f o

Article type:
Case Report

How to cite this article:
Kianfar, Y., Nikzad, M., Hajipour, P., Shokrpoor, S., & Peighambari, S. M. (2026). First report of mixed-type hemangioma in a Yellow Fischer lovebird (*Agapornis fischeri*) in Iran. *Journal of Poultry Sciences and Avian Diseases, 4*(X), 1-7.
[URL]x.doi.org/10.61838/kman.jpsad.170

A B S T R A C T

Hemangiomas are benign vascular tumors that are rarely reported in avian species, especially in companion psittacine. This report describes the first documented case of a mixed-type hemangioma in a Yellow Fischer lovebird (*Agapornis fischeri*) in Iran. A 7-year-old bird was presented with a progressively enlarging cervical mass and clinical signs of lateral recumbency. The owner reported episodes of hemorrhage from the mass, leading to severe blood loss. Despite supportive care, the bird died shortly after admission. The excised mass was fixed in 10% buffered formalin and submitted for histopathological evaluation. Microscopically, the lesion demonstrated two distinct vascular growth patterns: small capillary channels lined by uniform endothelium, and larger cavernous sinusoids separated by fibrovascular stroma. These findings were consistent with a mixed-type capillary and cavernous hemangioma. While neoplasms are increasingly diagnosed in aging pet birds, hemangiomas remain rare, and mixed types even more so. This case highlights the importance of histopathological evaluation in exotic species and contributes to the limited literature on vascular tumors in ornamental birds.

Keywords: *Hemangioma, Yellow Fischer lovebird, vascular tumors, histopathology*

1 Introduction

Hemangiomas are benign vascular neoplasms characterized by the proliferation of endothelial cells forming blood-filled vascular structures. These lesions are broadly classified into capillary, cavernous, and mixed types based on vessel size and architecture (Saleh et al., 2023). Capillary hemangiomas consist of numerous small, tightly packed capillary-sized vessels and are generally superficial, whereas cavernous hemangiomas are composed of larger, dilated vascular channels often located deeper within the tissue mixed hemangiomas, though less frequently reported,

Article history:
Received 11 November 2025
Revised 18 December 2025
Accepted 06 January 2026
Published online 20 January 2026

demonstrate histological features of both capillary and cavernous components within the same lesion. While hemangiomas are commonly documented in human infants, they are relatively rare in animals, and their occurrence in exotic species is infrequently described (Sayyed et al., 2024).

In veterinary medicine, hemangiomas have been observed in domestic animals such as dogs, cats, and horses, where they primarily affect cutaneous or subcutaneous tissues (Marr et al., 2021). Among avian species, reports of hemangiomas are uncommon but have been described in ornamental birds, including parrots, canaries, and budgerigars, often affecting the skin or periorbital regions (Zehnder et al., 2016). Histopathological examination remains the gold standard for diagnosis, especially in birds where gross tumor appearance may be nonspecific (Kumar et al., 2016). Although both capillary and cavernous hemangiomas have been individually documented in avian species, reports of mixed-type hemangiomas are exceedingly rare. To the best of our knowledge, the present case represents the first documented report of a mixed-type (capillary and cavernous) hemangioma in a Yellow Fischer lovebird (*Agapornis fischeri*) in Iran.

2 Case Presentation

In January 2025, a 7-year-old Yellow Fischer lovebird (*Agapornis fischeri*) was presented to the Birds Clinic of the Faculty of Veterinary Medicine, University of Tehran with clinical signs of lateral recumbency. Physical examination revealed a prominent mass located on the left side of the neck (Figure 1). According to the owner, the mass had initially appeared approximately 20 days before and had progressively increased in size. The bird had a history of intermittent bleeding from the mass, with at least one episode of acute hemorrhage that resulted in significant blood loss.

Despite supportive care, the bird unfortunately succumbed shortly after presentation. Further examinations revealed no additional masses in any other part of the body. The mass was surgically excised postmortem and fixed in 10% neutral buffered formalin (Chambers et al., 2025). After 24 hours, the fixative solution was refreshed to ensure optimal tissue preservation. The formalin-fixed tissue was subsequently submitted to the pathology laboratory for differential diagnosis and further microscopic examination.

Figure 1. A 7-year-old Yellow Fischer lovebird (*Agapornis fischeri*) with a prominent mass located on the left side of the neck.

3 Pathology

On gross examination, the mass was approximately 1.5 ×1 × 0.8 cm in size. The cut surface revealed a honeycomb pattern of fibrous trabeculae separating blood-filled cavities. Tissue samples of the mass were fixed in 10 % neutral buffered formalin, routinely processed, dehydrated, embedded in paraffin wax, sectioned at 5 µm in thickness (Rotary Microtome RM2 145; Leica, Wetzlar, Germany) and stained with Haematoxylin and Eosin.

Histopathological investigation demonstrated well-demarcated mass with two growth patterns: capillary and cavernous (Figure 2). In capillary pattern, the tumor was composed of small sized vascular spaces filled with erythrocytes. These capillaries were lined by a single layer of uniform endothelial cells supported in a little fibrous connective tissue stroma (Figure 3). In cavernous pattern, the tumor had large, thin-walled vascular spaces or sinusoids that were lined with a single layer of endothelium and were separated by a fibrovascular stroma. Lumina of these channels were often filled with red blood cells (Figure 4). No mitotic figures and atypia were observed (Figure 2). Based on microscopical findings, the mass was diagnosed mixed type of capillary and cavernous hemangioma.

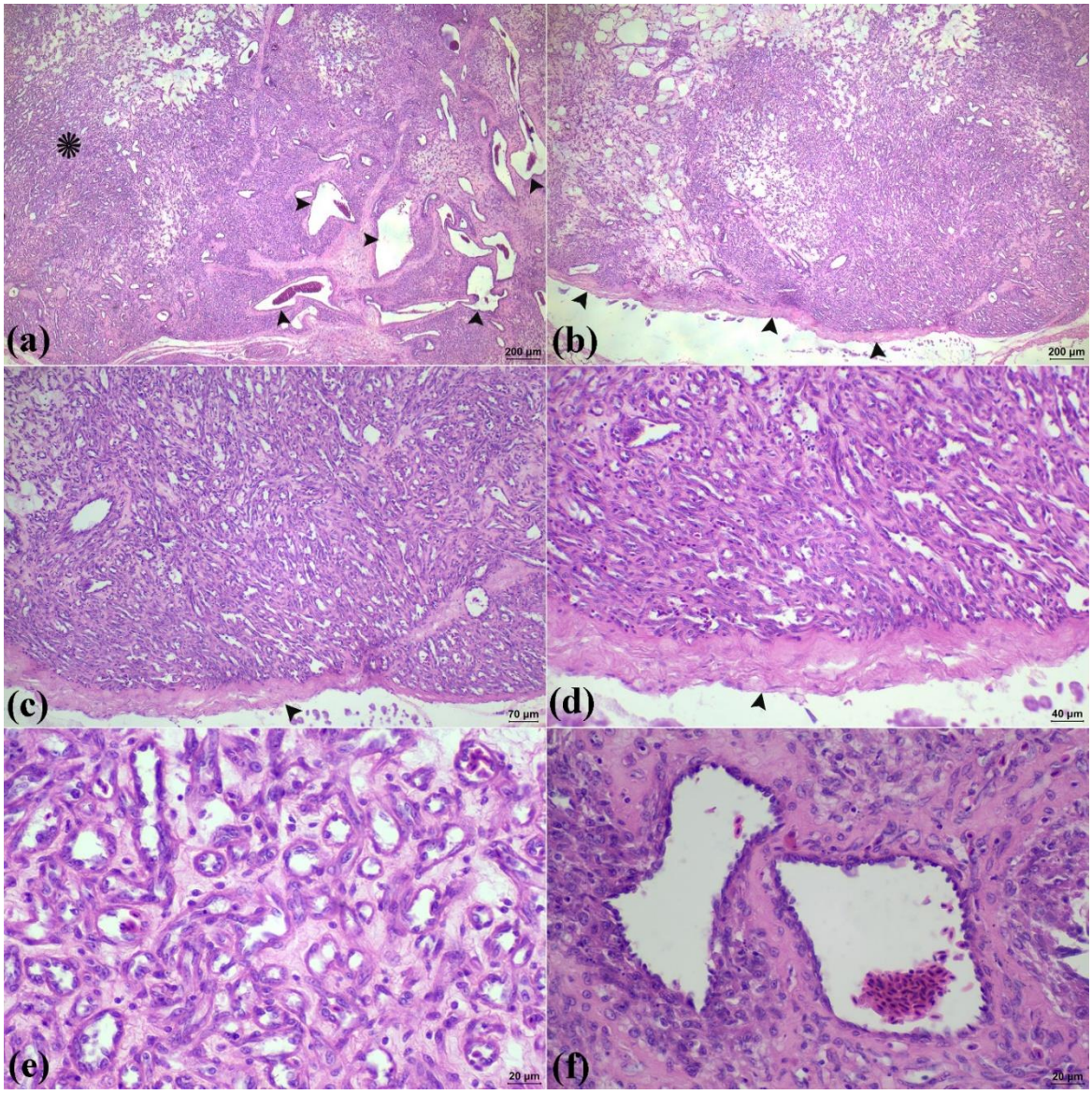


Figure 2. Mixed-type of capillary and cavernous hemangioma. (a): capillary pattern (*) and cavernous pattern (arrowheads). (b-d): well-demarcated mass with non-infiltrative margins (arrowheads). (e-f): Cellular appearance without mitotic figures and atypia. H & E stain.

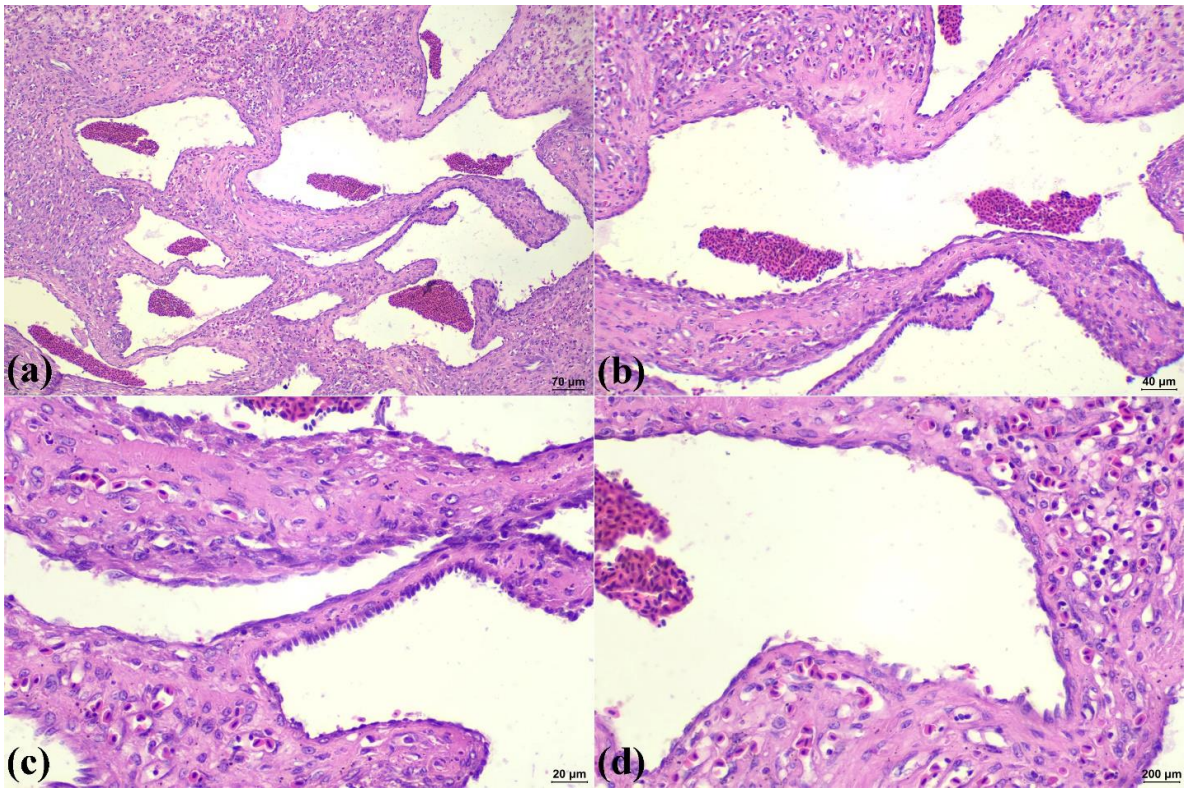


Figure 3. Capillary hemangioma. Numerous capillaries in a little fibrous connective tissue stroma are shown. H & E stain.

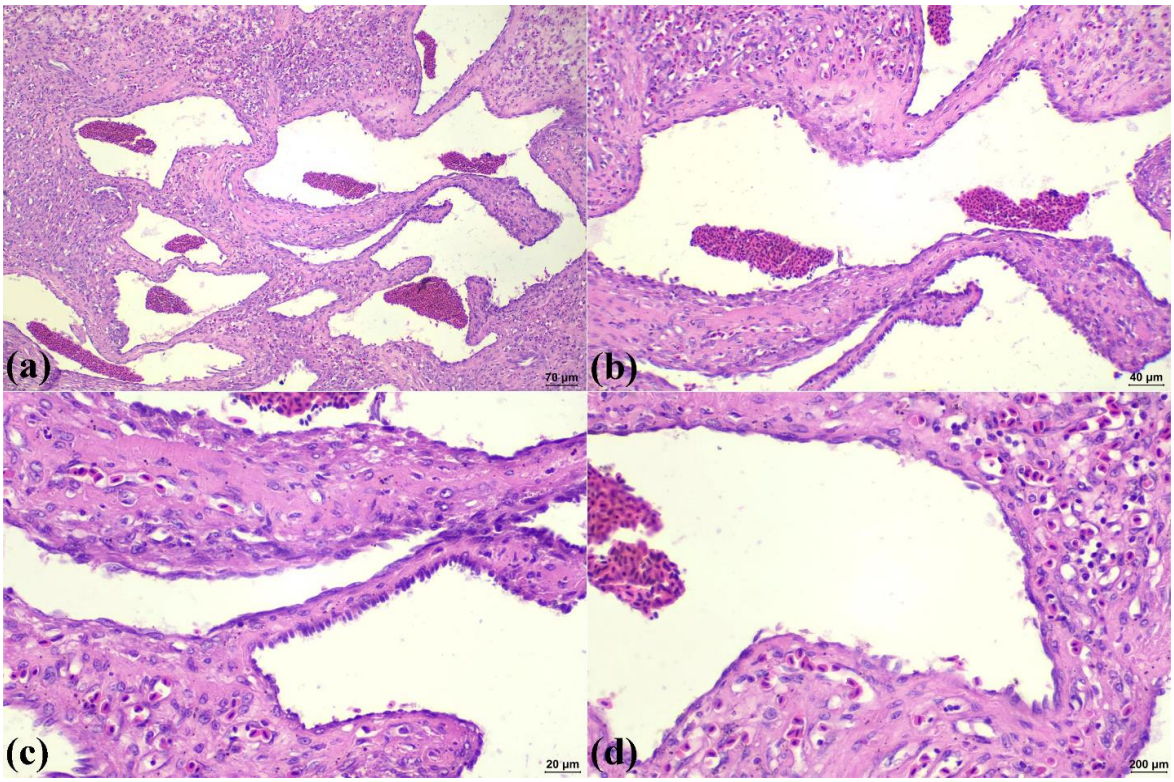


Figure 4. Cavernous hemangioma. Numerous, variably sized, thin-walled channels separated by fibrovascular stroma are shown. H & E stain.

4 Discussion

Neoplastic diseases are increasingly recognized in companion birds (Peña et al., 2025), reflecting both their advancing age and enhanced veterinary care. Neoplasia has been documented across multiple avian species (psittacine, passerines, and pigeons) affecting skin, reproductive, gastrointestinal, musculoskeletal, and neural tissues (Reavill, 2004; Hoppes, 2024). For instance, a retrospective survey in Melbourne found that 2.45 % of captive birds presented to veterinary clinic had solid neoplasms, of which 83.7 % were malignant (Sutherland et al., 2023) Similarly, a study on pigeons reported a 33.7% prevalence of various tumor types, including vascular lesions. These findings underscore that neoplasms, particularly in long-lived pet birds, are not rare and warrant vigilant clinical evaluation (Shimonohara et al., 2013).

Within avian oncology, hemangiomas and hemangiosarcoma are comparatively rare but notable endothelial tumors. In chickens, cutaneous hemangiomas have been described at both light and ultrastructural levels (Masegi et al., 1993). Similar lesions are scarcely reported in pet birds such as a case of hemangioma in a Carneau pigeon (Laku et al., 2021). An interclavicular hemangiosarcoma was documented in a double yellow-headed Amazon parrot presenting with a hemorrhagic coelomic mass (Hanley et al., 2005). Thus, vascular tumors of this nature are evidently rare in companion psittacine, rendering our report on a mixed hemangioma in a lovebird particularly significant.

Recent case reports further illustrate the diversity and biological behavior of vascular tumors in birds. A non-invasive tibial hemangioma in a Carneau pigeon responded favorably to surgical excision with complete recovery, supporting the benign nature of some vascular proliferations (Laku et al., 2021). In contrast, hemangiosarcoma have been described in several psittacine and galliform species, including an ovarian hemangiosarcoma in an orange-winged Amazon parrot confirmed by immunohistochemistry, a trauma-associated hemangiosarcoma in a Pacific parrotlet, and a rapidly recurrent propatagial hemangiosarcoma in a golden pheasant. These reports emphasize the variable clinical course of avian vascular neoplasms (from localized, surgically curable lesions to aggressive, recurrent malignancies) and underscore the diagnostic importance of correlating histopathology with clinical findings (Kline et al., 2016; Suedmeyer et al., 2001).

Based on histopathology, hemangiomas are characterized by proliferations of well-differentiated vascular channels (Mickley et al., 2009); and mixed-type variants include capillary and cavernous elements (Szabo S & PE, 2016). In chickens, ultrastructural studies demonstrate mesenchymal origin and distinct alveolar-to-capillary transitions (Masegi et al., 1993). The pigeon hemangioma case revealed mature vascular structures without atypia (Laku et al., 2021). Our histopathological evaluation revealed a well-demarcated vascular mass with a dual capillary–cavernous growth pattern, composed of well-formed, blood-filled vascular spaces lined by a single layer of uniform endothelial cells, minimal fibrous stroma, and absence of cytological atypia or mitotic figures, supporting the diagnosis of a benign mixed-type hemangioma. These findings contrast with malignant vascular neoplasms such as hemangiosarcomas reported in budgerigars and parrots, which are characterized by invasive growth, cellular atypia, necrosis, and aggressive behavior. Furthermore, the present lesion differed distinctly from the neck kaposiform haemangioendothelioma described by Rossi et al. in a Fischer's lovebird, which showed a larger, poorly circumscribed tumor composed predominantly of dense spindle cells arranged in nodules with hypocellular, hyalinized fibrous stroma, limited or absent true luminal formation, and features such as slit-like spaces, glomeruloid capillary proliferation, and microthrombi, with only superficial areas resembling capillary hemangioma (Rossi et al., 2016; Varela et al., 2025). Additionally, our findings were different from lymphangioma or vascular malformations, which were described as emerging simultaneously from multiple areas of the epicardium and composed of multiple irregular channels and cystic spaces lined by a single endothelial cell layer and separated by fibrovascular septa containing smooth muscle tissue; such lesions typically show uniformly thin-walled, erythrocyte-poor spaces (Espinosa et al., 2021).

Collectively, these architectural and cellular differences confirm a benign vascular proliferation in the present case and provide important diagnostic and prognostic distinctions from both malignant avian vascular tumors and kaposiform haemangioendothelioma. Limitations of this study include the lack of immunohistochemical analysis due to limited availability, although IHC is recommended in similar cases for better tumor characterization. Additionally, the bird succumbed shortly after presentation, preventing blood analysis and long-term clinical follow-up.

In conclusion, this report documents the first confirmed case of a mixed-type hemangioma in a lovebird in Iran. The

presence of both capillary and cavernous patterns emphasizes the importance of histopathology in diagnosing vascular tumors in birds. Although rare, such neoplasms should be considered in pet bird medicine, especially when we are evaluating progressive, hemorrhagic masses.

Acknowledgements

The authors would like to sincerely thank the staff of small animal hospital and pathology laboratory of the Faculty of Veterinary Medicine, University of Tehran.

AI Use Statement

Artificial intelligence tools were not used for data analysis or interpretation. AI assistance was limited to language editing and formatting during manuscript preparation.

Conflict of Interest

We declare no conflict of interest.

Author Contributions

YK, MN and PH were involved in primary clinical examination. SSH was involved in histopathology and staining techniques. YK, MN, SSH, and SMP drafted the manuscript. SMP contributed to the study's supervision, reviewing and editing of manuscript. Artificial intelligence tool (Chat GPT-free version) was used solely for language editing, sentence formatting, and grammatical improvement; all data, analyses, and scientific interpretations presented in this study are original and generated by the authors. All authors have read and approved the final manuscript and agreed to the published version.

Data Availability Statement

Data are available from the corresponding author upon reasonable request.

Ethical Considerations

All ethical principles were fully observed in the conduct of this study in accordance with the guidelines and regulations of the Ethical Committee of the Faculty of Veterinary Medicine, University of Tehran. The study protocol was reviewed and approved under the ethical approval code EUT.750800.023.18.

Funding

This research was funded by a grant (7508007-6-51) from the University of Tehran Research Council.

References

Chambers, J. K., Watanabe, K., Michishita, M., Hatai, H., Tanaka, Y., Doge, S., Ochiai, K., Kato, S., Goto-Koshino, Y., Tanaka, M., Izawa, T., & Japanese College of Veterinary Pathologists Standardization of Animal Tissue Processing, C. (2025). Standardization of tissue handling in veterinary pathology: How fixation affects morphological and molecular examination results. *Veterinary Pathology*, *62*(6), 949-962. [PMID: 40574335] [DOI].

Espinosa, J., Ferreras, M. C., Garcia, D., Vallejo, R., & Perez, V. (2021). Case Report: Multiple Cavernous Pericardial Lymphangioma (Pericardial Lymphangiomatosis) in a Captive Peregrine Falcon (Falco peregrinus brookei). *Front Vet Sci*, *8*, 662157. [PMID: 33937381] [PMCID: PMC8079740] [DOI].

Hanley, C. S., Wilson, G. H., Latimer, K. S., Frank, P., & Hernandez-Divers, S. J. (2005). Interclavicular hemangiosarcoma in a double yellow-headed Amazon parrot (Amazona ochrocephala oratrix). *Journal of Avian Medicine and Surgery*, *19*(2), 130-137. [DOI].

Hoppes, S. (2024). *Neoplastic Diseases of Pet Birds*. [URL]

Kline, Z. F., Whittington, J. K., & Coleman, D. A. (2016). Cutaneous hemangiosarcoma in a Pacific parrotlet (Forpus coelestis). *Journal of Avian Medicine and Surgery*, *30*(2), 152-158. [PMID: 27315383] [DOI].

Kumar, V., Philip, A. A., Palanivelu, M., Pathak, R., Singh, A., & Singh, A. (2016). Cutaneous capillary haemangioma in a white Pekin duck (Anas platyrhinchos domesticus). *Indian Journal of Veterinary Pathology*. [DOI].

Laku, D., Bokko, B., Mohammed, A., Mana, H., Haruna, A., Adam, M., Yusuf, Z., Saidu, A., Mutah, A., & Gambo, H. (2021). Hemangioma in a carneau pigeon (Columba livia domestica): Case report. *International Journal of Veterinary Sciences and Animal Husbandry*, *2021;6(6):05-07k*. [DOI].

Marr, J., Miranda, I. C., Miller, A. D., & Summers, B. A. (2021). A review of proliferative vascular disorders of the central nervous system of animals. *Veterinary Pathology*, *58*(5), 864-880. [PMID: 33302811] [DOI].

Masegi, T., Inoue, Y., Yanai, T., & Ueda, K. (1993). An ultrastructural study of cutaneous hemangioma in two chickens. *Journal of Veterinary Medical Science*, *55*(1), 185-188. [PMID: 8461420] [DOI].

Mickley, K., Buote, M., Kiupel, M., Graham, J., & Orcutt, C. (2009). Ovarian hemangiosarcoma in an orange-winged Amazon parrot (Amazona amazonica). *Journal of Avian Medicine and Surgery*, *23*(1), 29-35. [PMID: 19530404] [DOI].

Peña, S., Ferrer, O., Balañá, B., Lima, M., Ordeix, L., & Alomar, J. (2025). Electrochemotherapy Intralesional Treatment in a Captive Peregrine Falcon (Falco peregrinus) with Dermal Squamous Cell Carcinoma. *Animals*, *15*(7), 919. [PMID: 40218313] [PMCID: PMC11988100] [DOI].

Reavill, D. R. (2004). Tumors of pet birds. *Veterinary Clinics: Exotic Animal Practice*, *7*(3), 537-560. [PMID: 15296864] [DOI].

Rossi, G., Galosi, L., Berardi, S., Piano, M. A., Robino, P., Rose, T., & Calabrò, M. L. (2016). Neck Kaposiform haemangioendothelioma in a Fischer's lovebird (*Agapornis fischeri*). *Research in veterinary science*, *106*, 112-115. [PMID: 27234547] [DOI].

Saleh, J. S., Whittington, C. P., Bresler, S. C., & Patel, R. M. (2023). Cutaneous vascular tumors: an updated review. *Hum Pathol*, *140*, 53-65. [PMID: 37059271] [DOI].

Sayyed, Z., Parveen, Y., Bhattacharyya, A., Arshiyan, A. M., Shah, A., & Bidkar, K. (2024). Reviewing hemangiomas and vascular malformations: An in-depth analysis. *Journal of Oral Research and Review*, *16*(2), 149-156. [DOI].

Shimonohara, N., Holland, C. H., Lin, T.-L., & Wigle, W. L. (2013). Naturally occurring neoplasms in pigeons in a research colony: a retrospective study. *Avian Diseases*, *57*(1), 133-139. [PMID: 23678742] [DOI].

Suedmeyer, W. K., Witter, R. L., & Bermudez, A. (2001). Hemangiosarcoma in a golden pheasant (Chrysolophus pictus). *Journal of Avian Medicine and Surgery*, *15*(2), 126-130. [DOI].

Sutherland, M., Luk, K., Courtman, N., & Ploeg, R. (2023). Survey of the clinical, cytological, and histopathological features associated with neoplasms in captive avian species in Melbourne, Australia. *Journal of Avian Medicine and Surgery*, *37*(3), 243-265. [PMID: 37962318] [DOI].

Szabo S, & PE, N. (2016). *Histopathology and pathogenesis of vascular tumors and malformations. In: North PE, Sander Tara, editors. Vascular tumors and developmental malformations: Pathogenic mechanisms and molecular diagnosis: Springer. 2016. p. 1-62.* . [DOI]. 978-1-4939-3239-9

Varela, B., Larrañaga, C., Yozzi, V., Yamasaki, K., & Verdes, J. M. (2025). Epidemiological and Pathological Studies of Canine Skin Hemangiomas and Hemangiosarcomas in Uruguay. [DOI].

Zehnder, A., Graham, J., Reavill, D. R., & McLaughlin, A. (2016). Neoplastic diseases in avian species. *Current therapy in avian medicine and surgery*, 107-141. [DOI].