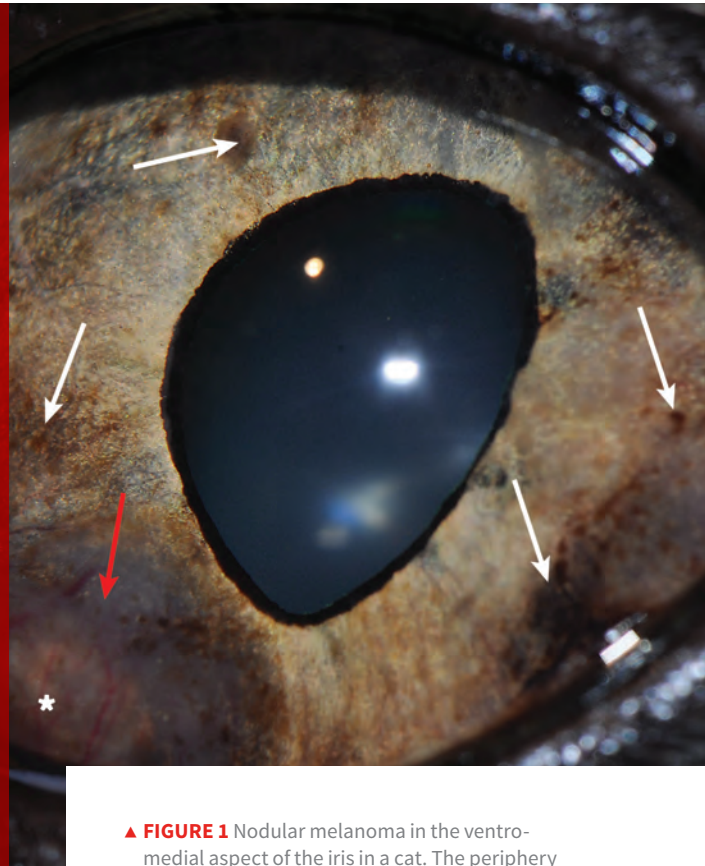


Anterior Uveal Melanocytic Neoplasia

Gil Ben-Shlomo, DVM, PhD,
DACVO, DECVO
Iowa State University



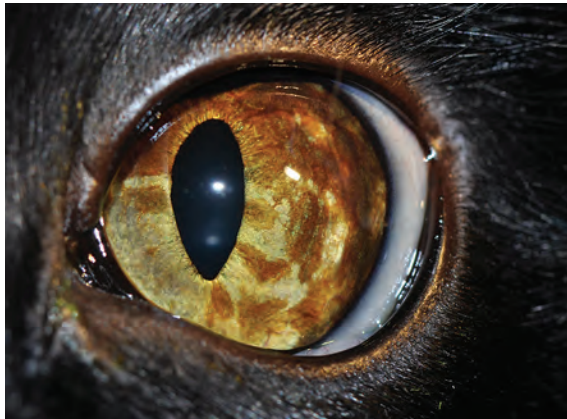
▲ **FIGURE 1** Nodular melanoma in the ventro-medial aspect of the iris in a cat. The periphery of the mass is heavily pigmented (*red arrow*), whereas the center is poorly pigmented (*asterisk*). This melanoma invaded the ciliary body and the iridocorneal angle and caused secondary glaucoma. Multifocal iris pigmentation (*white arrows*) and dyscoria can also be noted.

Although uncommon, intraocular tumors can occur in dogs and cats, with primary anterior uveal melanocytic tumors being the most common.¹⁻³ Melanocytic tumors may be malignant (ie, melanoma) or benign (ie, melanocytoma). In dogs, melanocytic tumors are twice as common as other primary intraocular tumors,² and iris melanocytomas are approximately 3 times more common than melanomas.^{4,5}

Clinical Signs

In dogs, iris melanocytic tumors arise from the anterior surface of the iris and are usually discrete, raised pigmented masses. As compared with ciliary body tumors, iris melanocytic tumors are easier to detect because of their anatomic

location, thus allowing for earlier diagnosis in the course of the disease.² In cats, flat, diffuse iris melanoma is more common than the nodular form (*Figure 1*) and usually starts as focal or multifocal areas of iris pigmentation, which may progress over time. Flat, diffuse iris melanoma cannot be differentiated from benign, diffuse iris melanosis based on clinical appearance alone (*Figure 2*, next page; see *Iris Freckles, Nevi, & Melanosis*, page 53).⁶ Observation of clinical signs (eg, dyscoria, iris thickening, pigment dispersion, increased intraocular pressure) may help with the decision to enucleate an eye. In cats, some histologic and immunohistochemical parameters have been found to be helpful in determining the risk for metastasis of diffuse iris melanoma.⁷ Although these parameters may not be a practical tool for deciding whether to enucleate an eye, they may be



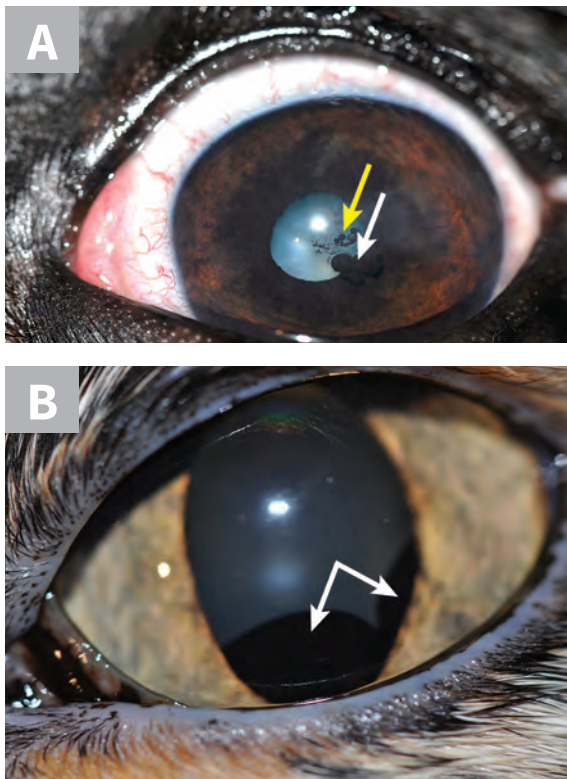
▲ **FIGURE 2** Diffuse iris pigmentation progressing toward the iridocorneal angle in a cat. Diffuse iris melanoma cannot be differentiated from benign iris melanosis based on clinical appearance alone.

used postenucleation to determine the metastatic risk in the individual cat and, when applicable, to form a tailored postoperative follow-up plan. Metastatic melanocytic tumors affecting the anterior uvea are rare but have been reported in dogs.⁸

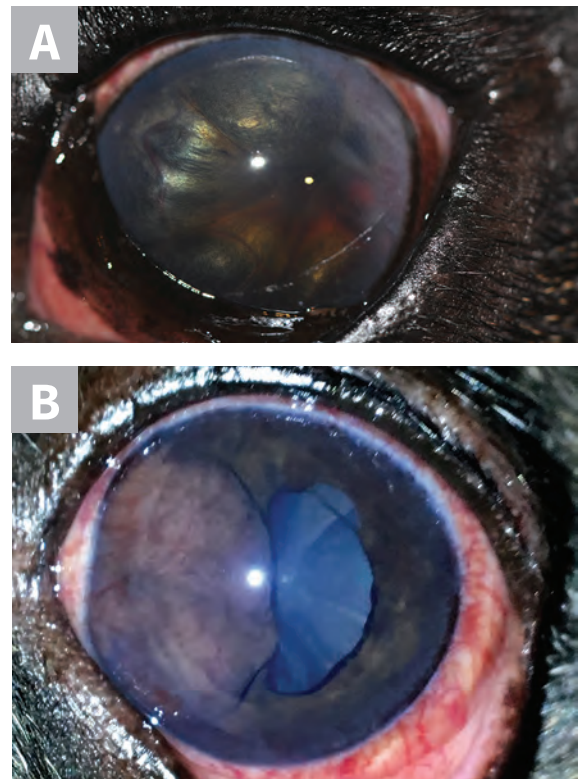
For additional considerations regarding potential malignancy of diffuse iris pigmentary changes, see *Iris Freckles, Nevi, & Melanosis*, page 53.

Predisposition

Breeds predisposed to melanocytic tumors include crossbreed dogs, Labrador retrievers, German shepherd dogs, golden retrievers, schnauzers, and cocker spaniels.⁵ Spayed dogs are also more likely to develop both benign and malignant melano-



▲ **FIGURE 3** A cluster of small, heavily pigmented uveal cysts over the iris and close to the pupil margins (A; white arrow) and free-floating in front of the pupil (yellow arrow) in a dog. Two big, heavily pigmented uveal cysts posterior to the pupil in a cat (B; arrows).



▲ **FIGURE 4** This aggressive iris melanoma in a dog obliterated most of the intraocular space, and the eye was enucleated (A). An aggressive amelanotic melanoma in a different dog (B) is present on the medial aspect of the anterior chamber, obliterating approximately one-third of the anterior chamber and causing dyscoria. Enucleation is indicated.

cytic tumors.⁵ Middle-age to older dogs are more commonly affected.⁵ The median age of dogs at the time of ocular melanocytoma or melanoma diagnosis is 9 years.⁵ Inherited melanoma affecting young adult (ie, mostly between 1-2 years) Labrador retrievers has also been reported.² No predispositions in cats have been identified.

Diagnosis

Diagnosis of melanocytic tumors is based on typical appearance and clinical signs. Changes in iris color and/or a visible mass raised from the surface of the iris are typical. Additional clinical signs may include dyscoria as the mass progresses in size, hyphema, and, in advanced stages, uveitis due to tumor necrosis. Glaucoma may develop secondary to uveitis and/or due to invasion of the tumor into the iridocorneal angle and mechanical blockage of the aqueous humor outflow. Retinal detachment and blindness may also be noted in advanced stages.⁹

Darkly pigmented iridociliary cysts (**Figure 3**) may be confused with melanocytic neoplasia, particularly in cats.¹⁰ Ocular ultrasonography can be helpful in differentiating darkly pigmented cysts from uveal masses

and should be performed prior to enucleation, especially in cats, as cysts are benign and do not require enucleation.

Treatment & Prognosis

The metastatic rate of anterior uveal melanoma is less than 5% in dogs.² Thus, early intervention by means of referral to an ophthalmologist and referral procedures (eg, sector iridectomy, laser therapy¹¹) should be considered in patients with focal lesions, with the aim of retaining the eye and vision. However, enucleation is advised in cases of fast-growing, locally invasive melanoma (**Figure 4**). Conversely, the metastatic rate of anterior uveal melanoma in cats is high (up to ≈60%),¹² and early enucleation may prevent premature death.¹³ However, because diffuse iris melanoma cannot be clinically differentiated from benign melanosis, the decision to enucleate the eye can be challenging (see **Iris Freckles, Nevi, & Melanosis**, page 53).

Laser treatment of suspected diffuse iris melanoma in cats has been suggested to effectively delay tumor progression¹⁴ but remains controversial due to the difficulty in differentiating benign diffuse iris melanosis from melanoma. ■■■

References

1. Dubielzig RR. Ocular neoplasia in small animals. *Vet Clin North Am Small Anim Pract.* 1990;20(3):837-848.
2. Martin CL. Anterior uvea and anterior chamber. In: Martin CL. *Ophthalmic Disease in Veterinary Medicine*. Boca Raton, FL: Taylor & Francis Group; 2009:298-336.
3. Day MJ, Lucke VM. Melanocytic neoplasia in the cat. *J Small Anim Pract.* 1995;36(5):207-213.
4. Diters RW, Dubielzig RR, Aguirre GD, Acland GM. Primary ocular melanoma in dogs. *Vet Pathol.* 1983;20(4):379-395.
5. Giuliano EA, Chappell R, Fischer B, Dubielzig RR. A matched observational study of canine survival with primary intraocular melanocytic neoplasia. *Vet Ophthalmol.* 1999;2(3):185-190.
6. Leland AM, Thomasy SM, Reilly CM, Kass PH, Maggs DJ. Comparing clinical perception with histologic diagnosis for feline irides with melanotic change. Paper presented at: 47th Annual Meeting of the American College of Veterinary Ophthalmologists; October 26-29, 2016; Monterey, CA.
7. Wiggins KT, Reilly CM, Kass PH, Maggs DJ. Histologic and immunohistochemical predictors of clinical behavior for feline diffuse iris melanoma. *Vet Ophthalmol.* 2016;19(Suppl 1):44-55.
8. Esson D, Fahrer CS, Zarfoss MK, Dubielzig RR. Suspected uveal metastasis of a nail bed melanoma in a dog. *Vet Ophthalmol.* 2007;10(4):262-266.
9. Miller PE. Diseases of the uvea. In: Maggs DJ, Miller PE, Ofri R, eds. *Slatter's Fundamentals of Veterinary Ophthalmology*. 6th ed. St. Louis, MO: Elsevier; 2017:254-278.
10. Fragola JA, Dubielzig RR, Bentley E, Teixeira LBC. Iridociliary cysts masquerading as neoplasia in cats: a morphologic review of 14 cases. *Vet Ophthalmol.* 2018;21(2):125-131.
11. Cook CS, Wilkie DA. Treatment of presumed iris melanoma in dogs by diode laser photocoagulation: 23 cases. *Vet Ophthalmol.* 1999;2(4):217-225.
12. Patnaik AK, Mooney S. Feline melanoma: a comparative study of ocular, oral, and dermal neoplasms. *Vet Pathol.* 1988;25(2):105-112.
13. Kalishman JB, Chappell R, Flood LA, Dubielzig RR. A matched observational study of survival in cats with enucleation due to diffuse iris melanoma. *Vet Ophthalmol.* 1998;1(1):25-29.
14. Nadelstein B. Laser treatment of suspected diffuse iris melanoma lesions in cats. Paper presented at: The 2nd Veterinary Ophthalmic Surgery Meeting; 2018; Chicago, IL.

Suggested Reading

- Labelle AL, Labelle P. Canine ocular neoplasia: a review. *Vet Ophthalmol.* 2013;16(Suppl 1):3-14.
- Smith SH, Goldschmidt MH, McManus PM. A comparative review of melanocytic neoplasms. *Vet Pathol.* 2002;39(6):651-678.
- Wang AL, Kern T. Melanocytic ophthalmic neoplasms of the domestic veterinary species: a review. *Top Companion Anim Med.* 2015;30(4):148-157.