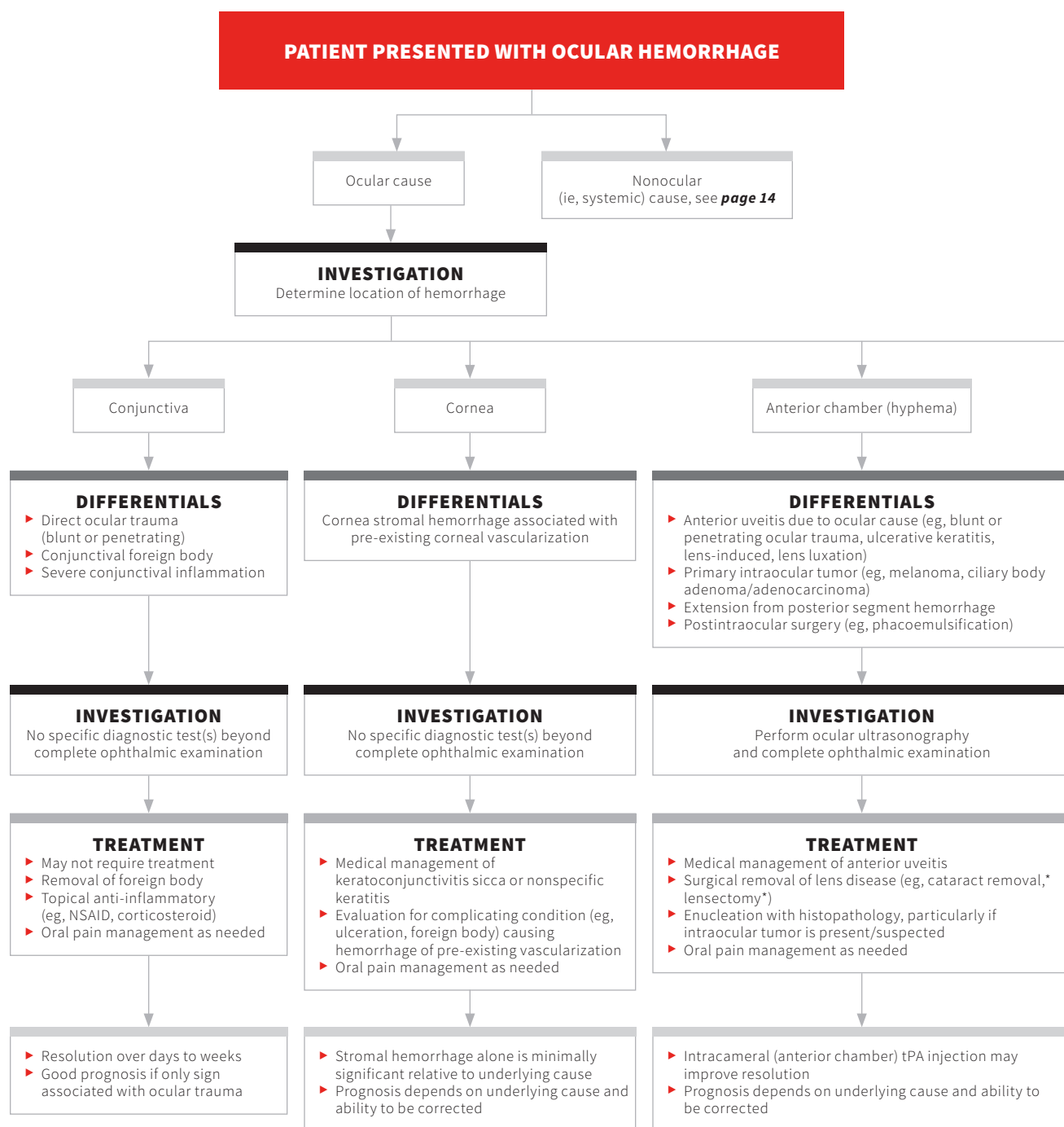


# OCULAR HEMORRHAGE

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tPA = tissue plasminogen activator

\*Denotes referral procedure

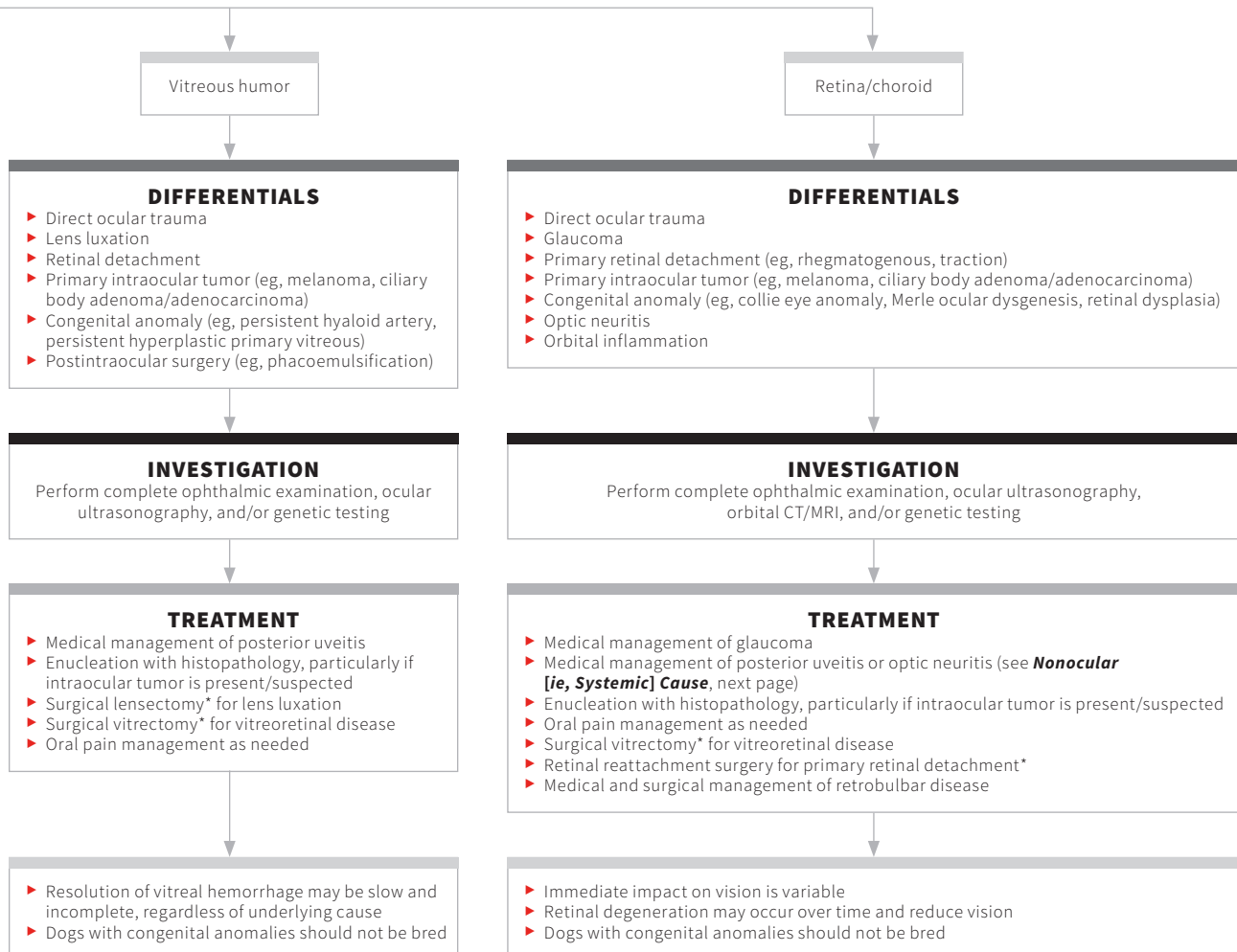
## TREATMENT OPTIONS

### Anterior segment hemorrhage

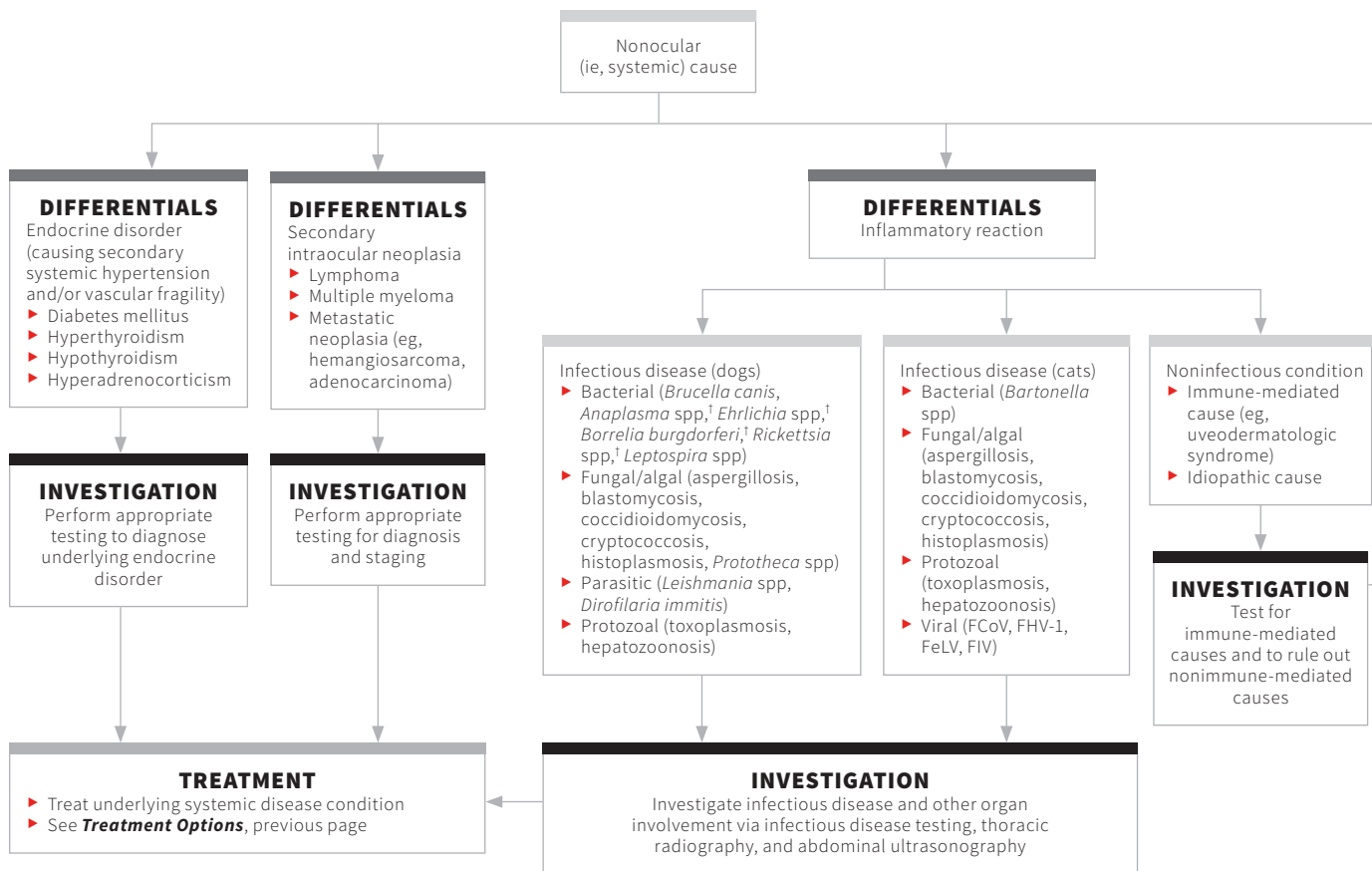
- ▶ Topical anti-inflammatories (eg, NSAIDs, corticosteroids) to minimize inflammation
- ▶ Topical atropine to induce mydriasis and provide pain relief
- ▶ Intracameral tPA injection to induce clot lysis
- ▶ Topical antiglaucoma medications if secondary glaucoma is present

### Posterior segment hemorrhage

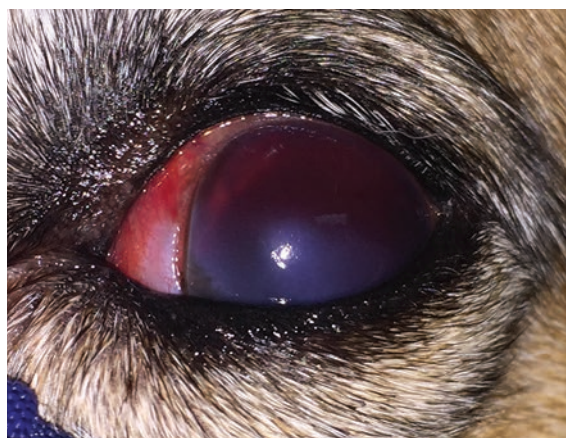
- ▶ Systemic anti-inflammatory drugs (eg, NSAIDs, corticosteroids) to control inflammation, depending on underlying cause and coinciding systemic conditions
- ▶ Topical medications will not be effective.



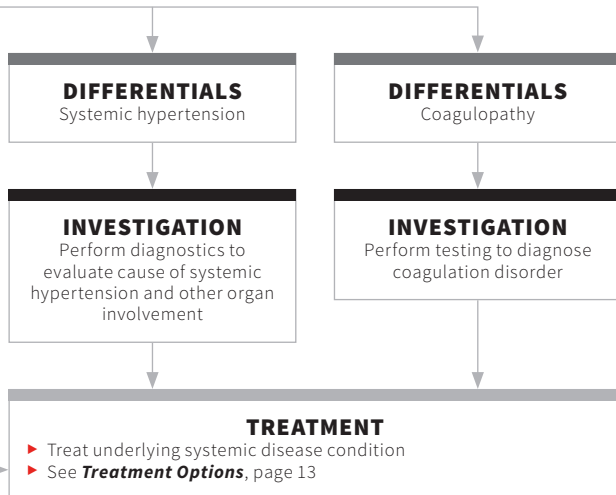
Continues ▶



▲ **FIGURE 1** Right eye of a 13-year-old spayed cocker spaniel diagnosed with intrastromal corneal hemorrhage (arrows) of unidentified underlying cause. Vascularization (ie, keratitis) had been noted previously, and the eye was nonpainful. Intrastromal hemorrhage is not a common sequela to corneal vascularization.



▲ **FIGURE 2** Left eye of a 10-year-old spayed Jack Russell terrier with traumatic anterior uveitis from being hit in the eye by a tennis ball the morning of presentation. Complete hyphema can be seen obscuring visualization of intraocular structures. The eye was sensing light (dazzle reflex-positive, consensual PLR to the right eye was present; unable to visualize direct PLR in the left eye).

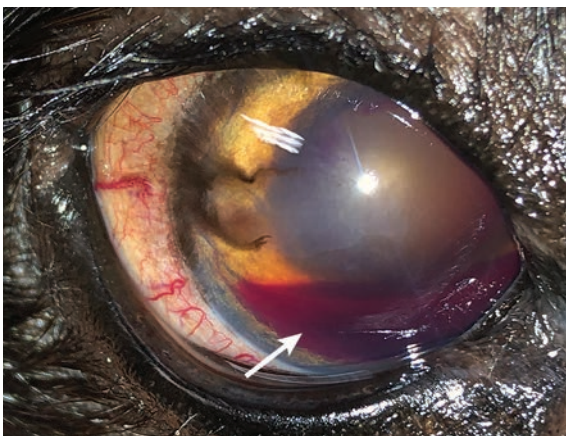


FCoV = feline coronavirus  
FHV-1 = feline herpesvirus

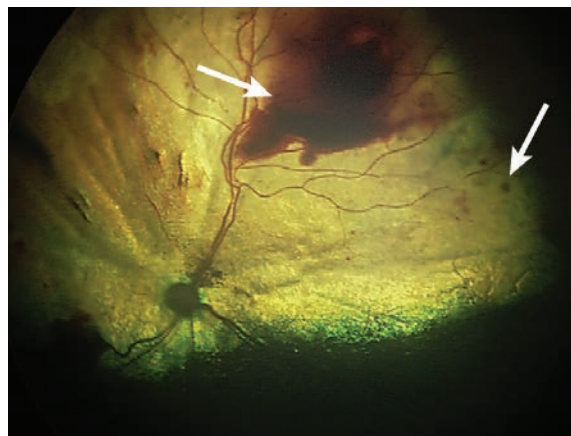
†Denotes those most likely to cause hemorrhage based on clinical anecdote

## Suggested Reading

- Jinks MR, Olea-Popelka F, Freeman KS. Causes and outcomes of dogs presenting with hyphema to a referral hospital in Colorado: a retrospective analysis of 99 cases. *Vet Ophthalmol*. 2018;21(2):160-166.
- Matas M, Donaldson D, Newton RJ. Intracorneal hemorrhage in 19 dogs (22 eyes) from 2000 to 2010: a retrospective study. *Vet Ophthalmol*. 2012;15(2):86-91.
- Saastamoinen J, Rutter CR, Jeffery U. Subconjunctival haemorrhage in 147 dogs. *J Small Anim Pract*. 2019;60(12):755-760.
- Smith SM, Westermeyer HD, Mariani CL, Gilger BC, Davidson MG. Optic neuritis in dogs: 96 cases (1983-2016). *Vet Ophthalmol*. 2018;21(5):442-451.
- Telle MR, Betzeze C. Hyphema: considerations in the small animal patient. *Top Companion Anim Med*. 2015;30(3):97-106.
- Violette NP, Ledbetter EC. Intracorneal stromal hemorrhage in dogs and its associations with ocular and systemic disease: 39 cases. *Vet Ophthalmol*. 2017;20(1):27-33.
- Violette NP, Ledbetter EC. Punctate retinal hemorrhage and its relation to ocular and systemic disease in dogs: 83 cases. *Vet Ophthalmol*. 2018;21(3):233-239.



▲ **FIGURE 3** Right eye of an 11-year-old neutered male crossbreed dog with chronic anterior uveitis of undetermined etiology. Settled hyphema (**arrow**) can be seen in the ventral anterior chamber.



▲ **FIGURE 4** Retinal hemorrhage (**arrows**) in a geriatric cat with systemic hypertension. Diffuse hyporeflexivity suggestive of retinal edema, retinal vascular tortuosity, and perivascular edema (also associated with systemic hypertension) can be seen.