Blindness

**Diagnostic Tree**

**Ophthalmology**

**Peer Reviewed**

- **Thorough history**
  - Duration?
  - Onset (acute vs progressive)?
  - Independent of lightness/darkness?
  - Associated with:
    - Ocular pain/discharge?
    - Change in eye appearance?
    - Change in environment?
    - Signs of systemic illness?
    - Signs of neurologic disease?
  - Toxin exposure?
  - Other animals affected?

- **Visual examination**
  - Ability to navigate in light and dark?
  - Globe/orbital asymmetry?
  - Signs of ocular pain?
  - Ocular redness?
  - Ocular cloudiness?
  - Clarity of visual axis?
  - Duration?
  - Onset (acute vs progressive)?
  - Independent of lightness/darkness?
  - Associated with:
    - Ocular pain/discharge?
    - Change in eye appearance?
    - Change in environment?
    - Signs of systemic illness?
    - Signs of neurologic disease?
  - Toxin exposure?
  - Other animals affected?

- **Response and reflex examination**
  - Menace response
  - Absence indicates intraocular, retinal, optic nerve, or cortical disease
  - Dazzle reflex (ie, blink response to extremely bright light)
  - Absence indicates retinal, optic nerve, optic chiasm, or brainstem disease
  - Direct + consensual PLR
  - Absence indicates retinal, optic nerve, optic chiasm, or brainstem disease
  - Absence indicates primary breed-related glaucoma
  - Absence indicates secondary glaucoma:
    - Anterior uveitis
    - Lens luxation
    - Intraocular tumor
  - PLR = pupillary light reflex

- **Thorough ophthalmic examination**
  - Intraocular pressure measurement
    - Normal 10-25 mm Hg
  - >25 mm Hg
  - <10 mm Hg
  - Glaucoma*
    - Scleral injection + corneal edema + mydriasis
    - Variable dazzle reflex in acute glaucoma
    - Dazzle reflex, direct and consensual negative in chronic glaucoma
  - Anterior uveitis*
    - Miosis + aqueous flare + hypopyon
    - May have negative menace, direct and consensual PLR if posterior uveitis also present
  - Blindness
    - Systemic infection (viral, bacterial, rickettsial, mycotic, algal, parasitic, protozoal)
    - Noninfectious inflammatory (uveodermatologic syndrome, lens induced, trauma, ulcerative corneal disease)
    - Neoplastic (primary intraocular melanoma, ciliary body adenoma) or metastatic (lymphoma, adenocarcinoma)
    - Systemic hypertension
    - Systemic hyperlipidemia

* Associated with acute blindness
** Not associated with acute blindness

**Clinical Inferences**

- Intraocular, retinal, optic nerve, optic chiasm, or brainstem disease
- Absence indicates primary breed-related glaucoma
- Absence indicates secondary glaucoma:
  - Anterior uveitis
  - Lens luxation
  - Intraocular tumor
- Absence indicates systemic infection (viral, bacterial, rickettsial, mycotic, algal, parasitic, protozoal)
- Absence indicates noninfectious inflammatory (uveodermatologic syndrome, lens induced, trauma, ulcerative corneal disease)
- Absence indicates neoplastic (primary intraocular melanoma, ciliary body adenoma) or metastatic (lymphoma, adenocarcinoma)
- Absence indicates systemic hypertension
- Absence indicates systemic hyperlipidemia

**PLR = pupillary light reflex**
Normal funduscopic examination

- Tropicamide 1% for dilation
- Evaluate retinal vasculature, optic nerve head, tapetal reflectivity, nontapetal pigmentation

Chorioretinitis*
- Indistinct retinal vasculature + multifocal lesions of tapetal hyporeflectivity (cellular exudate or fluid transudate)
- Negative dazzle reflex and PLR

Optic neuritis*
- Optic nerve hyperemia + swelling + peripapillary retinal detachment
- Negative dazzle reflex and PLR

Retinal degeneration**
- Vascular attenuation + tapetal hyperreflectivity + optic nerve atrophy
- Negative dazzle reflex and PLR at end stage

Retinal detachment*
- Anterior displacement of retina (+ associated vessels) with subretinal accumulation of fluid or cells (bulla retinal detachment)
- Veil-like appearance to retina with lack of retinal vessels over tapetum = rhegmatogenous detachment
- Negative dazzle reflex and PLR

Systemic infection (viral, bacterial, rickettsial, mycotic, algal, parasitic, protozoal)
- Noninfectious inflammatory (uveodermatologic syndrome, granulomatous meningoencephalitis)
- Neoplastic (primary [astrocytoma] melanoma) or metastatic (lymphoma, adenocarcinoma)
- Systemic hypertension

Retinal degeneration**
- Vascular attenuation + tapetal hyperreflectivity + optic nerve atrophy
- Negative dazzle reflex and PLR at end stage

Normal funduscopic examination
- Sudden acquired retinal degeneration (SARD) may be likely
- Perform electroretinogram to confirm diagnosis

Fluorescein dye application

- Systemic infection (viral, bacterial, rickettsial, mycotic, algal, parasitic, protozoal)
- Noninfectious inflammatory (uveodermatologic syndrome, granulomatous meningoencephalitis)
- Neoplastic (primary [astrocytoma] melanoma) or metastatic (lymphoma, adenocarcinoma)
- Systemic hypertension

Uptake at corneal ulcer
- Associated with corneal opacification (edema, vascularization, cellular infiltration)
- Associated with mild to severe reflex anterior uveitis (miosis, flare, hypopyon)
- May be associated with acute blindness, but less likely (unilateral disease)