

RVC Royal Veterinary College University of London

Acute Blindness from neurology point of view

VET-CT Clinical Support Services

NSV

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Neurological blindness

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Neurological blindness

Optic tract, LGN, Optic radiation and visual cortex

Optic chiasm lesions

Optic neuropathy

Retinal disorders

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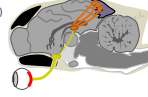
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Neurological blindness

The most common **retinal disorders** that may result in visual deficits include:

- Sudden acquired retinal degeneration syndrome (SARDS)
- Progressive retinal atrophy (PRA)
- Retinal pigment epithelial dystrophy
- Retinal detachment
- Retinal toxicity (frequently enrofloxacin in cats and ivermectin in dogs)
- Infectious chorioretinitis
- Immune-mediated retinitis (IMR)
- IMR-cancer-associated retinopathy (CAR)
- Inborn error of metabolism

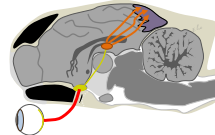


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Neurological blindness – Optic neuropathy

- Optic disc/nerve hypoplasia
- Optic neuritis
- Optic nerve neoplasia
- Ischaemic optic neuropathy
- Compressive optic neuropathy
- Traumatic optic neuropathy
- Toxic optic neuropathy




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Optic nerve (CN II)

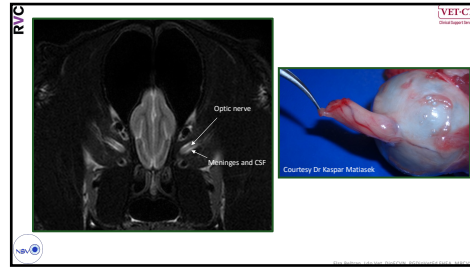
- Misnomer
- Myelinated by oligodendroglia
- Contain astrocyte
- Surrounded by meninges
- Course caudal in the orbit



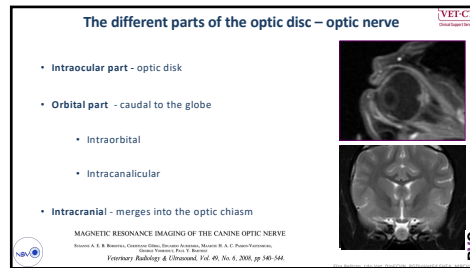
Courtesy Dr. Kaspar Mattlesek

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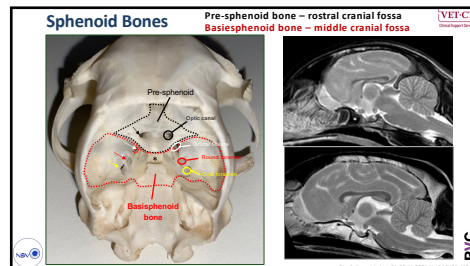
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Tests to evaluate the visual pathways

- Vision – Conscious (talamocortex)
- Menace Response – Conscious

Visual perception

- Pupillary light Reflex (PLR) - brainstem

Visual reflexes

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Optic neuritis

Veterinary Ophthalmology (2017) 1-10 DOI:10.1111/vop.12278

Optic neuritis in dogs: 96 cases (1983-2016)

Sara M. Smith, Hans D. Wessermeyer, Christopher L. Martini, Brian C. Gilger and Michael C. Davidson
Department of Clinical Sciences, North Carolina State University College of Veterinary Medicine, Raleigh, NC 27615, USA

- Optic neuritis associated with Meningoencephalitis of unknown origin (MUO) or as "focal" MUO same incidence
- Follow-up (72 cases)
 - 50 remained blind
 - 10 partial vision recovery
 - 12 normal vision

Do we do something wrong? Is it really the same pathology?...

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Optic neuritis

Prognostic Factors for Recovery of Vision in Canine Optic Neuritis of Unknown Etiology: 26 Dogs (2003-2018)

Christoforos Pappas¹, Elia Bellini², Mark Dunning^{3,4}, Irene Espadas^{1,5}, Sabina Gilicinski¹, Amy Teresa Barry² and Annette Wossmann^{1*}

- Statistically associated with complete vision recovery
 - Presence of a reactive PLR
 - Absence of fundoscopic lesions
 - Younger age
 - Lower total CSF nucleated cell count

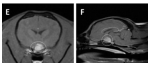
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Optic neuritis

Presumed optic neuritis of non-infectious origin in dogs treated with immunosuppressive medication: 28 dogs (2000-2015)

L. Moore¹, B. Tovar², V. Chaves³ and A. Sauer⁴

Journal of Small Animal Practice (2020) 61, 476-483



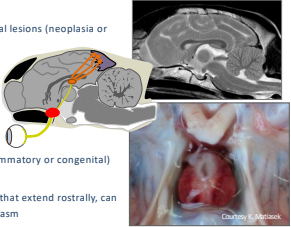
- Age of presentation 6 months to 10.5 years of age
- Fundus - Evidence of optic neuropathy in 71%
- MRI – Widening of the optic nerves 67 and contrast uptake in 58%
- CSF - 44% pleocytosis
- Immunosuppressive prednisolone was administered to all dogs
- Prednisolone was used only in 9 of 28 (32%) dogs
- 19 remaining dogs received a combination of prednisolone with cytosine arabinoside, cyclosporine and/or azathioprine
- Vision was recovered in 24 eyes (50%) of 18 affected dogs

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Neurological blindness – Optic Chiasm Lesions

- Intracranial extension of orbital lesions (neoplasia or inflammation)
- Disease of sphenoid bones
- Traumatic brain injury
- CNS diseases (neoplasia, inflammatory or congenital)
- Tumours of the pituitary area that extend rostrally, can cause damage to the optic chiasm

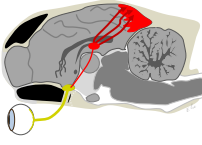


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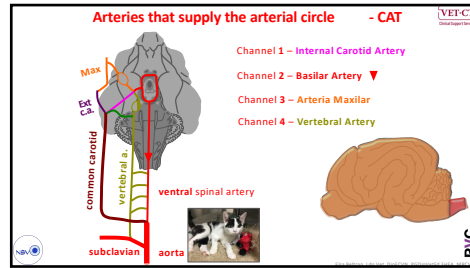
Neurological blindness – optic tract, lateral geniculate nucleus lesions, optic radiation and visual cortex

- Vascular, inflammatory, infectious, trauma, congenital, metabolic and neoplastic
- The neuronal cell bodies in the LGN and the visual cortex are particularly vulnerable to storage diseases (degenerative), developmental abnormalities, vitamin B1 (thiamine) deficiency and hypoxia
- Vision loss (temporary and permanent) has been reported in cats following general anaesthesia and usually after the mouth has been held open by a gag during an oral procedure

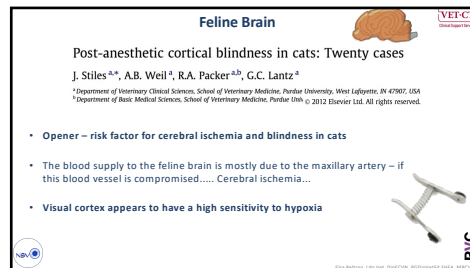


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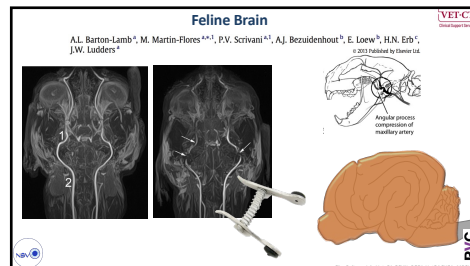
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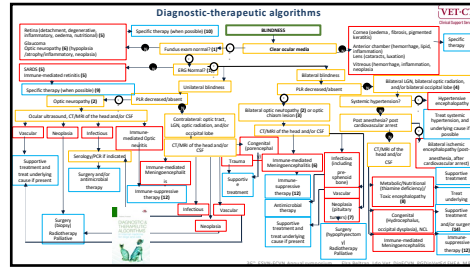
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