

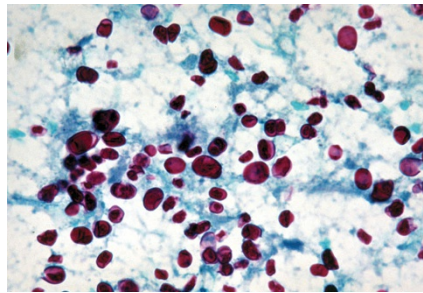
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## What's your diagnosis:

# Head Tilt and Sudden Blindness in a Dog

An adult, 40-lb, age-unknown, male mixed-breed dog was obtained from a licensed animal supplier for surgical training of veterinary students at an Australian veterinary school. Although Australian laws allow the use of pound dogs that would otherwise be euthanized, community concern and the potential for adverse publicity have virtually stopped the supply of pound dogs. Consequently, when dogs are used in medical research or veterinary education, the licensed suppliers provide unwanted farm dogs from rural areas or unwanted surplus greyhounds.

On arrival, supervised veterinary students examined the dog and admitted it to quarantine. They screened the dog for heartworm (it was negative) and endoparasites (it was positive), then treated it orally with Drontal Plus (Bayer Healthcare, Animal Health Division, Shawnee Mission, KS) containing praziquantel, pyrantel embonate, and febantel, and vaccinated it against distemper, infectious hepatitis, parvovirus, and parainfluenza (Canvac-4, CSL, Australia). Three weeks after arrival, the students noticed the dog suddenly developed a right-sided head tilt. Clinical examination, including otoscopic examination of the ear canal, was unremarkable, and the supervising veterinarian placed the dog on the antibiotic enrofloxacin for 14 days. There was no response to treatment and the students caring for the dog thought that during the two weeks of treatment the dog had become blind. The right-sided head tilt was still present and the dog was weak and falling to the right side. A complete blood count, serum biochemistry screen, and abdominal, thoracic, and skull radiographs were unremarkable.



**FIGURE 1.** Ocular aspirate from a male mixed breed dog with blindness, bilateral vitreous humor cloudiness, and multiple raised white retinal lesions. The aspirate contains many microorganisms varying in size and shape. Many of the cells show irregular cytoplasmic and nuclear cleavage and contain endospores. PAS stain, medium high power.

A veterinary ophthalmologist examined the dog and found bilateral clouding of ocular fluid and multiple white, patchy retinal lesions. He aspirated a sample of vitreous humor for microscopic examination and saw numerous microorganisms ~12 x 6 µm in diameter with a thin cell wall. Endosporulating spherules were seen in some cells. The microorganisms stained poorly with Giemsa, but were strongly positive on Periodic Acid Schiff (PAS) staining (Fig. 1).

The supervising clinician made a tentative diagnosis and decided to euthanize the dog. On necropsy, the most striking gross lesions were miliary linear to round 0.1 cm tan-white nodules throughout the myocardium (Fig. 2). The thyroids contained miliary linear white 0.2 cm foci throughout. The brain was unremarkable and the nasal cavity, cranial vault, and tympanic bullae were clear of exudate. The eyes were removed and taken by the ophthalmologist.



**FIGURE 2.** Close up of the heart of the same dog in Fig. 1. The surface of the myocardium has multiple linear to round tan-white lesions. Similar miliary lesions were seen throughout cut sections of the myocardium.

Histological examination of organs excluding the eyes revealed severe dissemination of similar organisms as seen in the ocular aspirate throughout the heart and thyroids, and moderate to severe distribution in the kidneys. There was mild to moderate scattering of the organism in lymph nodes, pancreas, liver, and intestinal submucosa. There was mild multifocal random dissemination in the brain. The spleen was depleted of lymphocytes.

Based on the clinical signs and morphological appearance of the organism, what do you think is the cause of disease in this dog? How common is this disease? Does it have other clinical manifestations? How would you treat this disease? How would you definitely identify the organism?

## What's your diagnosis?