Bilateral granulomatous and necrotizing panophthalmitis occurring after vaccination in a dog

Carolina Naranjo Freixa[1], Miriam Caro Suárez[2], María Sánchez Encinas[3], Isabel Rodríguez Piñeiro[3], Fernando Laguna Sanz[2]
[1]IDEXX Laboratories, Spain
[2]Ophthalmology Service, Hospital Veterinario Puchol, Madrid, Spain
[3]Internal Medicine Service, Hospital Veterinario Puchol, Madrid, Spain

INTRODUCTION

Vaccine reactions are occasionally reported in dogs. It may be difficult to ascribe a lesion to a vaccine reaction, and ruling out other potential etiologies is essential. Granulomatous scleritis, necrotizing or non-necrotizing, is described in dogs and it is presumed to have an immune-mediated etiology. Inflammation can extend from the sclera into the adjacent intraocular or periocular tissues. Our goal was to describe a case of bilateral granulomatous and necrotizing panophthalmitis in a dog occurring shortly after vaccination.

MATERIALS AND METHODS

Clinical history and diagnostic tests were reviewed, including complete physical and ophthalmic examination, CBC, biochemistry, serology, abdominal ultrasound, cytology and culture of aqueous and vitreous humor, and histopathology of both eyes.

RESULTS

A 1 year and 9-month-old female intact Beagle dog presented for bilateral blindness. It had been vaccinated with a pentavalent vaccine approximately 1 week prior to presentation (Vanguard CPV-L DA2Pi, Zoetis®). After complete ophthalmic examination, a clinical diagnosis of bilateral panuveitis of presumed infectious origin was made (Fig. 1). Biochemistry revealed a 20-fold increase in ALT and ALP and 7-fold increase in GGT. Abdominal ultrasound revealed mild and diffuse changes suggestive of steroid hepatopathy vs other hepatopathy (vacuolar, lipid or nonspecific). Serology for *Leishmania infantum*, *Ehrlichia canis*, *Anaplasma* spp and *Rickettsia* spp was negative. PCR for *Leptospira* spp on aqueous humor and PCR for *Anaplasma* spp and *Bartonella* spp on blood were also negative. Cytology revealed mononuclear and lymphocytic inflammation in the aqueous humor, with occasional individualized melanin-laden macrophages in the vitreous. Cytology and culture of the aqueous and vitreous humor did not reveal organisms. Bilateral enucleation was elected.

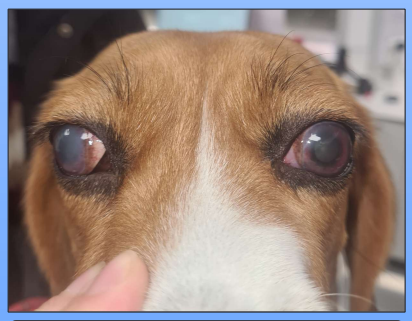

Figure 1. Clinical appearance at the time of presentation. There is episcleral injection and corneal edema.

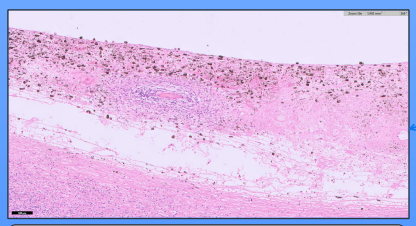

Figure 2. Granulomatous perivasculitis with extensive choroidal necrosis. HE.

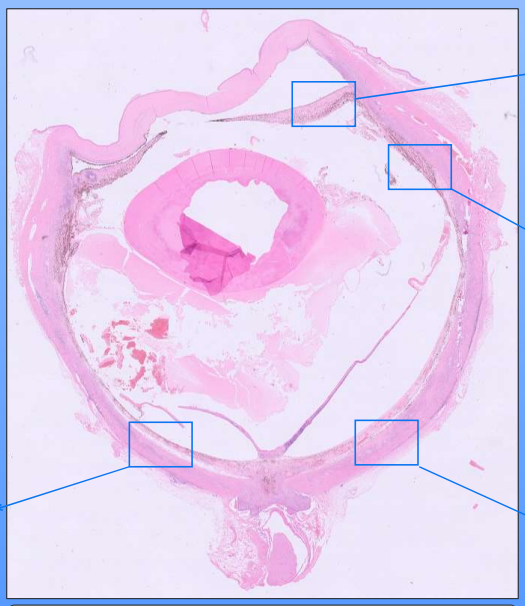

Figure 3. Subgross view of the right eye (OD). Marked thickening of the uvea, proteinaceous exudate in the vitreous and retinal detachment can be seen. HE.

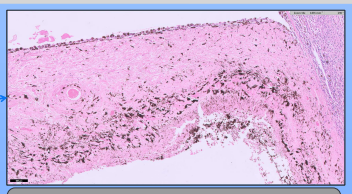

Figure 4. Extensive iris necrosis with loss of the posterior epithelium and pigment dispersion. HE.

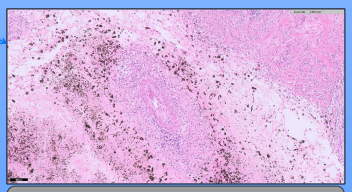

Figure 5. Granulomatous vasculitis/perivasculitis in the ciliary body, with severe associated necrosis. HE.

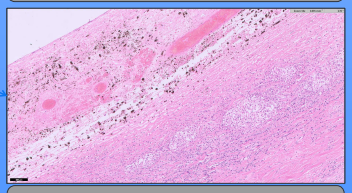

Figure 6. Granulomatous inflammation of the sclera with extensive choroidal necrosis. HE.

Microscopic examination showed bilateral granulomatous panophthalmitis, including severe granulomatous scleritis and extensive necrosis of the uvea (Figs. 2-6). Granulomatous vasculitis and perivasculitis was seen in some viable areas of the uvea (Figs. 2 and 5). Additionally, there were robust preiridal fibrovascular membranes, posterior synechia, exudative retinal detachment and pyogranulomatous optic perineuritis in both eyes (Fig 3). The right eye (OD) also had a mature cortical cataract. A corneal perforation with aphakia (attributed to lens extrusion through the perforation) was noted in the left eye (OS). Special stains (Gram, PAS, Ziehl-Neelsen, Warthin Starry) and PCR for *Leptospira* spp performed on the paraffin block were negative. Liver values progressively normalized over the following weeks.

CONCLUSIONS

Granulomatous and necrotizing scleritis is suspected to have an immune-mediated origin and, in this dog, it occurred bilaterally and symmetrically shortly after vaccination, associated with extensive uveal necrosis. Extensive search did not reveal the presence of microorganisms in the eye or associated systemic infections. We hypothesize that the severe ocular lesions in this dog may have been related to the recent vaccination. A potential delayed-type hypersensitivity reaction is suspected.

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