



# Diagnostic Exercise

## From The Davis-Thompson Foundation\*

Case #: **161** Month: **March** Year: **2021**

### Answer Sheet

**Title:** *E. cuniculi*-induced phacoclastic uveitis in a rabbit

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**Morphologic diagnosis:** Uveitis, severe, chronic, focal, pyogranulomatous with intralesional spores and cataractous change

**Typical gross findings:** Cataract and uveitis

**Typical microscopic findings:** Inflammation centred on the iris and ciliary body associated with a dense infiltrate of heterophils mixed with fibrin, necrotic debris and multinucleated giant cells possibly containing lens remnants. Inflammatory cells and debris spill into the anterior chamber and are adhered to the lens and also Descemet's membrane. The lens may be distorted with eosinophilic globular change (Morgagnian globules), cortical cataract formation and basophilic spores within the lens capsule. Gram stains can reveal gram-positive spores within the inflammatory infiltrate and lens.

**Aetiology:** *Encephalitozoon cuniculi*

### Comment:

*Encephalitozoon cuniculi* is an opportunistic, emergent, zoonotic microsporidian parasite infecting a number of different species of mammals and humans. It can infect both domestic and laboratory rabbits, resulting in chronic interstitial nephritis, granulomatous encephalitis and phacoclastic uveitis (Künzel and Joachim 2010). *E. cuniculi* spores can be identified in paraffin-embedded, H&E stained tissue sections although they can be obscured by inflammatory debris. Gram and modified trichrome stains were determined to be the best stains for enhancing spore detection (Rodríguez-Tovar et al. 2017).

In one study of 144 seropositive rabbits with clinical signs, 75% showed neurological signs, 14.6% demonstrated phacoclastic uveitis, and 3.5% suffered from renal failure (Künzel et al. 2008).

Ocular *E. cuniculi* infection can be responsible for cataract and lens-induced uveitis. Inflammation occurs in response to the release of lens protein after lens

capsule rupture. Histopathological investigation of four rabbits with eye lesions found pyogranulomatous inflammation encasing an anterior or polar lens capsule break. Heterophils, macrophages and multinucleated giant cells containing lens fiber remnants were visible. Occasional spores were detected by immunohistochemistry within lens epithelial cells (Giordano et al. 2005).

The most frequent route of infection for *E. cuniculi* is probably through ingestion of spores shed in urine of infected animals and haematogenous spread via infected monocytes, but little is known about the pathogenetic mechanisms of the disease. How *E. cuniculi* gains access to the lens is poorly understood. The lens is an avascular segregated compartment in the adult and it is thought there may be early infection in rabbit kits, when the lens has a thin capsule and rich vascularity (Giordano et al. 2005).

Treatment with various therapies often proves ineffective although phacoemulsification of infected lenses has been successfully undertaken in rabbits with slowly progressive unilateral phacoclastic uveitis and cataract formation (Felchle and Sigler 2002).

## References

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