Epidemic blindness 
(choroid blindness) in kangaroos  

Introductory statement

A number of studies involving serology and virus isolation have confirmed that infections with arthropod-borne viruses are common in native wild mammals in Australia (Ladds 2009). One of the more significant syndromes associated with infection is that of kangaroo blindness, also referred to as epidemic blindness, choroid blindness or chorioretinitis of kangaroos. The disease is significant because it has been associated with intermitted episodes of deaths of large numbers of animals.

Aetiology

Orbivirus of the Wallal serogroup (a variant to the reference strains of this common virus), Warrego virus possibly also involved.

Natural hosts

Most common in western grey kangaroos (*Macropus fuliginosis*), also reported from eastern grey kangaroos (*Macropus giganteus*), red kangaroos (*Macropus rufa*) and euro (*Macropus robustus*).

Occurrences in Australia

Western New South Wales, north-western Victoria, south-eastern South Australia, and Western Australia, between April 1994 and July 1996. Earlier outbreak in north-western Victoria in 1975. The significance of the choroiditis reported in macropods from New South Wales and Queensland that were examined in March 2010 remains unclear, given the absence of retinal lesions.
Epidemiology

Transmitted by midges (Culicoides austropalpalis, C dycei and C marksii). These (or at least related viruses) apparently circulate regularly in northern Australia. A possible explanation for the occurrence of outbreaks may be the entry of the viruses, or at least a pathogenic strain, into southern vector populations and in turn the infection of susceptible groups of macropods. During outbreaks infection is widespread, but often asymptomatic. Only severely affected animals which become blind are noticed. Animals are viraemic (thus capable of transmitting infection to biting midges) within several weeks of first infection, weeks to months before clinical signs appear. The eye lesions may be immunologically mediated.

Clinical signs

Clinically, kangaroos are blind, stumbling into bushes and other objects, especially when disturbed. Otherwise the animals are apparently normal, being able to hear, move and feed freely. Apart from blindness the are few external signs of eye disease. Changes in tapetal reflectivity when spotlighted.

Diagnosis

Clinical signs, pathology. Serology, PCR, immunoperoxidase tests and electron-microscopy used as research tools.

Pathology

The pathology of choroiditis in kangaroos has been reviewed by Ladds (2009). The main lesions are retinitis and/or retinal degeneration, and uveitis. The retinal lesions vary in extent from small segmental lesions to cases in which the whole of the retina is involved. Acute cases show active retinal degeneration, with necrotic retinal cells, neutrophils, gitter cells and often copious protein-rich exudate. Severe long standing cases show scant atrophic retinal remnants and few inflammatory cells. The uveitis, characterised by infiltration with mononuclear cells, is most prominent in the choroid overlying affected retina. Wallerian degeneration is seen in optic nerves. Mild multifocal non-suppurative encephalitis occurs in some cases, but may be coincidental.

Figure 1. a) Severe acute retinal necrosis and inflammation, with accompanying severe non-suppurative choroiditis. b) Severe chronic retinal atrophy and some remnant choroiditis. c) Normal retina (Courtesy of L. Reddacliff)

Differential diagnoses

Toxoplasmosis, head trauma.

Treatment

None practical.
Surveillance and management

Australia’s National Arbovirus Monitoring Program (http://www.animalhealthaustralia.com.au), or NAMP, plots the extent of arboviral spread on an annual basis.

Statistics

Wildlife disease surveillance in Australia is coordinated by the Wildlife Health Australia. The National Wildlife Health Information System (eWHIS) captures information from a variety of sources including Australian government agencies, zoo and wildlife parks, wildlife carers, universities and members of the public. Coordinators in each of Australia’s States and Territories report monthly on significant wildlife cases identified in their jurisdictions. NOTE: access to information contained within the National Wildlife Health Information System dataset is by application. Please contact admin@wildlifehealthaustralia.com.au.

Human health implications

None known.

Conclusions

The factors leading to an outbreak of kangaroo blindness after what are often prolonged intervals have not been identified. A newly emerged strain of virus is possible, however, the southern and then western movement of a pathogenic virus that has been endemic in the north cannot be excluded.

References and other information


Author details

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To provide feedback on this fact sheet

We are interested in hearing from anyone with information on this condition in Australia, including laboratory reports, historical datasets or survey results that could be added to the National Wildlife Health Information System. If you can help, please contact us at admin@wildlifehealthaustralia.com.au.

Wildlife Health Australia would be very grateful for any feedback on this fact sheet. Please provide detailed comments or suggestions to admin@wildlifehealthaustralia.com.au. We would also like to hear from you if you have a particular area of expertise and would like to produce a fact sheet (or sheets) for the network (or update current sheets). A small amount of funding is available to facilitate this.

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