Rainbow lorikeet paralysis (clenched claw)

Fact sheet

Introductory statement
Rainbow lorikeet paralysis syndrome, also known as clenched claw syndrome, has been recognized as a disease of wild rainbow lorikeets (*Trichoglossus haematodus*) throughout eastern Australia since the 1970s.

Aetiology
The cause of the condition is unknown. Numerous theories, including lead poisoning, thiamine deficiency and viral infections, have been proposed but none have been proven.

Natural hosts
Rainbow lorikeets are predominantly affected, although the condition has also been described in scaly-breasted lorikeets (*Trichoglossus chlorolepidotus*) (Ladds 2009, Booth et al 2001).

World distribution
The condition has only been recognised in Australia.

Occurrences in Australia
The condition has most commonly been described from affected birds in Sydney and the central New South Wales coast area but cases have also been observed in Queensland and Victoria (Rose 1999).

Epidemiology
The disease affects both adult and sub-adult birds, but appears to be more common in juveniles, 12-16 weeks of age. It occurs mainly in spring and summer but cases have been seen throughout the year (Rosenwax and Phalen 2010, Rose 1999, Reece and Hartley 1994).
Clinical signs

The course of the disease is one to two weeks throughout which affected birds generally appear bright, alert and continue feeding. They present with unilateral or, more commonly, bilateral, flexed hocks and clenched feet and are unable to perch, usually resting on their hocks. A head tilt and intention tremor may also be present. Occasionally birds present collapsed and die within one to three days. Other birds continue to live and adapt to resting on their hocks. Only low numbers are known to recover completely and return to the wild (Rosenwax and Phalen 2010, Rose 1999, Pass 1993, McOrist and Perry 1986).

Diagnosis

Diagnosis is based on clinical signs presenting in conjunction with histological evidence of a non-suppurative encephalomyelitis.

Pathology

There are no significant gross lesions. Histologically there is non-suppurative inflammation in the cerebellar white matter, caudal brainstem and spinal cord consisting of lymphocyte, plasma cell and macrophage perivascular cuffs and endothelial cell proliferation. Mononuclear cell infiltration may also be present within the dorsal root ganglia and proximal regions of the peripheral nerves. Some birds also have foci of neuronal necrosis, astrocytosis, and vacuolation of the neuropil within the hind brain or spinal cord. Wallerian degeneration is frequently observed in the spinal cord and peripheral nerves of birds (Ladds 2009, Rose 1999, Pass 1993, McOrist and Perry 1986).

Differential diagnoses

Differential diagnoses include traumatic injury and polioencephalomalacia.

Laboratory diagnostic specimens

A complete necropsy should be performed. Collect a range of tissues, including brain, spine and peripheral nerves (sciatic and brachial), and submit them in formalin for histopathology. Frozen tissues should be held for possible further testing.

Treatment

Although a variety of treatments, including CaEDTA, fluids, meloxicam, corticosteroids, and Vitamin E and Vitamin B injections, have been tried none have proven to be successful.

Prevention and control

Control of the disease is not possible at this stage because the aetiology is unknown. However, as thiamine deficiency is one possible cause, and many affected birds are found near feeders, it would seem prudent not to feed wild lorikeets.
Surveillance and management

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.

There is no targeted surveillance program for rainbow lorikeet paralysis syndrome.

Statistics

There are currently two reports of rainbow lorikeet paralysis syndrome in the National Wildlife Health Surveillance Database. An event in Sydney consisting of nine birds was reported in 2010, while a single affected juvenile lorikeet from Lilyfield was reported in 2012.

One study reported that between five and ten percent of lorikeets rescued annually in south-east Queensland and coastal NSW presented with this syndrome (Booth et al 2001).

Wildlife Health Australia is interested in receiving reports of this condition in wild birds in Australia. Contact admin@wildlifehealthaustralia.com.au.

Research

A recent report investigated the condition in nine affected rainbow lorikeets. Of these eight were positive for lead exposure with three having high blood lead levels. However, liver lead levels were within normal range and no histological evidence of lead poisoning was found. Four birds did have evidence of metastatic mineralisation of the gastrointestinal tract, lungs or kidneys. This could have been caused by cadmium toxicity, which can also yield false positive results on the lead analyser used in the study. One bird had evidence of adenovirus infection, one bird tested positive for psittacine beak and feather disease virus and two birds had gastrointestinal papillomas.

The authors propose future studies to assess serum biochemistry profiles to look for evidence of muscle degeneration, electrolyte disturbances and kidney dysfunction. Tissues will be screened for heavy metals and other toxins. Birds will also be tested for evidence of infection with herpesviruses, beak and feather disease virus, and bornavirus (Rosenwax and Phalen 2010).

To gain a more complete epidemiological picture of the disease as many cases as possible should be entered into eWHIS.

Human health implications

None.

Conclusions

Rainbow lorikeet paralysis syndrome has been recognised for many years. While it does not appear to represent a major threat to lorikeet populations it may be indicative of more widespread issues related to chronic exposure to toxins, malnutrition or other factors.
References and other information


Acknowledgements

The following people have had input into this document: Peter Holz.

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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.

Disclaimer

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