Trichinellosis and Australian Wildlife

Fact sheet

Introductory statement

Trichinellosis is caused by infection with *Trichinella* spp., intracellular helminth parasites of mammals, birds and reptiles. Trichinellosis primarily refers to infection with *T. spiralis*, a significant public health risk (Dick and Pozio 2001). *T. spiralis* has never been diagnosed in animals in Australia (Animal Health Australia 2013). A related species (*T. pseudospiralis*) is reported in wildlife in Tasmania (Obendorf et al. 1990).

Aetiology

*Trichinella* spp. are nematodes belong to the family *Trichurata*. There are 12 genotypes identified, eight of which are distinct species. Most human cases are due to *T. spiralis* and *T. murrelli* (Dick and Pozio 2001).

Natural hosts

Trichinella infections occur in an extremely wide host range including mammals and birds. Infection is most common in rodents and carnivores but it is likely that all mammalian species can serve as suitable hosts (Gajadhar and Forbes 2010). The domestic pig is the main reservoir host for *T. spiralis*.

World distribution and occurrence in Australia

*Trichinella* spp. have been detected worldwide in domestic and wild animals (Pozio 2007).

There are no cases of Trichinella reported from mainland Australia. *T. pseudospiralis* infection has been detected in marsupials and birds in Tasmania (Obendorf et al. 1990), and in a human from Tasmania (Andrews et al. 1994). *T. papuae* has been detected in a mature boar from a Torres St island and has been described in pigs in New Guinea (Cuttell et al. 2012). *T. spiralis* has never been diagnosed in animals in Australia and Australia’s domestic pig population is free from *T. pseudospiralis* and other *Trichinella* species (Animal Health Australia 2013).
Epidemiology

Hosts are infected by ingesting encysted larvae in muscle tissue. Most wildlife acquire the parasite from scavenging. Pigs can become infected following ingestion of uncooked garbage, faeces or infected rat carcasses. The matured larvae penetrate the small intestine and distribute throughout the body, burrow into individual muscle cells and result in formation of a cyst to protect the larvae (Merk Veterinary Manual 2016). Globally, wildlife may be an important reservoir for infection of domestic animals and humans (Dick and Pozio 2001).

Clinical signs

Infection in wildlife and domestic animal hosts does not commonly cause clinical disease. Decreased mobility, fever, inappetence, reduced growth, decreased reproductive activity and increased risk of predation may be seen (Dick and Pozio 2001). Gastrointestinal and respiratory symptoms, fever, muscle pains and weakness are seen in humans.

Diagnosis

Diagnosis is by microscopic examination of muscle biopsy or antibody detection, using ELISA. Samples for testing include tissues of tongue, jaw, diaphragm and skeletal muscle. Polymerase chain reaction (PCR) has simplified the identification of Trichinella isolates from different host species and geographical regions (Dick and Pozio 2001).

Pathology

There may be elevated muscle enzymes in blood serum. There are few gross lesions observed with infection. Lesions may include sloughing of gut epithelium and local haemorrhage of the small intestines. Larval cysts may be visible in the muscles of the jaw, tongue and diaphragm. Affected muscles and lymph node may be grossly swollen and soft in texture.

Treatment, prevention and control

In wildlife and other infected animals, treatment is impractical. The prevention and control of trichinellosis in free-living wildlife is difficult and arguably unnecessary. In domestic trichinellosis, the most practical form of control is preventing the ingestion of contaminated animal products (Dick and Pozio 2001). Human infection can be avoided by ensuring meat is cooked appropriately. Prevention of trichinellosis in endemic areas involves farm level controls, meat inspection regulations, food processing methods and public education (Merk Veterinary Manual 2016).

Surveillance and management

In Australia, domestic surveillance includes abattoir monitoring. A study of wild pigs and other feral carnivores found no evidence of Trichinella infection in the far north of mainland Qld, with one positive case of *T. papuae* in a mature boar from a Torres St island (Cuttell et al. 2012). Surveillance in Australian wildlife includes game meat export certification results and limited other surveys in wildlife (Cuttell et al. 2012; Cuttell 2013).
Wildlife disease surveillance in Australia is coordinated by 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.

There are reports of *T. pseudospiralis* infection in Tasmanian devils (*Sarcophilus harrisii*) and a quoll (*Dasyurus* sp.) (all from Tasmania) in the National Wildlife Health Information System.

**Human health implications**

Trichinellosis is a significant public health risk to humans. Consumption of raw or undercooked meat represents the main risk for human infection (Pozio 2007). A risk assessment for the introduction of *T. pseudospiralis* and *T. papuae* in mainland Australia via wildlife found a very low level of risk of introduction, but possible significant consequences for human health recreational hunters, consumers of game meats and government authorities responsible for food security and trade (Cuttell 2013).

**Conclusions**

Trichinellosis is a significant zoonosis in many countries worldwide. Trichinellosis is not present in mainland Australia and incursion would have considerable public health, trade and animal health implications. Ongoing surveillance, research and prevention strategies are important to ensure the parasite is not introduced to Australia in meat products or wildlife.

**References and other information**


Animal Health Australia (2013) Response policy briefs (Version 3.5). Primary Industries Ministerial Council, Canberra, ACT.


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**To provide feedback on this fact sheet**

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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