



Animal &
Plant Health
Agency

Thelazia callipaeda

Information Note

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The parasite

T. callipaeda is a vector borne, zoonotic nematode that infects a variety of mammals. The adult parasites are 1-1.7cm in length and are found under the nictitating membrane, in the conjunctival sac, lacrimal duct and glands of dogs, cats, wildlife (particularly foxes but also rabbits, hares and other species) as well as man. It produces eggs that hatch immediately to the first larval stage (i.e. it is larviparous). The parasite develops in and is transmitted by the male fruit fly *Phortica variegata* (the only recognised vector for this parasite in

Europe). This fly feeds on the lachrymal secretions of animals and humans as well as plant juices and transmits the infective larvae (L3) to the final host.

The vector

Phortica variegata flies are associated with woodlands and peak activity is observed at 20-25°C, 50-75% humidity. *T. callipaeda* L1 to L3 development takes place in the intermediate fly host vector and can be completed in as little as 14 days. The L3 (infective) larvae migrate to the proboscis (mouthparts) where they are transmitted to the conjunctival sac of the final host. The prepatent period, i.e. time from infection of the final host with L3 larvae until L1 are produced by the adult parasite, is 4-8 weeks

P. variegata have been identified in the UK (Gloucester, Kent and Berkshire) (Gibbs, 2003, Clemons, 2009 and Chandler, 2014) and modelling has suggesting the south and east of England as suitable habitat for this fly (Otranto et al, 2006)

T. callipaeda in Europe

This parasite is considered enzootic in Italy, France and Switzerland, but there are increasing autochthonous reports (i.e. reports in indigenous or untraveled animals) from other countries in Europe. There have also been reports of cases in dogs imported or travelling from enzootic countries into Germany, Belgium, Netherlands and recently the UK (Graham-Brown et al, 2017). There is concern that infected animals could be a source of infection of the intermediate fly host in the UK and increase the chance of human and animal disease. People and cats travelling to endemic areas are also at risk of being infected.

It has been suggested that a new endemic area in Spain may have resulted from the importation of hunting dogs into that area in the past. (Miro et al, 2011)

Wildlife

Various wildlife species have been identified as being infected in endemic areas. Foxes play a central role as indicated by the high prevalence of thelaziosis recorded in this animal species in hyperendemic areas of southern Italy (Otranto et al, 2009). Their importance is probably due to their proximity to the vector.

Clinical signs in animals

Ocular signs of pain, lacrimation, conjunctivitis, excessive blinking, keratitis and corneal ulceration have been reported. Subclinical infection is also possible, traditionally associated with male only parasite infections; however one case detected in the UK had

subclinical infection with male and female parasites present (Graham-Brown et al, 2017), thus increasing the chance of undetected infections spreading to vectors within the UK.

Treatment in dogs

Obligatory treatment for animals entering the UK (i.e. praziquantel) has no effect on this parasite. The only treatments considered effective are the oral or spot on preparations of milbemycin oxime and moxidectin.

Monthly treatment with milbemycin oxime when animals are travelling in enzootic areas is advised to reduce infection rate (Diakou, 2017). Manufacturers guidelines should always be followed. Slow-release insecticide collars do not protect against thelaziosis. (Lechat et al, 2015)

Human cases

Termed 'oriental eye worm', the majority of cases occur in Asia, where it occurs predominantly in rural communities with poor living and socioeconomic standards and mainly affects the elderly and children. However a small number of autochthonous human cases have now been reported in Europe in areas where the infection is well established in domestic animals (dogs and cats) and wild carnivores such as foxes, beech martens and wild cats (Otranto and Dantas-Torres, 2015). Usually cases in humans cause clinical signs of exudative conjunctivitis, lacrimation and pain, but asymptomatic infection is recorded. Medical advice should be sought if concerned.

References

- Chandler, Dipterists Digest, (2014) 21, 149
- Clemons, Dipterists Digest, (2009) 16, 25
- Diakou, Veterinary Record (2017) 181, 344-345
- Gibbs, Dipterists Digest, (2003) 10, 113
- Graham-Brown et al, Veterinary Record (2017) 181, 346
- Lechat, et al. Parasites & Vectors (2015)8, 93
- Miro et al, Parasites & Vectors (2011) 4, 148
- Otranto and Dantas-Torres, Parasites & Vectors (2015) 8, 273
- Otranto, et al, Med Vet Entomol. (2006)20:358–64
- Otranto, et al, Vet Parasitol. (2009)166: 262–7.
- Oxford textbook of Zoonoses 2nd edition, edited by Palmer et al, (2011) 850
- Veterinary Parasitology 4th edition, edited by Taylor, Coop and Wall (2016)

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