# Trichinellosis

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## Nature of the disease

There are 7 species of Trichinella including the most recently discovered T. papuae found in Papua New Guinea in 1998. The potential importance of trichinellosis as a zoonosis in the Pacific Region is investigated by the Regional Animal Health Service of SPC under the Zoonoses Regional Project.

## Classification

OIE List B disease

## Susceptible species

All Trichinella spp have relatively low host specificity and all mammals are susceptible to trichinellosis, including humans. Birds (Raptors, passeriform birds, and chickens) are susceptible to T. pseudospirallis.

Infestation are more common in omnivores (Horses, Humans, Pigs, Rats...) and carnivores (Cats, Dogs, Seals...). Pigs and rodents seem to play the most important in the epidemiology of the disease.

## Distribution

Trichinellosis is more common in temperate regions than in tropical regions. It occurs in North America, South America (Argentina and Chile), northern and eastern Europe, Kenya, Egypt, Lebanon, Nepal, Thailand, Indonesia.

In the Pacific region, Trichinellosis occurs in the North Island of New Zealand, and serological evidences of Trichinella spp. have been found in Fiji, Kiribati, Palau, Samoa, Solomon Islands, Tonga and Wallis and Futuna. T. pseudospirallis has been found in Australia and T. papuae in PNG.

## Clinical signs

The pathogenicity of all the different species of Trichinella has not yet been totally explored. For the most common, T. spirallis, the following clinical signs have been found.

Trichinellosis is rarely detected clinically in animals. In case of heavy burden, the following signs are seen:

In humans there is an initial phase dominated by gastro-intestinal symptoms (vomiting and diarrhea), followed by a stage lasting about 2 months in which there is:

# Post-mortem findings

Cysts may be present in any voluntary muscle but are best seen in thin muscles such as the diaphragm, the tongue, the masseters, the laryngeal muscles, and eyes muslces. In case of heavy burden (1,500 parasites/g), the muscle can have a grey appearance directly observable. There are no cysts for the two non encapsulated Trichinella: T. pseudospirallis and T. papuae.

Usually the lesions (cysts and larvae) are only visible under microscopic observation.

NB People handling potentially infested tissues should wear rubber gloves and wash thoroughly before eating or handling food.

# Differential diagnosis

Trichinellosis cannot be diagnosed on clinical grounds. Microscopically the cysts have to be differentiated from those of other parasitic, protozoan or fungal infections.

# Specimens required for diagnosis

Usually the disease is not recognised as a clinical disease and is only diagnosed in animals at slaughter.

For identification of the parasite, different techniques can be used:

For serological identification of the parasite, ELISA tests have been developed. Their sensitivity is very good (detection of infection level such as 1 larvae/100g of muscles) but they may fail to diagnosis early and late stage of the disease, due to lack of immune response. Thus they are more useful for herd screening than for individual diagnosis. An ELISA test for T. papuae infection will be validated under the zoonoses project.

N.B. The selection of muscles for samples require a good knowledge of the parasite location, for T. papuae this is beeing investigated under the zoonoses project.

# Transmission

Disease in pigs is perpetuated by swill feeding, eating infected rodent' carcases, tail-biting, infestation by faeces from newly infested animals.

Transplacental transmission of larvae occurs in mice and humans, but not in pigs.

Human transmission is caused by ingestion of raw, or improperly cooked, infected meat. Pigs, and where eaten, horses, dogs and rats are the source of infection for humans. Trichinella organisms are destroyed by storing meat at -15oC or heating to a core temperature of 60°C.

# Risk of introduction

Trichinellosis could be introduced with infected pigs or pig meat from endemically infected countries. Freezing will destroy the encysted larvae in pig meat. Recommended temperatures and times to destroy T. spirallis are:

However introduction by infected rodents could result in pig transmission which emphasize the importance of de-ratting aircraft and ships.

# Control / vaccines

No vaccines have been developed so far. Treatments exist for humans if diagnostis is done in time.

To prevent trichinosis in pigs (main host at risk for human health in the region) measures involve the control of vectors and the destruction of the parasite in infected meat. If swill is fed to pigs, it should be cooked at 100°C for 30 minutes to inactivate T. spirallis.

# References

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