

What is *Toxoplasma gondii*?

- *T. gondii* is a parasite that can infect virtually all species of warm-blooded animals, including people (zoonosis).
- Felidae are the definitive hosts. Non-feline species are intermediate hosts.
- Sporozoites in oocysts are excreted in faeces; tachyzoites and bradyzoites are found in tissues and milk.

Infection

- *T. gondii* has an entero-epithelial life cycle in its definitive host and is shed in the faeces. This shedding lasts 10-14 days.
- There are three major modes of transmission of *T. gondii* in all host species (including humans and cats): congenital infection, ingestion of infected tissues and ingestion of oocyst-contaminated food or water.
- After ingestion, *T. gondii* follows an extra-intestinal life cycle; tissue cysts are mainly formed in the CNS, muscles and viscera.
- Parasitaemia during pregnancy of the host can cause placentitis and spread of tachyzoites to the foetus, potentially leading to abortion or congenital disorders.

Clinical signs

- Approximately 10 to 20% of cats experimentally inoculated with *T. gondii* tissue cysts develop self-limiting small bowel diarrhoea for 1 to 2 weeks. However, *T. gondii* infection is not a major cause of diarrhoea in cats.
- Systemic disease is rare and usually develops from reactivation of latent infections rather than during newly acquired infection.
- Cats with clinical toxoplasmosis can develop several disorders, including depression, anorexia, weight loss, fever, muscle hyperesthesia, seizures, ataxia, dyspnoea, anterior or posterior uveitis and diarrhoea.
- Transplacentally infected kittens develop more severe signs and frequently die of pulmonary or hepatic disease.

Diagnosis

- Antibody tests in cats are not very useful to prove clinical toxoplasmosis. However, if negative they can be used to rule out the disease. They are helpful to assess the risk for human health.

- An antibody-positive cat is very unlikely to shed oocysts (antibodies need 2 to 3 weeks to develop and by that time, the cat is usually no longer shedding). The cat is also unlikely to shed oocysts in the future if re-exposed or immunosuppressed.
- An antibody-negative cat could potentially shed oocysts (e.g. early infection before antibodies have developed) and might shed oocysts sometime in the future if exposed to *T. gondii* for the first time.
- Ante-mortem diagnosis of clinical toxoplasmosis should be based on the detection of the organism in muscle biopsies or bronchioalveolar lavage or by PCR (CSF or aqueous humour).
- Shedding of *T. gondii* oocysts is best demonstrated by faecal PCR.

Disease management

- Clindamycin is the treatment of choice for cats with clinical toxoplasmosis (recommended dose 10 to 12 mg/kg orally q 12 h for 4 weeks).
- Cats with uveitis should be treated with clindamycin (at the dosage above) and topical corticosteroids (e.g. prednisolone acetate 1% solution q 6 to 8 h) to avoid secondary glaucoma and lens luxations.
- Since *T. gondii* cannot be cleared from the body, recurrence of the disease toxoplasmosis is possible.

Prevention

- The best way to avoid *T. gondii* infection in cats is not to feed any raw meat.
- Although the risk of transmission of infection from a cat to its owner is very low, this can be reduced further by avoiding contact to cat's faeces (especially if older than 24 hours), covering sand-pits for children and washing hands after contact with cats.
- Additional measures for immunosuppressed persons and pregnant women may include:
 - Avoid cleaning cat's litter trays
 - Prevent cats from hunting
 - Prevent cats from eating insects (e.g. cockroaches can harbour *T. gondii* in high quantity)
- If testing for antibodies, please note that cats with antibodies to *T. gondii* have been infected in the past and are a highly unlikely source of infection in the future (as they have completed their 10-14 day period of oocyst shedding).



***Toxoplasma gondii* infection in cats**



Image courtesy of Katrin Hartmann, LMU, Munich, Germany.

■ Cat with toxoplasmosis with myositis caused by *T. gondii* cysts. The cat presented in lateral recumbency, was unable to get up, and showed severe muscle hyperesthesia.

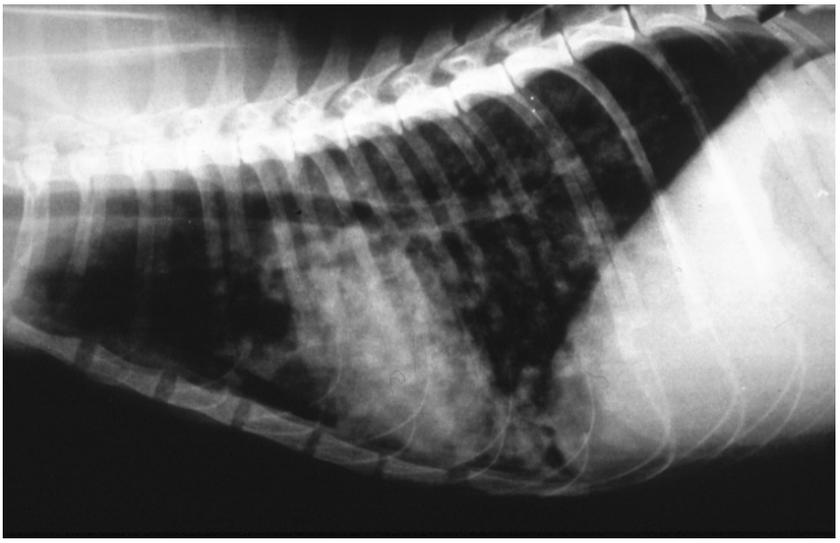


Image courtesy of Katrin Hartmann, LMU, Munich, Germany.

■ Thoracic radiograph (laterolateral view) of a cat with pulmonary toxoplasmosis.

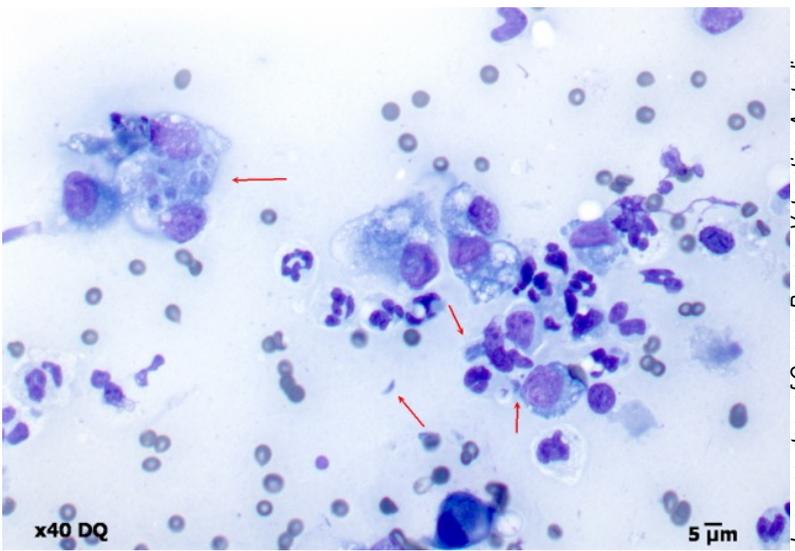


Image courtesy of George Reppas, Vetnostics, Australia.

■ Cytology of a fine needle aspirate of a cat with pulmonary toxoplasmosis and lung consolidation with numerous intracellular and extracellular *T. gondii* tachyzoites and cysts (arrows).