

Toxoplasmosis in Cats - A Problematic Infection for Our Feline Friends

The world is full of infectious organisms that cause disease in our pets. One problematic parasite is called *Toxoplasma gondii*, the causative agent of toxoplasmosis in cats. Toxoplasmosis is relatively common in our feline friends, yet is under-recognized as potential cause of a pet's clinical signs. This week I share some information about this important infection to raise awareness of it. Please share with other cat parents. Happy reading!



Toxoplasmosis - What is it?

In a recent post, I shared information about coccidiosis. *Toxoplasma gondii* is a coccidian too, but it's unique. This infectious agent infects virtually all warm-blooded animals (including humans), and cats are definitive hosts. There are three known infectious stages:

- Sporozoites in oocysts - a form found in cat feces
- Tachyzoites - a rapidly dividing state found in tissue cysts
- Bradyzoites - a slowly dividing stage found in tissue cysts

There are three main genotypes (aka genetic composition) of *T. gondii*: Type I, Type II, and Type III. In humans, Type I disease involves the eye and/or congenital infections. Type II infections occur in individuals with compromised immune system, and Type III infections involve the nervous system. Although Type I infections do occur in cats, most are Type II and Type III.

Infection occurs via one of the three major routes:

- Congenital transmission
- Ingestion of infected tissue
- Ingestion of contaminated food and water



Microscopic appearance of *Toxoplasma gondii* oocysts in a fecal examination

Less common modes of transmission are via lactation, blood product transfusions, and tissue transplants. Most cats become infected upon ingestion of a rodent harboring tissue cysts full of bradyzoites. Once in the gastrointestinal tract, bradyzoites are released by the cysts due to the action of potent digestive enzymes. The bradyzoites then penetrate individual intestinal cells to undergo either asexual or sexual reproduction. Asexual production results in the formation of tachyzoites that ultimately form cysts in tissues throughout the body, particularly skeletal muscle, visceral organs, and the central nervous system. Sexual reproduction produces unsporulated oocysts that are defecated in feces. The oocysts sporulate or become infective in the environment and are ingested by rodents to begin the cycle again.

Toxoplasmosis - What does it look like?

Clinical signs are variable, ranging from acute and rapidly fatal to slow and progressive. Given the life cycle of *T. gondii*, the clinical signs depend on the degree and location of organism-induced injury. The initial site of injury upon ingestion of oocysts and tissue cysts is the gastrointestinal tract. The result of this insult is self-limiting, small bowel diarrhea that lasts up to ten days. Interestingly, many cats actually don't develop outward clinical signs, and thus this type of infection can be silent and clinically unimportant.

Toxoplasma gondii in the form of tachyzoites gain access to blood and lymph fluid to spread to other organs, causing systemic toxoplasmosis. Associated clinical signs are seen most commonly in stressed cats and/or in those with compromised immune systems, including those co-infected with feline immunodeficiency virus (FIV) and those receiving immunomodulatory medications (i.e.: prednisolone, cyclosporine, etc.). Kittens infected either *in utero* or via ingesting infected milk from a queen are typically severely affected because of massive tachyzoite replication in the presence of developing immune systems. Many kittens may be stillborn or die before weaning.

The most common organs affected by toxoplasmosis are the lungs, central nervous system, liver, pancreas, heart, and eyes. Common clinical signs may include:

- Lethargy & depression
- Low body temperature
- Enlarged abdomen
- Continuous crying
- Unsteadiness while walking (called ataxia)
- Respiratory distress
- Coughing
- Weight loss
- Yellowing of the whites of the eyes (called icterus)
- Eye changes
- Vomiting
- Diarrhea
- Orthopedic issues (i.e.: joint pain, stiffness)
- Skin nodules

Toxoplasmosis - How is it diagnosed?

After obtaining a thorough patient history and performing a complete physical examination, a veterinarian will recommend testing to confirm a clinical suspicion for toxoplasmosis, as well as to assess major organ function. Recommended tests may include:

- Complete blood count
- Serum biochemical profile
- Urinalysis
- Diagnostic imaging (i.e.: chest radiographs, abdominal sonography)
- Serum antibody test - non-invasive blood test to detect immune system proteins the body makes in response to exposure to *T. gondii*
- Polymerase chain reaction - a test to detect deoxyribonucleic acid (DNA) of *T. gondii*
- Tissue cytology and/or biopsy - direct identification of *T. gondii* in tissues confirms infection

Pet parents may find it helpful to partner with a board-certified veterinary internal medicine specialist to develop a logical and cost effective diagnostic plan.

Toxoplasmosis - How is it treated?

The antibiotic clindamycin is the drug of choice to treat cats with clinical signs of toxoplasmosis. With effective therapy, clinical signs may begin to resolve within 48 hours, but up to four weeks of therapy may be needed. Other drugs (i.e.: pyrimethamine, trimethoprim, sulfonamides, triazines, azithromycin, etc.) may also be used effectively. Cat owners are encouraged to collaborate with a board-certified veterinary internal medicine specialist to help maximize the likelihood of a positive outcome.

Toxoplasmosis - Can I get it?

Toxoplasmosis is a zoonotic infection. That means it can be transmitted from cat to human. Common routes of infection are eating cysts in raw or undercooked meat and shellfish, as well as inadvertently ingesting oocysts in the feces of a recently infected cat. Working with soil (i.e.: gardening) contaminated with infected cat feces is another potential source of exposure and

infection. *Toxoplasma gondii* infection in individuals with healthy immune systems is often relatively innocuous. However, in pregnant women and immunocompromised people, infection can be deadly. Pregnant women should not handle / clean litter boxes, and all meat and fish products should be thoroughly cooked before eating them. Furthermore, people are recommended to consult with their personal physicians if their cat has been diagnosed with toxoplasmosis.



Pregnant women should not handling contaminated cat litter without consulting with their personal physician.

The take-away message about toxoplasmosis in cats...

Toxoplasmosis is a common parasitic infection encountered in cats. Clinical signs may be acute and life threatening or gradual and progressive. With accurate identification and prompt treatment, a positive outcome is a realistic expectation.

To find a board-certified veterinary internal medicine specialist, please visit the [American College of Veterinary Internal Medicine](#).

Wishing you wet-nosed kisses,

CriticalCareDVM