

TOXOPLASMOSIS

What is toxoplasmosis?

Toxoplasmosis is a disease caused by a one-celled parasite called *Toxoplasma gondii*, hereafter called the "toxoplasma organism." In humans, it may affect many different organs of the body, causing many different types of clinical signs. The respiratory system is commonly involved and pneumonia may result. The most common finding is a mild, flu-like illness that lasts a few days. Most people recover uneventfully. Even if the patient sees a physician, the illness may still be attributed to the flu unless special blood tests are run.

How does it relate to pregnant women?

If a pregnant woman contracts toxoplasmosis, it is possible for the toxoplasma organism to affect the unborn baby. It is this form of the disease that has the most dire consequences because the baby may be affected for life.

How common is toxoplasmosis in adults? And how common in cats?

Exposure to the toxoplasma organism will result in the production of antibodies. Antibodies are the defense agents of the immune system and are produced in response to immune system stimulation. The presence of antibodies means that the person or cat has been exposed; it does not necessarily mean that any disease occurred. It is estimated that about 50% of domestic cats in the United States have been exposed to toxoplasmosis. It is also estimated that about 33% of the U.S. population has been exposed. However, those statistics do not mean that 50% of the cats or 33% of humans have had the disease toxoplasmosis. The presence of antibodies only means that exposure to the toxoplasma organism has occurred in the past.

How common is it in babies?

The disease toxoplasmosis occurs in about 140 babies per million births in the United States, or about 14 per 100,000. A like number of children will be infected with the toxoplasma organism at the time of birth and develop disease later in life. Therefore, the combined incidence of congenital and acquired toxoplasmosis in the United States is 28 per 100,000 or 0.028%. Although this is indeed a real disease with dire consequences, it should be noted that its incidence is very small, especially in light of how many people have *Toxoplasma* antibodies.

How is it transmitted?

Although several species may develop the disease toxoplasmosis, including humans and dogs, the organism can only complete its life cycle in the domestic cat. This means that the cat may be infected with the toxoplasma organism and transmit it to other cats or to other species, including humans. However, in order for this to occur the following must happen:

1. The cat must be infected with the toxoplasma organism. In order for this to occur, the cat must eat

something infected with it. It is most commonly available to the cat by ingestion of infected mice or infected raw or undercooked meats, especially pork or mutton.

2. The cat must be shedding the toxo organism in its feces. This occurs for only about a 10 day period. It usually only occurs once in the cat's lifetime. (In a few situations, the cat may shed the organism again; however, if that occurs, the number of organisms that are shed are so small that transmission is very unlikely.)
3. The toxo organism must "incubate" in the cat's feces for 1-5 days before it is infective to humans. This "incubation" must occur after the feces leaves the cat's body and have access to oxygen (i.e. in the litter box or in soil).
4. The toxo organism must be swallowed by the person being infected. It is not spread to humans through the air.

The toxo organism may also be transmitted to humans by eating raw or undercooked meats, especially pork or mutton. Since many hamburgers from fast-food restaurants are made of beef diluted with pork, most authorities feel that human infection occurs much more frequently by this method than by association with cats. The incidence of toxo antibodies in U.S. veterinarians is not different than that of the rest of the population.

What is involved in testing for toxoplasmosis?

We are frequently asked to test a cat that belongs to a pregnant woman for toxoplasmosis. Pregnant women should know the following concerning toxoplasmosis testing.

1. A screening test for toxo antibodies can be performed on both the pregnant woman and the pet cat. A negative result means that the woman (and/or the cat) has not been exposed to the toxo organism. However, it does not infer that either the woman or the cat has any immunity to toxoplasmosis in the event of a future exposure. In fact, it means just the opposite. Both are susceptible to infection.
2. A single antibody titer that is positive, performed on the woman and/or the pet cat, means that there has been exposure to the toxo organism in the past or that there is an active infection of toxoplasmosis in progress. In order to know which situation exists, a second test must be run 2-4 weeks later.
 - a. If the two tests give similar results, there has been an infection in the past and a certain degree of immunity exists.
 - b. If the second test is significantly higher than the first, there is a strong possibility that an active case of toxoplasmosis is in progress.
 - c. It is very important that both tests be performed by the same testing laboratory in order to properly compare results.
3. The direct means of documenting the possibility of transmission of toxoplasmosis requires that we microscopically examine a fecal sample from the cat looking for the oocysts (eggs) of the toxo organism. Because these oocysts are very tiny (even under a microscope) and because the cat may not be shedding oocysts today but may do so in the future, multiple examinations must be done during the course of pregnancy, preferably once weekly. This is not a very high yield procedure, meaning that it can be difficult to detect the parasites and they can be missed by this diagnostic technique.

How can toxoplasmosis be prevented?

There are several practical means of preventing the transmission of toxoplasmosis.

- 1.** Do not allow your cat to eat mice or poorly-cooked meat. Feeding a commercial cat food and not allowing your cat outdoors virtually eliminates any possibility of the cat becoming infected.
- 2.** Clean all feces from your cat's litter box daily. *Even if the cat's feces is infected with toxo oocysts, they must incubate for 1-5 days before becoming infectious.* To be extra safe, do not let a pregnant woman clean the litter box.
- 3.** When working in soil (flower beds) that cats might use for defecation, wear gloves to keep from getting oocysts on your hands.
- 4.** Avoid eating raw or poorly-cooked meats. Be especially careful of fast-food hamburgers. Since this is probably more of a threat to your baby than your cat, special attention should be paid here.
- 5.** Keep children's sandboxes covered. Outdoor cats will frequently use the sandbox for defecation. Even if the feces are scooped out, the sandbox may remain contaminated with parasites.

SUMMARY

- 1.** Toxoplasmosis that affects babies is quite rare. (Incidence in the United States is 0.028% of all births.) It is frequently referred to as "A Ladies Home Journal Disease." (This magazine was the first widely-read publication to link toxoplasmosis and cats.)
- 2.** Feeding commercial cat food and keeping your cat indoors so it cannot catch mice will prevent spread of toxoplasmosis by your cat.
- 3.** Having someone other than a pregnant woman clean out the litter box daily will prevent spread of toxoplasmosis by your cat.
- 4.** Transmission from your cat to you requires that you swallow the toxo oocysts that have incubated in your cat's feces for 1-5 days. Reasonable personal hygiene should be adequate to prevent that from occurring.
- 5.** Toxoplasmosis is transmitted more commonly in the United States via poorly cooked meat than by cats.
- 6.** Testing your cat's blood for toxoplasma antibodies is only meaningful if a positive test is followed 2-4 weeks later with another test.
- 7.** Weekly testing of your cat's feces will more directly detect a cat that is capable of transmitting toxoplasmosis.