Toxoplasmosis

reprinted from www.aidsmeds.com, united states

What is it?

Toxoplasmosis is a disease caused by the organism *Toxoplasma gondii*. Toxoplasmosis usually affects the brain and causes a disease called toxoplasma encephalitis. The organism can infect and cause disease in other organs, including the eyes and lungs.

Common sources of this organism include cats or birds, and undercooked meat, especially pork, lamb, or venison. While cats or birds that test negative for toxoplasmosis and remain housebound are not a risk, those that go outside can carry toxoplasma back into the house or apartment. Handling either bird droppings or kitty litter than contains cat droppings is a major source of infection.

Toxoplasma encephalitis can occur in patients who have antibodies to *Toxoplasma gondii*—which indicates that the infection is present in the body—and have T-cell counts below 100. Luckily, some of the treatments used to prevent *Pneumocystis carinii* pneumonia (PCP), especially TMP-SMX (Bactrim™, Septra®), have been shown to effectively prevent toxoplasmosis from causing disease.

What are the symptoms of toxoplasmosis?

Some of the symptoms of toxoplasma encephalitis include headache, fever, confusion, seizures, abnormal behavior, and coma.

How is toxoplasmosis diagnosed?

A blood test can be ordered to check for the presence of antibodies to *Toxoplasma gondii* (including on cats & birds). However, just because someone has antibodies to this organism does not mean that they will experience disease. Approximately 40% of all people living in the United States have been exposed to *Toxoplasma gondii* at some point in their lives. Only people with compromised immune systems, particularly HIV+ patients with T-cell counts below 100, are at risk for developing toxoplasmosis, the active form of disease caused by this organism. In some cases, active disease can be caused by a recent exposure, perhaps from eating undercooked meat. It's also possible that harmless amounts of *Toxoplasma gondii* in the body can take advantage of the immune system being suppressed, begin reproducing, and cause active disease.

To diagnose toxoplasma encephalitis, an MRI scan is usually performed. *Toxoplasma gondii* can cause multiple lesions on the brain. However, it can be difficult to tell the difference between toxoplasmosis of the brain and other central nervous system disease, such as lymphoma. In turn, a brain biopsy is sometimes recommended.

Polymerase chain reaction (PCR) can be used to find *Toxoplasma gondii* in the blood and in the spinal fluid (cerebrospinal fluid, or CSF). If PCR finds this organism, treatment is definitely required in people with T-cell counts below 100.

How is toxoplasmosis treated?

To treat toxoplasmosis, a combination of three drugs—amounting to more than ten pills a day—is usually recommended:

- **Pyrimethamine (Daraprim®):** A large dose (between 100mg and 200mg) of this antimalarial drug is taken at first, followed by a lower dose. It is taken by mouth in pill form.

REPRINTED BY
PROJECT inform
Information, Inspiration and Advocacy for People Living With HIV/AIDS
MARCH 2002

- **Folic Acid, Vitamin B9:** This vitamin helps protect the bone marrow from the side effects of pyrimethamine.
- **Sulfadiazine:** This drug—an antibiotic—is taken by mouth four times a day.

High doses of these treatments are continued for four to six weeks. Thereafter, lower doses are taken as "maintenance therapy" to prevent the toxoplasmosis for coming back. Maintenance therapy can be discontinued if you have completed the initial six weeks of treatment and no longer have any symptoms of toxoplasmosis—provided that your T-cell count is above 200 for at least six months while taking anti-HIV medicines.

Some patients are allergic to sulfadiazine and cannot tolerate it. In turn, alternatives are often recommended. The drugs clindamycin or azithromycin (Zithromax®) have been shown to be effective when added to a combination of pyrimethamine and folic acid.

Corticosteroids, such as dexamethasone, are sometimes used to help control inflammation of the brain and the symptoms associated with toxoplasmosis.

Can toxoplasmosis be prevented?

Yes, it can. For people who do not have antibodies to *Toxoplasma gondii* or do have antibodies but no longer have the infection (determined using PCR), the best way to prevent toxoplasmosis is to prevent coming into contact with *Toxoplasma gondii*. Meats such as pork, lamb, or venison should never be eaten rare and should be cooked long enough that the internal temperature of the meat is 150°F. This is especially true for HIV+ people with T-cell counts less than 100.

As for cats and birds, it's always best to use rubber gloves when cleaning kitty litter boxes or removing droppings from bird cages. It's also best to clean up after these pets every day; *Toxoplasma gondii* is not infectious in fresh cat or bird excrement, as it takes several days for the organism's eggs to hatch while inside cat or bird feces.

Drugs used to prevent toxoplasmosis (prophylaxis) are, for the most part, the same as those used to prevent Pneumocystis carinii pneumonia (PCP). Trimethoprim-Sulfamethoxazole (TMP-SMX; Bactrim™, Septra®) is the most effective combination of drugs used to prevent PCP and toxoplasmosis. And because PCP prophylaxis is generally started when a person's T-cell count falls below 200, he or she should be well protected against toxoplasmosis in the event his or her T-cell count falls below 100.

For those who cannot handle TMP-SMX, due to the allergic reactions caused by SMX, another effective option is dapsone in combination with pyrimethamine and folic acid. This triple-drug combination only needs to be taken once a week.

Are there any experimental treatments in development for toxoplasmosis?

If you would like to find out if you are eligible for any clinical trials involving new treatments for toxoplasmosis, there is an interactive web site run by amfAR, the American Foundation for AIDS Research. Another useful service for finding clinical trials is *AIDSinfo.nih.gov*, a site run by the U.S. National Institutes of Health. They have "health information specialists" you can talk to at their toll-free number at 1-800-HIV-0440 (1-800-448-0440).

a note about this publication

This publication is reprinted here from another source (*www.aidsmeds.com*). We do not always have the resources at Project Inform to produce our own treatment information on every treatment topic. In these cases, we try to provide reliable information from other sources but cannot confirm that every fact in these publications is accurate. This information is designed to support, not replace, the relationship that exists between you and your doctor or medical provider.

TEXT LAST UPDATED: MARCH 2002