Toxoplasmosis

WHAT IS TOXOPLASMOSIS?

Toxoplasmosis (toxo) is an infection caused by the single-celled parasite *toxoplasma gondii*. A parasite lives inside another living organism (the host) and takes all of its nutrients from the host.

The most common illness caused by toxo is an infection of the brain (encephalitis). Toxo can also infect other parts of the body. Toxo can lead to coma and death. The risk of toxo is highest when CD4 cell counts are below 100 cells/mm^3.

HOW COMMON IS TOXO?

The toxo parasite is very common in cat feces, raw vegetables, and soil. It is also common in raw meat, especially pork, lamb, and venison. It can get into your body when you breathe in dust. Up to 50% of the population is infected with toxo. A healthy immune system will keep toxo from causing any disease. It does not seem to spread from person to person.

In the early years of the HIV epidemic, toxo was a common opportunistic infection (OI). With the advent of combination antiretroviral therapy (ART), it has become uncommon. In 1995, 10,000 people were hospitalized for toxo. By 2008 that number dropped to less than 3,000. However, toxo still occurs in people with HIV, especially if they are not tested and receiving medical care. Rates of toxo are higher in Black/African American and Latinx/Hispanic people than Caucasian people.

HOW IS TOXO DIAGNOSED?

The first signs of toxo include fever, confusion, headache, disorientation, personality changes, and tremor. Other symptoms include seizures, poor coordination, and nausea, Toxo is usually diagnosed by testing for antibodies to *toxoplasma gondii.* Pregnant people who are exposed to toxo may pass it to their babies.

The toxo antibody test shows whether you have been exposed to toxo. A positive test does not mean that you have toxo encephalitis. However, a negative antibody test means that you are not infected with toxo.

Brain scans by computerized tomography (CT scan) or magnetic resonance imaging (MRI scan) are also used to diagnose toxo. A CT scan for toxo can look very similar to scans for other OIs. An MRI scan is more sensitive and can make it easier to diagnose toxo.

HOW IS TOXO TREATED?

Toxo is treated with a combination of pyrimethamine (Daraprim) and sulfadiazine. Both drugs can cross the blood-brain barrier.

The *toxoplasma gondii* parasite needs vitamin B to live. Pyrimethamine stops toxo from getting vitamin B. Sulfadiazine prevents toxo from using it. The normal dosage of these drugs is a daily dose of 50-75 mg of pyrimethamine and 2-4 grams of sulfadiazine.

These drugs both interfere with vitamin B and can cause anemia. People with toxo usually take leucovorin, a form of folic acid (a B vitamin), to prevent anemia.

This combination of drugs is very effective against toxo. Over 80% of people show improvement within 2-3 weeks.

Toxo usually comes back after the first episode. People who have had toxo should keep taking the anti-toxo drugs at a lower maintenance dose.

HOW DO I CHOOSE A TREATMENT FOR TOXO?

If you are diagnosed with toxo, your healthcare provider will probably prescribe pyrimethamine and sulfadiazine. This combination can cause a drop in white blood cells and kidney problems.

Also, sulfadiazine is a sulfa drug. Almost half the people who take it have an allergic reaction. This usually is a skin rash and sometimes a fever.

Allergic reactions can be overcome using a desensitization procedure. Patients start with a very small amount of the drug. They get increasing amounts until they can tolerate the full dose.

People who cannot tolerate sulfa drugs can use clindamycin (Cleocin) instead of sulfadiazine in the combination.

CAN TOXO BE PREVENTED?

The best way to prevent toxo is to take strong antiretroviral medications (ARVs). You can be tested to see if you have been exposed to toxo. If not, you can reduce your risk of infection by not eating undercooked meat or fish and by wearing gloves and a face mask and washing thoroughly if you clean a cat box.

If your CD4 cell count is less than 100 cells/mm^3, you should take medication to prevent toxo. People with a CD4 cell count less than 200 cells/mm^3 usually take TMP/SMX (Bactrim or Septra) to prevent pneumocystis pneumonia (PCP). These drugs also protect against toxo. If you can't tolerate Bactrim or Septra, your healthcare provider can use other drugs.

THE BOTTOM LINE

Toxoplasmosis is a serious opportunistic infection. If you have not been exposed, you can reduce your risk of exposure by not eating undercooked meat or fish and taking extra precautions if you clean a cat box.

You can take strong antiretroviral medications to keep your CD4 cell count up. This should prevent toxoplasmosis from causing health problems. If your CD4 cell count falls below 100 cells/mm^3, talk with your healthcare provider about taking drugs to prevent toxo.

If you develop headaches, disorientation, seizures, or other possible signs of toxo, see your healthcare provider immediately. With early diagnosis, toxo can be treated effectively. If you do develop toxo, you should continue to take the anti-toxo drugs to prevent another episode.

MORE INFORMATION

CDC: Toxoplasmosis (Toxoplasma infection)

HIV.gov: Toxoplasma gondii Encephalitis

UCSF HIV InSite: Toxoplasmosis and HIV

POZ: Toxoplasmosis

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