15.10B: Toxoplasmosis

LEARNING OBJECTIVES

• Compare and contrast: acute and latent toxoplasmosis and outline the life cycle of the protozoan that causes it

Toxoplasmosis is an infection caused by the parasite *Toxoplasma gondii*. Toxoplasmosis is found in humans worldwide, but the definitive hosts are cats. Humans may become infected as a result of infected blood transfusions, organ transplants, ingesting contaminated soil, raw or undercooked meat, and most commonly from the careless handling of cat litter, which can lead to accidental ingestion of the parasite. Toxoplasmosis can also be passed from an infected mother to her baby via the placenta (transplacentally). Symptoms that may occur from toxoplasmosis include: enlarged lymph nodes, headache, fever, muscle pain, and sore throat. Individuals with immunocompromised or weakened systems display more severe symptoms, such as: confusion, fever, headache, blurred vision and seizures. The three categories of toxoplasmosis include acute, latent, and cutaneous toxoplasmosis.

Symptoms

Acute toxoplasmosis is characterized by swollen lymph nodes found in the neck or under the chin, followed by the axillae, and the groin area. Enlarged lymph nodes will occur at different times after the initial infection. Latent toxoplasmosis is characterized by the formation of cysts in both the nervous and muscle tissue due to the bradyzoite form of the parasite. Often times, individuals infected with latent toxoplasmosis do not present with symptoms, as the infection enters a latent phase. In individuals with cutaneous toxoplasmosis, skin lesions will occur due to the tachyzoite form of the parasite and its presence in the epidermis.
**Hosts, Life Cycle**

The known definitive hosts for *Toxoplasma gondii* are members of family Felidae (domestic cats and their relatives). In the life cycle of this parasite, unsporulated oocysts are shed in the cat’s feces. The cat will shed large numbers of these cysts over a short period of time. The oocysts will then take 1-5 days to sporulate in the environment and become infective. The intermediate hosts in nature (including birds and rodents) become infected after ingesting contaminated soil, water, or plant material. The oocysts, upon ingestion, will transform into tachyzoites, which will localize in the neural and muscle tissue. After localizing to these sites, they will develop into tissue cyst bradyzoites. Cats, can become infected after consuming intermediate hosts that are infected with tissue cysts or by ingesting sporulated oocysts.

![Toxoplasmosis Life Cycle](https://www.cdc.gov/parasites/images/toxoplasmosis_life_cycle.jpg)

**Figure:** Toxoplasmosis Life Cycle: Overview of the life cycle of Toxoplasmosis gondii.

**Key Points**

- Cats are the definitive hosts for Toxoplasma gondii and are the primary source of infection to humans.
- Toxoplasmosis can occur in either acute, latent or cutaneous forms.
- Toxoplasmosis is found worldwide and can be transmitted by eating undercooked meat of animals which may contain cysts, ingesting contaminated food or water, transplacentally or from coming in contact with infected cat feces.

**Key Terms**

- **definitive host**: a host in which the parasite reaches maturity and, if possible, reproduces sexually
- **axillae**: The armpit
- **transplacental**: Through or across the placenta