

TOXOPLASMOSIS

AGENT: *Toxoplasma gondii* - 4 to 7 microns long. 2-4 wide - Subphylum Apicomplexa, Family Eimeriidae

SPECIES: Cats

RESERVOIR AND INCIDENCE: Infection in humans and lower animals is widespread. An estimated 500 million humans have been infected with the organism. Serologic surveys in the United States using the SABIN-FELDMAN DYE TEST have demonstrated *T. gondii* infection in 30-80% of cats. Significance - Presumably all serologically positive cats have shed toxoplasma oocysts and could re-shed organisms during reinfection or reactivation. Life cycle consists of: 1. Definitive host (felids: intestinal infection with shedding of oocysts; only host in which sexual form develops.) - **Domestic cat predominates as reservoir for zoonotic transmission in the home and laboratory environment.** 2. Intermediate hosts - *Mice, rats, hamsters, G. pigs, rodents, rabbits, dogs, sheep, cattle, & NHP's. - These have not proved to be important in zoonotic infection in the laboratory animal environment (organism replicates asexually in extraintestinal sites only).

TRANSMISSION: Fecal-Oral: Ingestion of meat containing cysts or tachyzoites or ingestion of oocysts Oocysts become infective after sporulation - occurs in 2 to 3 days. Transmission to man occurs via a. Eating raw or undercooked meat containing cysts. b. Ingesting sporulated oocysts from cat feces. c. Transplacentally. 1/3 of US human population has serologic evidence of past infection.

DISEASE IN CATS: Most postnatally acquired infections in cats are **ASYMPTOMATIC**. Prepatent period variable - 3 days to several weeks. **Shedding occurs for 1-2 weeks - PUBLIC HEALTH HAZARD.** Oocyst shedding reactivated by induction of hypercorticism or superinfection with other feline microorganisms.

DISEASE IN MAN: The infection is very common in humans, but clinical disease is of low incidence and occurs only sporadically. Postnatal infection - Less severe disease and commonly presents as a generalized lymphadenopathy that may resolve without treatment in a few weeks. **Congenital infection results in systemic disease often with severe neuropathological changes.** Rarely, serious ocular or systemic toxoplasmosis can be acquired by older individuals or reactivated in immunocompromised individuals. Clinical Signs include fever, skin eruption, malaise, myalgia, arthralgia, cervical lymphadenopathy, pneumonia, myocarditis, meningoencephalitis, and chorioretinitis.

DIAGNOSIS: Serology, isolation, microscopic demonstration of organisms in smear or section. Paired serum samples taken one or more weeks apart. a. IFA: serial titers of suspected infections. b. Sabin- Feldman Dye Test: most sensitive test, but rarely used. c. ELISA. The demonstration of cysts does not establish a causal relationship to clinical illness, since cysts may be found in both acute and chronic infections. However, only finding tachyzoites in blood or body fluids confirms active infection.

TREATMENT IN MAN: The treatment of choice is pyrimethamine plus either trisulfapyrimidines or sulfadiazine. Folic acid avoids the hematologic effects of pyrimethamine-induced folate deficiency.

PREVENTION/CONTROL: **Pregnant women need be aware of potential risk associated with fetal infection.** Pregnant women should have their serum examined for Toxoplasma antibody. If the IgM test is negative but an IgG titer is present and less than 1:1000, no further evaluation is necessary. **Those with negative titers should take measures to prevent infection by avoiding contact with cat feces and avoid working in soil or gardens that could be contaminated by cats,** etc. and by thoroughly cooking meat. Freezing of meat to -20oC (-4oF) for 2 days or heating to 60oC (140oF) kills cysts. Under appropriate environmental conditions, oocysts passed in cat feces can remain infective for a year or more. Thus, children's play areas should be protected from cat and dog feces. Cats a. Daily cleaning of litter pans (since oocysts not infective for 2 to 3 days) b. Wear gloves c. Wash hands before eating d. Should only be fed dry, canned, or cooked Hands should be washed after handling raw meat and before eating or touching the face.

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