

# *Epidemiology of Toxoplasmosis*

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## *Objectives .....*

- To recognize epidemiology of toxoplasmosis ...
- To uncover its important complications and prevention ...

## *Toxoplasmosis is .....*

- ☐ Systemic protozoan parasitic infection.
- ☐ Zoonotic disease ..
- ☐ Caused by an obligate intracellular protozoan parasite :

### *Toxoplasma gondii (TG)*

- ☐ Primarily ... Disease of the *blood and lymphatic system* .. But may reach to *CNS, the eye, Muscles, other ...* (bloodstream)
- ☐ Toxoplasmosis is the most common cause of infectious *retinochoroiditis in both adults and children (developing countries).*

# *Epidemiology of Toxoplasmosis*

- About one-third of the world's population is infected *with latent toxoplasmosis... up to 60%*
- The *incidence* in underdeveloped more than developed countries .. WHY?
- (US & Europe trend is 15- 22%)

*The highest prevalence is in tropical (Hot, humid) regions. The lowest in ....??*

□ *WHY ?*

# *Epidemiology of Toxoplasmosis*

## ***The variation in prevalence explained by:***

- The number and presence of the cats,
- Climate, cultural practices.
- Cooking habits.

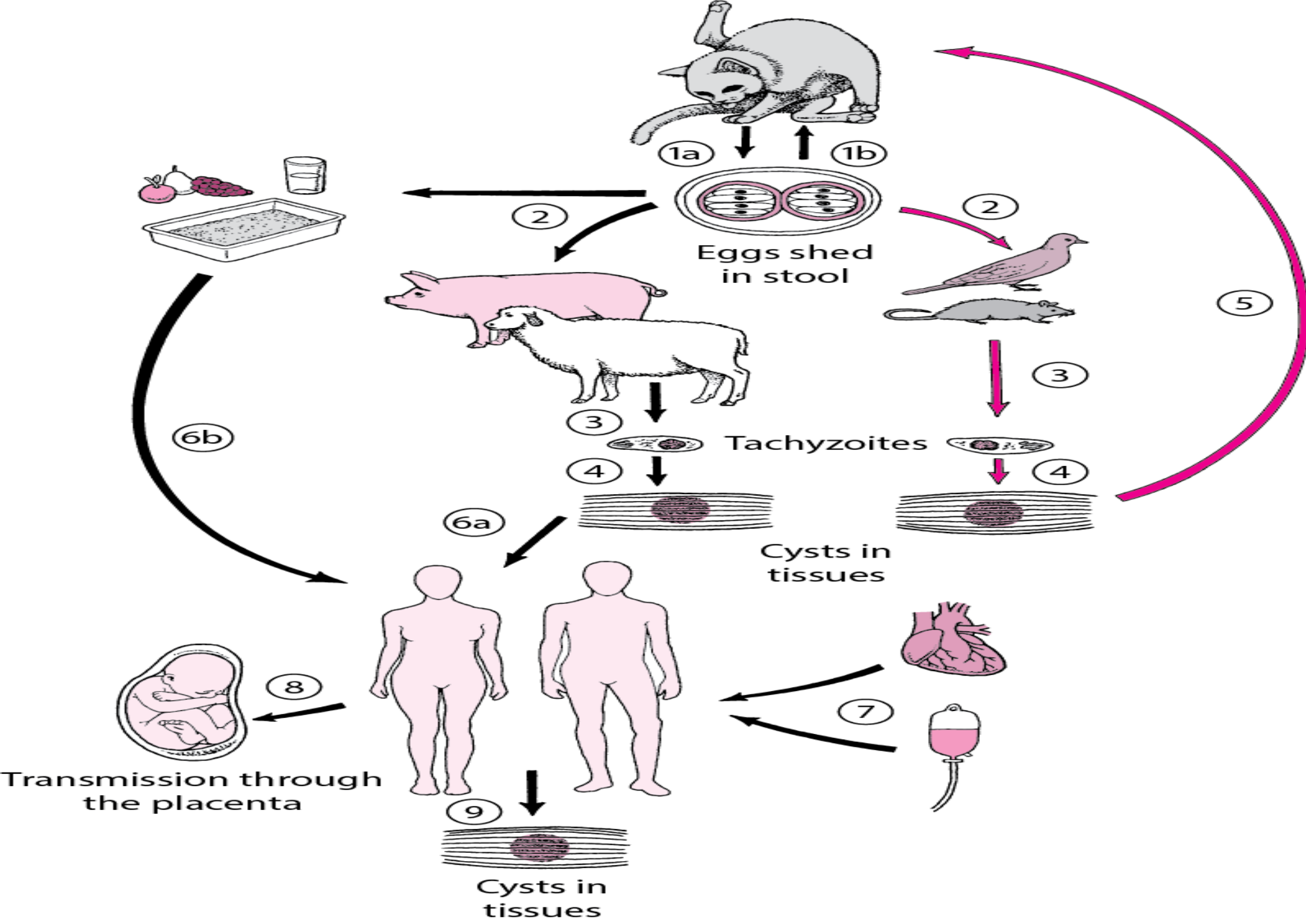
# **MODES OF TRANSMISSION:**

***Does a direct contact with cats is the principal mode for transmission..??***

***NO, Why?***

- Eating food, water that are contaminated with TG eggs.
- Eating meat contains *Toxoplasma* cysts (pork or lamp)
- Spread from a newly infected mother to a fetus.
- Rarely, blood transfusion or organ transplant (TG cyst).

***Is there a direct Person to person transmission in TG ??***



# *Clinical Forms of toxoplasmosis*

- 1. Acquired Systemic Toxoplasmosis .. Depends on ...?????*
- 2. Reactivation of Latent Infection: .. For Whom???*
- 3. Congenital Toxoplasmosis*

## *Toxoplasmosis Infection: in immunocompetent ...*

- *80-90% of people have few or no toxoplasmosis symptoms and recover fully.*
- *10 to 20% of people have painless lymphadenopathy. Intermittent low fevers, rash and hepatosplenomegaly a vague ill feeling.*
- *The symptoms disappear on their own, usually within 2 to 3 weeks ... why?*
- *Chronic phase (Latent) TG are found in tissue cysts, (muscles and CNS). Typically, Asymptomatic*
- *Recently.. latent infection may lead to neuropsychiatric disease in some immunocompetent individuals.*

# *Toxoplasmosis infection in immuno-depressed people ...*

- *AIDS, cancer or who take immunosuppressants medications .....*
- *Are especially at risk of toxoplasmosis.*
- *Toxoplasmosis in immunosuppressive person, is very serious and may be fatal if untreated.*
- *Encephalitis, acute disseminated toxoplasmosis, pneumonitis, carditis, organ failure... even death.*
- *If have past infection and change to latent type ... So*
- *TG infection reactivated....*
- *Reactivation in the brain →→ Necrotizing Encephalitis ..*  
*Meningoencephalitis .. (Cerebral Toxoplasmosis)*
- *Ocular form: Retinochoroiditis, Uveitis, Retinitis.*
- *Exanthematous form: Rare*

## *Toxoplasmosis infection during pregnancy (congenital infection)*

- *Infection during pregnancy → TG through the placenta → to the fetus*
- **Congenital transmission occurs in (sero-ve) women, Not (sero+ve) (*acute infection*).**

### **The explanation IS ... ??**

- **Its prevalence is 1 in 1000 to 1 in 10,000 live births,**
- **Transmission rate is about 20% ...**
- *The result may be a fetus with; IUGR, preterm birth, a miscarriage, stillbirth, post partum death, or birth defects.*
- *Congenital toxoplasmosis; a baby born with problems in vision, seizures, hydrocephalus, microcephaly and intellectual disabilities later in life even mental retardation.*

***A woman who was infected before the pregnancy can infect her Fetus??***

# *Congenital Toxoplasmosis*

- Infection in consecutive siblings is rare, ***WHY??***
- ***When the infection is commonest? In Early or Late in pregnancy??***
- 5-25% of infection in 1<sup>st</sup> trimester & 90% at end of pregnancy.
- **Which is more severe Infection? Early or later in pregnancy??**

Later infection is often Asymptomatic, or Chorioretinitis might occur later in childhood.

## ***Can reinfection occur??***

- Is exceptional ... ***As Acute infection, in general, protects the host from symptomatic re-infection.***

# *Diagnosis of Toxoplasmosis*

- *Blood tests: Diagnosis of Acute and chronic infection by serological detection of IgM and IgG.*
  - *IgM is indicative of an acute infection (2 wks ----1yr)*
  - *IgG will occur over time. (low in acute infection)*
- *For Brain: CT Scan, MRI.*
- *Histological Findings Lymph node- and other tissues.*
- *Amniocentesis- For detection of (congenital toxoplasmosis).*

# *Treatment of Toxoplasmosis*

## *Treatment of Acquired Toxoplasmosis:*

- Many of these infections are self limited.. No treatment or symptomatic management.
- For moderate to severe cases:
  - ✓ *Pyrimethamine + sulfamethoxazole with Folinic acid .. WHY??*
  - ✓ *Pyrimethamine + Clindamycin with Folinic acid ... (4Wks)*
- In sero+ve patients with AIDS, Trimethoprim/Sulfamethoxazole ... to prevent cerebral toxoplasmosis.
- **In chronic disease** Prophylactic treatment only in high-risk patients, **WHY??**

## *Treatment of Congenital Toxoplasmosis*

- *Routine pre-natal screening is recommended.*
- *During pregnancy, Spiramycin is recommended before 18 wks of gestation. ... why?*
- *After 18 Wks, pyrimethamine, sulfadiazine, and folinic acid.*
- *Treatment of the neonate to avoid retinal damage and loss of vision (pyrimethamine and sulfadiazine In severe cases steroids).*

## ***Prophylaxis against Toxoplasmosis***

- ***Pets should keep indoor, checked, personal hygiene***
- ***Avoid raw or undercooked meat, raw milk and vegetables.***
- ***Pregnant women should avoid soil or kittens***
- ***Patients who are seropositive & CD4+ count > 100 cells/ $\mu$ L, started prophylaxis against CNS toxoplasmosis.***
- ***In utero diagnosis and treatment is necessary.***