## Epidemiology of Toxoplasmosis

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- 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.*
- □ The *incidence* in underdeveloped more than developed countries.
- **U** (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 ??



### *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?
- <u>Chronic phase (Latent)</u> TG are found in tissue cysts, (muscles and CNS).Typically, <u>Asymptomatic</u>
- Recently.. latent infection may lead to <u>neuropsychiatric</u> 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 <u>a fetus with</u>; IUGR, preterm birth, a miscarriage, stillbirth, post partum death, or birth defects.
- <u>Congenital toxoplasmosis; a baby born with problems in vision, seizures,</u> 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.

### Clinical Forms of toxoplasmosis

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

## Diagnosis of Toxoplasmosis

- Blood tests: Diagnosis of Acute and chronic infection by serological detection of <u>IgM and IgG</u>.
  - IgM is indicative of an acute infection (2 wks ----1yr)
  - IgG will occur over time. (low in acute infection)
- For Brain: CT Scan, MRI.
- Spinal tap (lumbar puncture).
- 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/μL, started prophylaxis against CNS toxoplasmosis.
- In utero diagnosis and treatment is necessary.