

Toxoplasmosis

Caused by *Toxoplasma gondii* which is intracellular parasite . Is endemic in Iraq .

Mode of transmission : Under cooked infected meat, contaminated grass or water

Incubation period 5-23 days .

Life cycle and Pathobiology

It has two phases . Sexual phase in the epithelium of small intestine of cats ,when cats consume meat of infected birds or rodents with *Toxoplasma* cysts to liberates merozoites where it infect intestinal cells to develop to male and female gametocytes where it fertilize to grow to Oocytes in cat intestine where it shed with stool externally and remain in moist condition for weeks or months contaminate the grass and water ,when sheep ,lamb ,pigs consume contaminated grass or water it pass to asexual phase where the oocyte liberates spirozoites and develop to cysts in their muscles when human considered as accidental host if consumes infected meat with cyst or contaminated grass or water with oocyst it liberates the merozoites to penetrates the cells of fibroblast, neuronal cells and muscular cells where it form tachyzoite which it rapidly multiply in the tissue cells to produce 6-12 merozoites and liberated to invade new cells and if it infect pregnant women it penetrate the placenta to infect the fetus to cause fetal death or congenital anomalies .After that it develop to cyst in their tissues(has bradyzoites multiply slowly) because it over countered by immune cells, if immune system is good can kill the merozoites .If human consume contaminated with oocytes in vegetables ,water , raw or weekly cooked infected meat contaminated with bradyzoites the human will be infected and he will develop tissue cyst which is microscopic these cyst remain for years inactive but may be alive ,if immunity severely reduced like in HIV it will be exacerbated and associated with high morbidity and mortality .Toxoplasmosis are seropositive in 40-60 % of Indian and Brazil people while in Iraq is more than this percent are infected with toxoplasmosis .

Epidemiology

Toxoplasmosis infects billion of people all over the world associated with significant mortality and disability in human it infect 60 million people in USA. And it common in Iraq because infected cats common Iraqi houses . Toxoplasmosis associated significant mortality and morbidity to fetus of pregnant ladies and associated with high mortality in immune-compromise patients .

Clinical features

Toxoplasmosis in immune-competent patients. It infects usually the children and pregnant women, the patients usually have subclinical or self-limiting disease in 80-90%. In adults they are usually infected at age of 25-35 years the patient presents with lymphadenopathy usually posterior cervical then mediastinal, mesenteric or retroperitoneal, spleen seldom enlarges. Some patients have fever, malaise, fatigue, headache, sore throat (heterophil negative glandular fever) this presentation constitutes 15%, these patients will improve within few months some remain for a year. Some patients will have severe conditions like encephalitis, myocarditis, polymyositis, pneumonitis and hepatitis. Retinochoroiditis it is almost always congenital infection although some cases are acquired.

Congenital toxoplasmosis: Pregnant women infection occurs in 0.3 – 1% mostly are subclinical infections. The risk of transmission from an infected mother is estimated to be 25% during the first trimester, with the majority of these fetuses developing severe clinical signs. The fetal mortality rate at this time is high and may develop retinochoroiditis, microcephaly or hydrocephaly. Conversely, approximately 50-65% of infants are thought to become infected during the third trimester and 70-90% are

asymptomatic at birth, although some will later develop clinical signs if they are not treated.

Toxoplasmosis in AIDS patients: When immunity is reduced the previous infectious toxoplasma gondii bradyzoyst will increase its activity and its dissemination in the body and may cause space-occupying lesions presented as fever and focal neurological signs, diagnosed by ring-enhancing mass in the brain CT-scan with contrast study, serology showed old infection (positive anti-toxoplasma IgG antibody).

Investigations

- 1- Direct detection of parasite by lymph node biopsy and staining section histochemically *T.gondii* anti-sera. Or by PCR detection of toxoplasma specific DNA. Usually both used in most cases of immunocompromised patients.
- 2- Serology usually used in immunocompetent patients: By indirect fluorescent antibody test called Sabin – Feldman test where IgM indicates acute infection negative IgM excludes infection. False positive or negative results also occur in some cases. IgG indicates old infection 4 fold rise in titer or if test > 1 | 1000 indicates acute infection.

Management

Infection is usually self limiting no need for treatment . Treatment indicated in severe ,progressive and immunocompromised patients , pyrimethamine and sulfadiazine and folinic acid drugs are used . in pregnant women spiramycin tablets 3 gm in divided doses is used till term usually it not cross placenta barrier ,fetus after labour if proved infected pyrimethamine and sulfadiazine is used .

Prevention :

Education of the people about disease and good hygiene of vegetables ,fruits and water to disinfect Oocytes and good cooked meat to destruct and kill toxoplasma cyst . Clean the hand when it touch meat , and people should wear gloves if cut vegetables from the farms so we clean our hands from toxoplasma oocytes .