

## Case Report

# Bilateral Toxoplasma Retinitis: Rare But Devastating Condition - A Case Report

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### Introduction

*Toxoplasma gondii*, an obligate intracellular protozoan, is the most frequent cause of infectious retinitis in immunocompromised individuals. Although some cases may occur as a result of reactivation of prenatal infestation but the vast majority are acquired postnatally.

Recurrent episodes of inflammation are common and occur when the cysts rupture and release hundreds of tachyzoites into normal retinal cells. Recurrences usually take place between ages of 10 and 35 yrs. The scars from which recurrences arise may be the residua of previous congenital infestations or more frequently, remote acquired involvements.

Toxoplasmosis is one of the more common parasitic zoonoses world-wide. Its causative agent, *Toxoplasma gondii*, is a facultatively heteroxenous, polyxenous protozoon that has several potential routes of transmission within &/or between different host species.

If *T. gondii* is first contracted during pregnancy, it may be transmitted vertically by tachyzoites that are passed to the fetus via the placenta. Horizontal transmission of *T. gondii* may involve three life-cycle stages, i.e. ingesting infectious oocysts from the environment or ingesting tissue cysts or tachyzoites which are contained in meat or primary offal (viscera) of many different animals.

Transmission may also occur via tachyzoites contained in blood products, tissue transplants, or unpasteurized milk. However, it is not known which of these routes is more important epidemiologically. In the past, the consumption of raw or undercooked meat, in particular of pigs and sheep, has been regarded as a major route of transmission to humans.

However, recent studies showed that the prevalence of *T. gondii* in meat-producing animals decreased considerably over the past 20 years in areas with intensive farm management.<sup>1</sup>

Cat is the definitive host of the parasite and other beings, such as mice, livestock and humans are intermediate host.

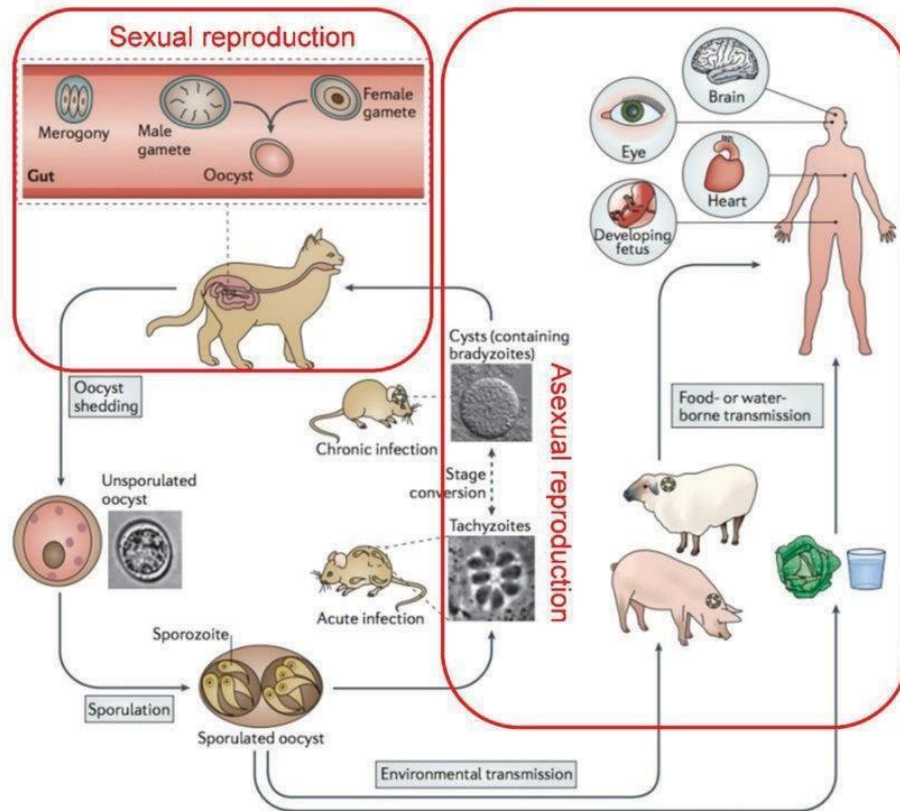
### Organisms exist in the following three forms:

- a) **Sporozoites** are contained within an oocyst (sporocyst) and are the result of sexual reproduction of the organisms with the intestinal mucosa of the cat. They are excreted in the faeces and spread to intermediate host.
- b) **Bradyzoites** are relatively inactive and are contained within tissue cysts that most commonly develop in the brain, eye, heart, skeletal muscles and lymph nodes. They may lie dormant for many years without provoking an inflammatory reaction.
- c) **Tachyzoites** (trophozoites) are the proliferating active form responsible for tissue destruction and inflammation following rupture of cell wall containing bradyzoites.

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**Mode of human infection:**

a) Ingestion of undercooked meat (lamb, pork, beef) containing bradyzoites of an intermediate host.



Ingestion of sporocysts from accidental contamination of hands when disposing of cat litter trays and then subsequent transfer on to food.



Infants may also become infested by eating dirt (pica) containing sporocysts.



In rural areas water contamination may play an important role in transmission.



Parasite (tachyzoite) may spread transplacentally from an infected pregnant woman.

**Congenital Toxoplasmosis:**

Toxoplasmosis is transmitted to the fetus through the placenta when a pregnant woman becomes infested. If the mother is infected before pregnancy, the fetus will be unscathed.

**Severity of involvement** of the fetus is dependent on the duration of gestation at the time of maternal infestation. Involvement in early pregnancy may result in

stillbirth, whereas if it occurs during late pregnancy it may result in convulsions, paralysis, hydrocephalus and visceral diseases.

**Manifestations:**

Intracranial calcification may be seen on CT scan. In most cases of congenital systemic toxoplasmosis are subclinical. In these children, bilateral healed chorio-retinal scars may be discovered later in life, either

by chance or when the child is found to have defective vision.

Infestation towards the end of second trimester usually results in disease that can be detected at birth such as macular scars. That occurring later in third trimester may results in normal examinations at birth but the development of uveitis or neurological disease in the future.

**Acquired Toxoplasmosis:**

In immunocompetent patients subclinical is the most frequent. Lymphadenopathic syndrome, usually self-limiting and characterized by cervical lymphadenopathy, fever, malaise and pharyngitis. Meningoencephalitis may occur rarely.

In immunocompromised patients may be life-threatening. The most common manifesta-tion in AIDS patients is an intracerebral space occupying lesion which resembles a cerebral abscess on MRI.

**Diagnosis of Toxoplasma Retinitis:**

The diagnosis of Toxoplasma retinitis is based on a compatible fundus lesion. Positive serology for toxoplasma antibodies is significant in early cases but in recurrent ocular toxoplasmosis no correlation exists between the titer and the activity of retinitis.

**Aims:**

- a) To reduce the duration and severity of acute inflammation.
- b) To lessen the risk of permanent visual loss by reducing the size of the eventual retinochoroidal scar.
- c) To reduce the the risk of recurrences.

**Where we should treat?**

- a) A lesion involving the macula, papillomacular bundle, optic nerve head or a major blood vessels.
- b) Very severe vitritis because of the risk of vitreous fibrosis and Tractional retinal detachment.
- c) In immunocompromised patients all lesions should be treated irrespective of location & severity.

**Treatment options:**

There is no universally agreed therapeutic regimen and no evidence to support the specific form of treatment.

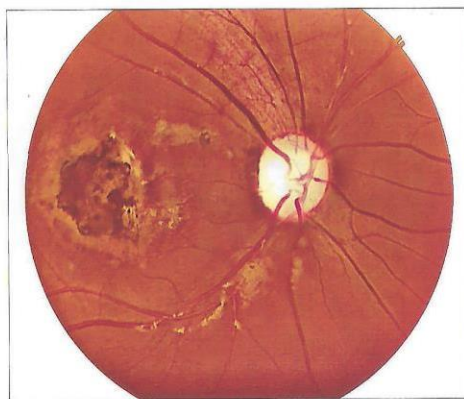
In line of aforementioned background based on updated literature review the case report on bilateral Toxoplasma Retinitis- a rare but devastating condition is delineated in next page:

SHYAMOLI EYE HOSPITAL

**3nethra**

Patient ID:	HGHGYGJGHJ
Name:	JUTHI...AKHTER
Age/Gender:	18 F

Date:	19-Sep-23
Photographer:	Abc



Right Posterior



Left Posterior

3/Ka,P.C. Culture Housing, Ring Road, Shyamoli, Dhaka-1207, Mobil no. 01701-463114

### The Case

A 18 years woman, **Juthy Akter**, attended my chamber (Eye Care Center, Shyamoli, Dhaka) with the complain of severe dimness of vision in both eyes, persisting for last 2- months. Often, she felt pain and had redness in both her eyes, including photophobia.

### Procedure followed/ Ophthalmological Examination

On examination, her visual acuity of is 6/60 both eyes and no visual improvement with refraction. Her intraocular pressure of both eyes is 14mm of Hg. Anterior segment of both eyes shows normal.

Posterior segment of both her eyes showed a large macular lesion in retina. The left eye center of macula had active inflammation and optic nerve head was inflamed (optic neuritis).

### Discussion

Programs for the prevention of congenital toxoplasmosis have been tested or discussed in several countries or states<sup>2-7</sup> To our knowledge, France and Austria are the only countries in which testing for toxoplasmosis is required by law in women of childbearing age. France has the most stringent program, but its epidemiologic impact on ocular toxoplasmosis has not been assessed.

No national registry is available, and data were acquired by asking patients or their mothers to recollect the results of their previous serologic tests. Therefore a recall bias, which could have affected the assignment of cases as congenital or acquired, cannot be ruled out. In children who are known to have been congenitally infected, a systematic ophthalmic longitudinal follow-up is recommended. The role of acquired infections in ocular toxoplasmosis has also been highlighted in specific epidemiologic circumstances.<sup>2</sup>

Diagnosis of toxoplasmosis in humans is made by biological, serological, histological, or molecular methods, or by some combination of the above. Clinical signs of toxoplasmosis are non-specific and are not sufficiently characteristic for a definite diagnosis. Toxoplasmosis in fact mimics several other infectious diseases. Detection of *T. gondii* antibody in patients may aid diagnosis<sup>8</sup>

It is known that *T. gondii* is a protozoan parasite that infects 30% of humans, mainly in the chronic stage, which is the parasite's most resistant stage. This resistant form is unaffected by current drugs that are used to treat toxoplasmosis, which are pyrimethamine and sulfadiazine; these drugs control the parasite's acute stage, tachyzoites.<sup>9,10</sup>

Although these compounds are most often used to treat toxoplasmosis, they cause severe side effects<sup>11-13</sup> they are not active against the bradyzoites found in the cyst.<sup>14</sup> Some studies have pointed out to the need to establish new in vitro and in vivo experimental models to test new compounds against *T. gondii* tachyzoites and bradyzoites.<sup>15</sup>

### Highlights:

- Infection by *T. gondii* a protozoan parasite is widely prevalent in humans and animals.
- *T. gondii* causes serious disease in congenitally infected children & depressed immunity.
- To prevent human infection, all meat should be cooked well before consumption.
- Gloves should be worn while gardening, & sandboxes used by children be covered when not in use to prevent exposure to soil contaminated *T. gondii* oocysts excreted in cat feces.
- Extreme care should be used in handling litterboxes for cats; & pregnant women, children & immunocompromised individuals should avoid litterboxes always.<sup>16</sup>
- A better understanding of clinical characteristics & course of ocular toxoplasmosis will have prudent implication for developing effective prevention & treatment strategies.<sup>17</sup>

### Conclusion:

Infection by *T. gondii* -a protozoan parasite is widely prevalent in human and animals. It can cause devastating disease in congenitally infected children with depressed immunity. Reassessment of older publications in the light of recent observations provides a richer understanding of ocular toxoplasmosis, although knowledge about the disease remains incomplete.

### Recommendations:

- It is advisable to have eye examination early.
- Mandatory step is to take medication in time.
- Primary treatment involves anti-parasitic medication against *T. Gondi* infection.
- Regular follow-up with the ophthalmologist remains essential.
- Ophthalmologist must monitor progress of retinitis to assess response of treatment and check to prevent potential complications.
- In case of active retinal lesions that threaten vision, retinal therapy may be considered to prevent destroying active tissue and further damage.

- Lastly patient should be educated on the importance of compliance with medication & need for regular follow-up appointments with ophthalmologists.

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