TOXOPLASMOSIS

Toxoplasmosis represents the most common form of posterior uveitis worldwide, with higher prevalence in tropical areas. It is caused by *Toxoplasma gondii*, an obligatory intracellular parasite.

Transmission occurs by ingestion of any of these forms of the organism, which depends on hygienic and alimentary habits. High levels of exposure to contaminated meat, such as reported in Southern Brazil, has been identified as a possible explanation for high prevalence of toxoplasmic scars in that population and to the occurrence of disease in several siblings (not possible by congenital infection). More recently it has been found, in another part of Brazil, that contamination of water supplies may play an even bigger role in the transmission of the disease to the community. The disease can also be acquired by transfusion of whole blood or leukocytes, organ transplant or accidentally, in laboratory workers.

Ocular toxoplasmosis is commonly attributed to congenital infection, which only occurs when the disease is acquired during pregnancy, but the role of acquired infection has been confirmed as more important than previously thought. Congenital transmission occurs only when the infection is acquired during pregnancy.

Primary ocular disease occurs more frequently during acute systemic infection, but may also occur during the course of the chronic phase of systemic disease. Case reports show that new lesions can appear for the first time as early as 2 months after onset of infection, or as late as 5 years. Recurrences are typical of both the congenital form and of the chronic phase of postnatally acquired disease. The risk of recurrence of lesions in cohorts of prenatally infected children and case series of patients with postnatal disease appear to be similar (8-40%), but are based on small numbers.

The classical ocular lesion is a focal necrotizing retinitis, with overlying vitreous inflammatory haze. This lesion is most likely caused by actively replicating organisms released form a ruptured cyst. The inflammation of the choroid and anterior segment are secondary, and probably due to direct extension of the retinal inflammation or a hypersensitivity reaction. Recurrent retinal lesions occur at the borders of retinochoroidal scars (satellite lesion). A bilateral macular lesion is suggestive of congenital disease, and unilateral lesions can be a consequence of both acquired and congenital disease. These lesions lead to destruction of the retina and underlying choroid resulting in scars, which will progressively show accumulation of pigment.

The symptoms from posterior disease include floaters and blurring of vision, while pain and redness will occur as consequence of anterior segment involvement. Retinal vascular involvement is frequently seen, with sheathing of vessels occurring even far from the original lesion. Vascular occlusion is not common, but may occur when a vessel crosses the main focus of inflammation.
Loss of vision may occur as a consequence of lesions affecting the macula, optic nerve, or retinal detachment secondary to organisation of a heavily infiltrated vitreous. Other complications involve subretinal neovascular membranes. Anterior segment complications include cataract, posterior synechiae and glaucoma.

The disease is more severe and tends to have a very different clinical behaviour in immunosuppressed individuals, such as in AIDS. Multifocal, bilateral or extensive areas of necrosis can be seen.

Pathogenesis of ocular toxoplasmosis depends on the virulence of the Toxoplasma strain and the host’s immune response. The reason for recurrences is not entirely clear with many theories including rupture of tissue cysts, hypersensitivity reaction or autoimmune mechanisms.

The diagnosis is mainly clinical, with serological tests used to confirm previous exposure to the organism. The dye test is the gold standard, but involves the use of live tachyzoites, which makes it less practical. The IFA has comparable sensitivity and specificity, but it is easier, safer and less expensive. ELISA sensitivity and specificity depend on the commercially available tests. Local production of specific antibodies can also be determined by the Witmer-Desmont coefficient.

In atypical cases, such as seen in immunocompromised individuals, the need for confirmation of etiological diagnosis becomes more important. Diagnosis can be confirmed by isolation of *T gondii* from body fluids or tissue specimens, histological demonstration of organisms in fluids or tissue specimens, and polymerase chain reaction (PCR) techniques for detection of *T gondii* DNA.

Therapy is indicated for lesions threatening central vision (macula and optic disc) or for very exudative lesions leading to intense vitritis. There is no convincing data to support the use of one anti-Toxoplasmic drug over the others, with the most commonly used being the combination of Pyrimethamine and Sulfadiazine, Clindamycin, Spiramycin, Tetracyclines, Azithromycin, Clarithromycin and Atovaquone.

In immunocompetent hosts systemic steroids are used in association with antimicrobial agents, since the intense inflammatory reaction is probably the most important factor in tissue damage. Treatment of anterior segment inflammation is done accordingly with topical steroids and cycloplegic agents. Recently, studies have looked into the use of intraocular therapy, combining clindamycin and dexamethasone as a way of avoiding systemic therapy and its potential complications. Results have been encouraging.

In immunocompromised individuals systemic steroids are contraindicated, since the damage is mainly caused by replicating organisms, with minimal inflammatory component. In these patients maintenance therapy is necessary due to the high risk of reactivation of the infection.
Prevention is aimed at breaking the transmission cycle. Better hygiene and proper cooking of meat are important in this process. In immunosuppressed patients drug prophylaxis becomes important for those who are seropositive and have reached a low level of immunity. The use of prolonged use of low-dose sulfamethoxazole/trimethoprim (Bactrin, Septrin) has also shown to lead to a reduction in the number of recurrences when compared to a control group, and could represent a good option for those patients with high risk of visual loss due to the central location of their scars.
**Recommended Reading:**


Couvreur J, Thulliez P. acquired toxoplasmosis of ocular or neurologic site:49 cases. *Presse Med* 1996;**25:**438-442.


