Prophylaxis for Ocular Toxoplasmosis

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The protozoan parasite Toxoplasma gondii is an important cause of ocular disease. Ocular toxoplasmosis (OT) can be a progressive and recurring disease that can threaten visual function. We present 2 cases of recurrent OT in immunocompetent patients for whom prophylaxis prevented recurrence of disease.

Ocular toxoplasmosis (OT) can be a recurring disease in both immunocompromised and immunocompetent patients. Secondary chemoprophylaxis has not yet been adequately studied. We present 2 cases of recurrent OT in which secondary prophylaxis prevented recurrence of the disease during the time period in which the patients were observed.

Case report 1. A 34-year-old immunocompetent female Trinidadian nurse with no known medical problems presented with complaints of new floaters in the field of vision of her left eye. She had a history of multiple recurrences of toxoplasmic chorioretinitis, the first episode having occurred at age 18. She took omeprazole as needed for reflux esophagitis. She presented to an ophthalmologist for each symptomatic recurrence. Recurrences had occurred at 8-month intervals over the past 16 years, and in the past each recurrence had been treated successfully with either pyrimethamine, sulfadiazine and folinic acid, or clindamycin and trimethoprim-sulfamethoxazole, with steroids added to the regimen as needed.

On initial examination, her corrected visual acuity was 20/40 in the affected eye. Her greatest visual acuity prior to this episode was 20/20 corrected. Funduscopic examination revealed old, inactive toxoplasmic lesions with a juxtafoveal reactivation spot. Serologic test results were positive for IgG to toxoplasma, and the patient was HIV-negative. The patient was treated with trimethoprim-sulfamethoxazole (160/800 mg b.i.d.) for 16 months after antibiotics were initiated, oral prednisone, in a tapering dose, was added to the regimen. After 3 weeks of treatment, there was a complete resolution of the reactivated lesions and all medication was stopped.

Eight months later, the patient returned with the same complaints. Examination revealed a reactivated retinal lesion. This recurrence of chorioretinitis was treated with pyrimethamine (50 mg q.d.), sulfadiazine (1 g q6h), and folinic acid (20 mg q.d.) for 6 weeks, with steroids added to the regimen 48 h after the initiation of antibiotic therapy. Once the treatment course was completed, the patient was given a combination of trimethoprim-sulfamethoxazole (160/800 mg b.i.d.) for prophylaxis against recurrences. She remained free of symptoms 18 months later.

Case report 2. A 27-year-old immunocompetent man from the Dominican Republic presented with a 1-month history of blurred vision in his left eye. He had a history of frequently recurrent toxoplasmic chorioretinitis since childhood. He presented to an ophthalmologist for treatment of each symptomatic recurrence. Past medical history was otherwise not significant. Medications included loratadine for seasonal allergic rhinitis. He reported no risk factors for HIV infection (i.e., multiple sex partners, injection drug use, or transfusion history).

Examination revealed acute juxtafoveal lesions and visual acuity of 20/60 in the affected eye. The patient was treated with trimethoprim-sulfamethoxazole (160/800 mg b.i.d.), clindamycin (300 mg q6h), and oral steroids for 3 weeks. Healing was documented as scarring and the absence of active inflammation, as seen on retinal examination by an ophthalmologist. Once healing occurred, the patient was administered trimethoprim-sulfamethoxazole (160/800 mg b.i.d.). During 18 months of follow-up, no recurrences were noted.

Discussion. Toxoplasma gondii is an obligate intracellular parasite that exists in 3 forms. The tachyzoite, which is the active, proliferating form, causes symptomatic disease. The bradyzoite, which is the encysted form, can survive in hostile conditions and usually evades immunologic response. Finally, the oocyst, a sexually intermediate form, has the cat as its definitive host. The oocyst form is transmitted congenitally or via ingestion of inadequately cooked meat, chicken, or eggs. Infection can also occur via blood transfusion, organ transplantation, or soil contamination.

Acute toxoplasmosis is a rare condition. In immunocompetent individuals, it presents as cervical lymphadenopathy,
without other symptoms. Toxoplasmosis can also mimic infectious mononucleosis, with symptoms of fever, myalgias, sore throat, hepatosplenomegaly, and rash [1]. Congenital toxoplasmosis can occur when the mother acquires the infection during gestation. In the United States, it is estimated that congenital toxoplasmosis occurs at a rate of 1 case per 10,000 live births. Transmission occurs less often during the first trimester (15%–20% of cases) than during the third (40% of cases). The severity of illness is greater if transmission occurs during the first trimester.

OT is a common cause of retinal disease in the United States. The choroid and sclera are secondarily affected because of the local inflammatory response. The majority of cases result from asymptomatic congenital infection that becomes symptomatic during the second and third decades of life. Tissue bradyzoites rupture within the retina and become tachyzoites, causing disease [2]. Patients usually complain of seeing floaters. Other symptoms include pain and a decrease in visual acuity. At times, OT can have a prolonged and relapsing course. Because the inflammation that occurs with OT is granulomatous, the differential diagnosis includes sarcoid, tuberculosis, syphilis, fungal, and viral infections [3]. OT can be severe and can potentially result in blindness (for example, in patients with AIDS), although such an outcome is uncommon (~1%–2% of patients with AIDS and OT are affected for the duration of their lifetime). In immunocompromised patients, encephalitis can occur.

The diagnosis of OT is made by visualizing the characteristic lesion (i.e., the localized area of necrotizing retinitis) on ophthalmologic examination. These lesions usually occur in the vicinity of old toxoplasmic lesions that have scarred. Confirmation by serologic testing can add some diagnostic information, but there is no correlation between ocular disease activity and serum antibody titer. PCR may be helpful in distinguishing between OT and other ocular diseases. In a trial study of 56 patients, all patients with OT had Toxoplasma gondii-positive PCR results for an aqueous humor sample and for a blood sample [4]. One of our 2 patients had positive serologic testing results, confirming past infection. No ocular fluid samples were obtained. Definitive diagnosis can be made by biopsy, if performing a biopsy is feasible.

The decision to treat is dependent on the size and location of the lesion. If the lesion is small and peripheral, it usually heals spontaneously, without much impairment. Larger, more destructive lesions can cause considerable loss of vision and are typically treated with folicin acid and a combination of pyrimethamine and sulfadiazine [5]. Clindamycin—and even tetracycline—can be used as an alternative therapy for patients for whom treatment has failed and for patients intolerant of sulfonamides. Recently, trimethoprim-sulfamethoxazole has been advocated for monotherapy. Atovaquone is an alternative, especially for immunocompromised patients who are at increased risk of bone marrow toxicity from sulfonamides. The role of steroids is adjunctive. Steroids are recommended when there is visibly significant inflammation (i.e., iritis or vitritis) and are also recommended to minimize chorioretinal scarring, especially within the posterior pole, a condition which was present in our 2 cases. To date, there are no randomized controlled trials comparing these treatment regimens.

Relapse, with progressive lesions, retinal scarring, and secondary loss of visual acuity, can be seen in both immunocompromised and immunocompetent patients. Therefore, if a chronic suppressive therapy to prevent relapse were efficacious, it would be of significant benefit. Silveira et al. [6] found that patients treated with 1 tablet of trimethoprim-sulfamethoxazole (160/800 mg) every 3 days for up to 20 consecutive months had significantly fewer recurrences (P = .01). Of note, although the study was prospective and randomized, it was open-labeled and, therefore, may be biased. A series of case reports of AIDS patients who had OT described continuation of the initial treatment regimen that had healed their ocular lesions [7]. Most patients had no recurrence of disease during secondary prophylactic treatment, but different treatments were used. The most effective regimen is yet to be determined, but our case reports present objective evidence of a possible future treatment option.

References