

Early diagnosis and successful treatment of acquired toxoplasmosis infectious retinochoroiditis

A case report

Xiaoli Lv, MD^{a,b}, Pingping Yu, MS^{a,*}

Abstract

Rationale: *Toxoplasma gondii* is distributed worldwide, infecting a large population. It can cause focal necrotic retinitis or retinochoroiditis in the human eyes and is one of the most common causes of posterior uveitis.

Patient concerns: A 68-year-old patient with normal immunity was complained about blurred vision and black shadow in the right eye for 1 week.

Diagnoses: Combined Yellow-and-white bulged lesions in the fundus of the right eye with the Goldmann-Witmer coefficient = 2 and based on the serological indicators, we considered the diagnosis of *T. gondii* infection-induced retinochoroiditis.

Interventions: Acetylspiramycin 0.4 QID × 3 weeks, concussive 20 days treatment after 3 days, for a total of 3 months, prednisone 20mg/day with a weekly reduction of 5mg for 1 month.

Outcomes: After oral acetylspiramycin, topical and systemic corticosteroids for 3 months, the retinal lesions were scarred, and inflammation of the anterior chamber and vitreum disappeared. After a 9-month follow-up, the visual acuity was 0.6, and no active lesions were observed in the fundus.

Lessons: The immunocompetent elderly who are in contact with domestic cats may have an opportunistic infection with toxoplasmosis leading to primary retinochoroiditis. Prompt diagnosis and effective treatment can get a good clinical prognosis.

Abbreviations: ESAT-6 = early secreted antigenic target-6, IgG = Immunoglobulin G, IgM = Immunoglobulin M, IL10 = interleukin-10, IL6 = interleukin-6, PPD = purified protein derivatives tuberculin, QID = quater in die, TORCH = Toxoplasma, Rubella virus, Cytomegalovirus, Herpes virus, T-SPOT = Detection of T cells in tuberculosis infection.

Keywords: acquired toxoplasmosis retinochoroiditis, aged, case report, diagnosis, Goldmann-Witmer, treatment

1. Introduction

Toxoplasma gondii, the most common cause of posterior uveitis worldwide, is a protozoan parasite that can infect up to one-third global population.^[1] Although posterior uveitis is usually a self-limited disease, it may reduce vision secondary to the optic nerve or macular involvement and/or severe vitreous inflammation.^[2] Atypical cases of ocular toxoplasmosis consist of multifocal lesions and large areas of retinal necrosis or retinochoroiditis.^[3] Such cases might require a combination of periocular and oral

treatment to control the inflammation. Hitherto, there is no consensus on the treatment efficiency and risk factors for the occurrence and recurrence of this eye disease.^[4] In addition, the Goldmann-Witmer coefficient is useful for the diagnosis of atypical lesions by comparing the titer of IgG in aqueous humor and serum.^[5]

Herein, we present an atypical toxoplasmosis retinochoroiditis in an aged, immunocompetent individual; however, it elucidates some critical principles in the diagnosis and management of this challenging condition.

2. Case presentation

The patient was a 68-year-old male, who visited the Clinical Ophthalmology Department of The Second Affiliated Hospital of Zhejiang Chinese Medical University in Hangzhou, Zhejiang, China, on September 6, 2016, and complained about blurred vision and black shadow in the right eye for 1 week. The history of systemic diseases was as follows: indirect cat exposure once for half a day, hypertension for >40 years in which, the blood pressure was controlled by drugs, prostate hyperplasia, excision of tumor of the right lung in the First Affiliated Hospital, Zhejiang University in 2006, and a smoking history of >10 years (15–20 cigarettes/day).

Ophthalmic examination showed visual acuities of 0.3 and 0.8 in the right and left eyes, respectively, and intraocular pressures of

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^a Department of Ophthalmology, The Second Affiliated Hospital of Zhejiang Chinese Medical University, Hangzhou, Zhejiang, ^b Shanghai University of Traditional Chinese Medicine, Shanghai, China.

* Correspondence: Pingping Yu, Department of Ophthalmology, The Second Affiliated Hospital of Zhejiang Chinese Medical University, 318 Chaowang Road, Hangzhou, Zhejiang 310005, China (e-mail: yppjs1971@163.com).

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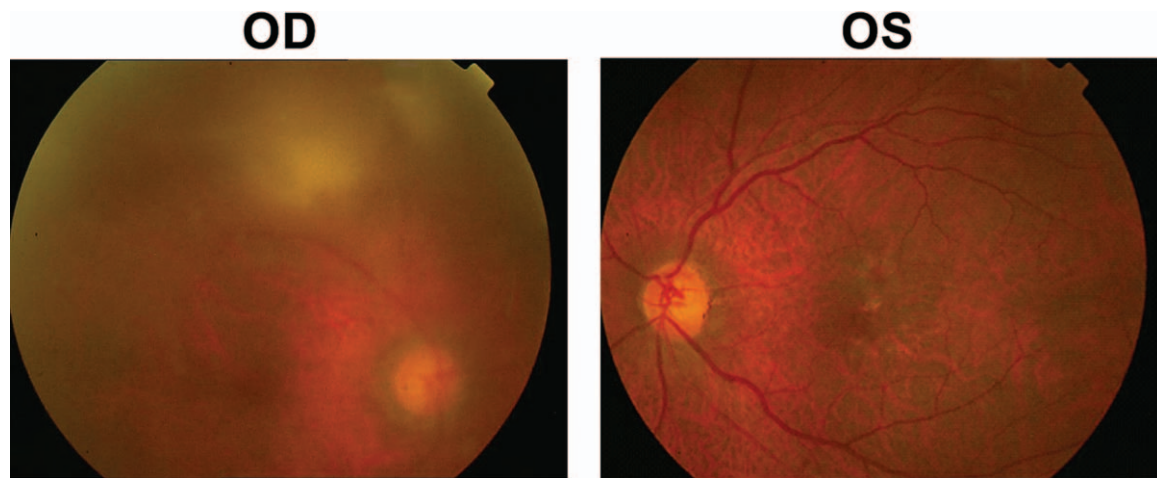


Figure 1. The right eye showed vitreous opacity and inflammatory cells; yellow-and-white lesions were visible in the superior temporal area, the sheath was visible in a peripheral retinal artery, and dotted hemorrhage was visible in the peripheral area of the inferior retina. The left eye disc was red with a distinct border, the retinal arteriovenous ratio was ~1:3, and pigment disorders were visible in the macula.

15 and 13 mm Hg in the right and left eyes, respectively. Any obvious anomalies were not observed in the anterior segment of both eyes. The slit lamp revealed an apparent vitreous opacity in the right eye, with visible inflammatory cells. The fundus of the right eye was blurred after mydriasis. No hyperemia and edema were observed in the optic disc. Yellow-and-white bulged lesions were visible in the superior temporal area with unclear border and dilated peripheral retinal vessels, as well as subtly visible hemorrhage in the inferior retina (Fig. 1). The left eye disc was red with a distinct border, the retinal arteriovenous ratio was ~1:3, and pigment disorders were visible in the macula.

After 3 weeks, the yellow-and-white lesions in the fundus were significantly enlarged. Subsequently, the patient underwent further examinations, including tumor indicators, blood routine, living routine, immunization routine, TORCH (Toxoplasma, Rubella virus, Cytomegalo virus, Herpes virus), blood transfusion laboratory test, and T-spot (Detection of T cells in tuberculosis infection); Test results helpful for diagnosis and differential diagnosis are summarized in Table 1.

We hypothesized that the patient should be diagnosed with one of the following diseases: infectious retinochoroiditis, tuberculous chorioretinitis, metastatic choroidal carcinoma, or lympho-

ma. Combined with the clinical manifestations and fundus characteristics of the patient, we speculated that the diagnosis mainly lied in the differentiation of lymphoma and infectious retinochoroiditis. Therefore, we measured the IL10/IL6 value and Goldmann–Witmer coefficient of the intraocular fluid (with Prof. Tao Yong, Beijing Chao-Yang Hospital affiliated to Beijing University) and obtained the following results: IL-10/IL-6 < 1, Goldmann–Witmer coefficient = 2. On the basis of the serological indicators, we considered the diagnosis of *T. gondii* infection induced retinochoroiditis. Thus, the following treatment program was adopted: acetylspiramycin 0.4 QID×3 weeks, concussive 20 days treatment after 3 days, for a total of 3 months, prednisone 20mg/day with a weekly reduction of 5 mg for 1 month. The fundus after the treatment is shown in Fig. 2.

After a 9-month follow-up, the visual acuity was 0.6, and no active lesions were observed in the fundus.

The study was approved by The Second Affiliated Hospital of Zhejiang Chinese Medical University in Hangzhou, Zhejiang, China. The patient enrolled has given informed consent.

Table 1

Test results helpful for diagnosis and differential diagnosis.

Laboratory inspection items	Results
White blood cell count, WBC/L	$6.7 \times 10^9/L$ (3.5–9.5)
Neutrophil percentage (NE%)	82.9
High-sensitivity C-reactive protein, CRPmg/L	4.8 mg/L (0–10)
Antigen ESAT-6	19 (0–6)
T-SPOT conclusion	Positive
PPD test	+
Toxoplasmosis IgM antibody	Positive
Toxoplasmosis IgG antibody	Positive
Rubella IgG antibody	Positive
Cytomegalovirus IgG antibody	Positive
Herpes simplex virus type 1 IgG antibody	Positive

ESAT-6=early secreted antigenic target-6, IgG=Immunoglobulin G, IgM=Immunoglobulin M, PPD=purified protein derivatives tuberculin, TORCH=Toxoplasma, Rubella virus, Cytomegalovirus, Herpes virus, T-SPOT=Detection of T cells in tuberculosis infection.

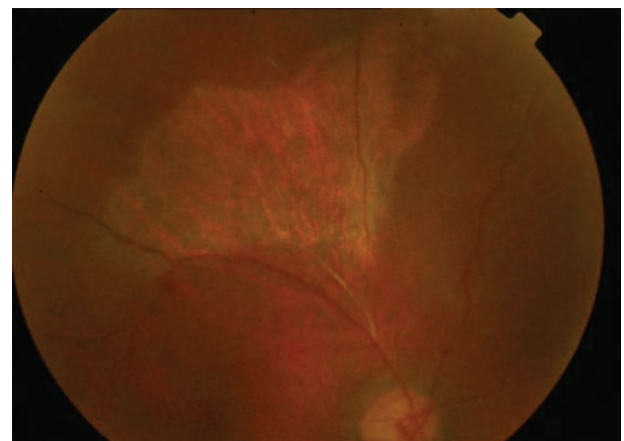


Figure 2. With the application of drugs, lesions were gradually reduced, which finally led to chorioretinal atrophy with visible choroidal vessels in the fundus.

3. Discussion

Approximately 30% of the global human population is chronically infected with *T gondii*.^[6] Human infections are primarily acquired by ingesting undercooked or raw meat containing viable tissue cysts or by ingesting food or water contaminated with *T gondii* oocysts.^[7,8] But in this case, the only positive history was indirect cat exposure once for half a day. The primary infections in adults are mostly asymptomatic; however, lymphadenopathy or ocular toxoplasmosis is presented in some patients.^[9] Severe, acute, disseminated toxoplasmosis might occur in immunocompetent individuals infected with some isolates.^[10–14] This normal immunity patient had atypical ocular manifestations, which were similar with other reports, but no lymph node reaction, no severe systemic, acute, disseminated toxoplasmosis symptoms.

The diagnosis of ocular toxoplasmosis depends largely on the presence of typical lesions, with retinochoroiditis as a critical feature. However, the Goldmann–Witmer coefficient is valuable in the diagnosis of atypical lesions, which is well-validated in this case.

Currently, optimal drugs for the treatment of toxoplasmosis are lacking. The majority of the available drugs can inhibit the growth of *T gondii* in the proliferative stage, for example, a combination therapy of pyrimethamine and sulfadiazine. Pyrimethamine can lead to poor blood-related performances such as leukopenia and thrombocytopenia as well as gastrointestinal and skin side effects. Sulfadiazine is a sulfonamide insect-resistant drug that usually causes sudden anaphylaxis. Clinically, spiramycin combined with azithromycin is often used for the systemic treatment of *T gondii* infection in pregnant women, wherein remarkable effects are observed without any adverse reactions.^[15] Hence, acetylspiramycin combined with hormone therapy was used for the treatment in this study. After periodic drug treatment, the serum IgM antibody was detected as negative, the topical lesions in the eye were scarred, the inflammation in the anterior chamber of the vitreum vanished, and the visual acuity improved.

In this case, we presented an immunocompetent elderly person suffered from atypical primary toxoplasmosis retinochoroiditis; we prescribed sensitive drugs and symptomatic supportive care and achieved good clinical outcomes. However, there was no direct evidence that the disease was caused by contact with domestic cats. In case of clinical suspected *T gondii* infection, it should be promptly confirmed by Goldmann–Witmer coefficient test, so that the patients could be treated promptly and correctly.

4. Conclusion

This case suggests that the elderly people with normal immunity may have an opportunistic infection of toxoplasmosis, and Goldmann–Witmer coefficient is valuable in the diagnosis; oral antibiotics acetylspiramycin, topical, and systemic corticosteroids can be used to obtain satisfactory clinical outcomes.

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Author contributions

Conceptualization: Xiaoli Lv, Pingping Yu.

Data curation: Xiaoli Lv, Pingping Yu.

Formal analysis: Xiaoli Lv.

Investigation: Xiaoli Lv, Pingping Yu.

Project administration: Xiaoli Lv.

Resources: Pingping Yu.

Validation: Xiaoli Lv.

Writing – original draft: Xiaoli Lv, Pingping Yu.

Writing – review & editing: Pingping Yu.

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