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Unilateral Ocular Toxoplasmosis Revealed by Total White Cataract: A Case Report

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Abstract **Case Report**

Ocular toxoplasmosis is a significant and often underestimated ophthalmological condition that can lead to severe visual impairment in immunocompetent individuals. This infection, caused by the protozoan Toxoplasma gondii, is the main cause of infectious posterior uveitis in this population. Although the typical form of the disease is focal posterior uveitis, a variety of clinical presentations can occur, complicating diagnosis and management. Here, we report a rare case of unilateral ocular toxoplasmosis revealed by a total white cataract in an immunocompetent patient, highlighting the diagnostic and therapeutic challenges clinicians may face.

Keywords: Ocular toxoplasmosis, Total white cataract, Diagnosis and treatment.

INTRODUCTION

Ocular toxoplasmosis is a significant and often underrecognized ocular infection caused by the protozoan parasite Toxoplasma gondii. It represents a leading cause of infectious posterior uveitis in immunocompetent individuals, potentially resulting in severe visual impairment. While the typical presentation of ocular toxoplasmosis involves focal posterior uveitis, a wide spectrum of clinical manifestations exists, posing challenges in both diagnosis and management. Herein, we present a rare case of unilateral ocular toxoplasmosis characterized by the unusual manifestation of a total white cataract in an immunocompetent patient. This case underscores the diagnostic complexities that clinicians may encounter and highlights the importance of a multidisciplinary approach to effectively address such atypical presentations.

Ocular toxoplasmosis can arise from congenital or acquired infection with T. gondii, transmitted through various routes such as ingestion of contaminated food or water, exposure to infected cat feces, or, rarely, through organ transplantation or blood transfusion. The global seroprevalence of toxoplasmosis varies depending on geographical, environmental, and dietary factors. Despite its wide distribution, ocular toxoplasmosis remains a diagnostic challenge due to its diverse clinical presentations and the lack of pathognomonic signs.

This case report details the clinical course of a 33-year-old male patient presenting with progressive visual impairment secondary to a total white cataract in the affected eye. Through a comprehensive diagnostic workup involving serological testing, imaging studies, and ophthalmological examinations, the diagnosis of unilateral ocular toxoplasmosis was established. Prompt initiation of appropriate antiparasitic and anti-inflammatory therapy, along with surgical intervention for cataract removal, led to a favorable outcome with improved visual acuity and resolution of intraocular inflammation.

The rarity of a total white cataract as the presenting feature of ocular toxoplasmosis underscores the importance of considering this infection in the differential diagnosis of inflammatory cataracts, particularly in regions with moderate to high toxoplasmosis seroprevalence. Moreover, this case highlights the efficacy of a multidisciplinary approach encompassing ophthalmology, infectious diseases, and pathology to ensure accurate diagnosis and timely management of ocular toxoplasmosis.

Through this case report, we aim to raise awareness among clinicians about the diverse clinical manifestations of ocular toxoplasmosis and the importance of a comprehensive approach to diagnosis and treatment, ultimately emphasizing the significance

of early intervention in optimizing visual outcomes for affected individuals.

CASE REPORT

A 33-year-old male patient presented with a 10-month history of progressive visual impairment in his right eye (RE). He had no personal or family history of eye disease, eye trauma, or previous surgery. He also had no general signs, such as fever, asthenia, headache, or mucocutaneous manifestations. He reported no contact with cats.

Ophthalmological examination revealed finger-count visual acuity at 3 meters OD and 10/10ths in the left eye (LE). Ocular tone was normal in both eyes. Biomicroscopic examination of the OD showed total opacification of the lens, obscuring the posterior segment. The anterior segment showed 90-degree posterior synechiae, with no corneal retrodescemetic precipitates or tyndall in the anterior chamber. The LE was normal, with no anterior segment or lens abnormalities. Fundus examination of the LE revealed a flat retina with no peripheral or central foci.

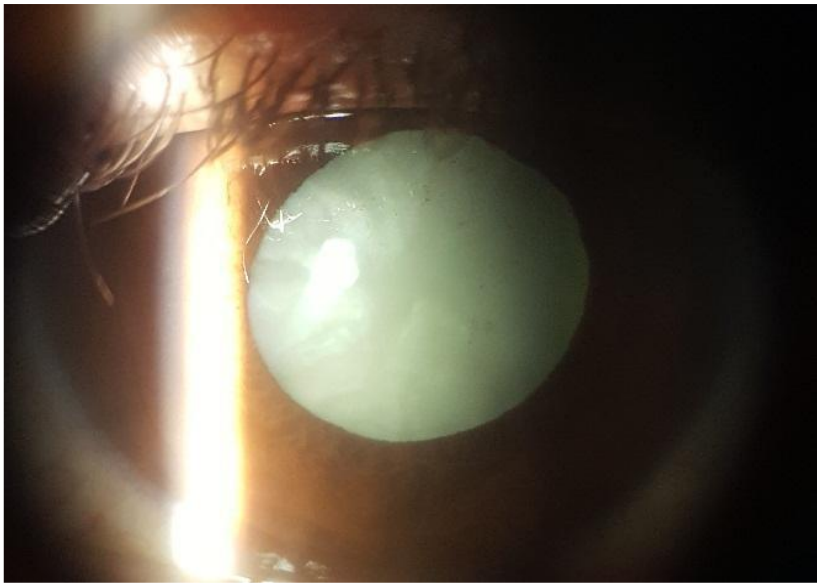

Figure 1: Presence of pigment deposits in a dense white cataract in RE

Ocular ultrasound revealed a hyperechoic vitreous suggesting moderate hyalitis.

Biological tests revealed positive serology for Toxoplasma gondii, with an IgG antibody level of 283 IU/mL (normal < 10 IU/mL) and an IgM antibody level of 0.3 IU/mL (normal < 0.8 IU/mL), indicating a long-standing infection. Serology of RE aqueous humor, obtained by anterior chamber puncture, confirmed local synthesis of anti-toxoplasmic antibodies, with an IgG level of 12 IU/mL and a Goldmann-Witmer index of 28 (normal < 4). The rest of the biological examination was unremarkable.

Cerebral magnetic resonance imaging (MRI) showed no toxoplasmic brain lesions. Fluorescein angiography (FA) was performed in both eyes. The RE showed diffuse hypofluorescence of the fundus, related to opacification of the lens, preventing visualization of the retina and toxoplasmic lesions. The LE showed no angiographic abnormalities.

The diagnosis of unilateral ocular toxoplasmosis revealed by a total white cataract of the OD was retained. The patient was treated with a combination of pyrimethamine (25 mg/day) and sulfadiazine (4 g/day) for 01 months, with folinic acid supplementation (15 mg/day) to prevent hematological toxicity. He also received local anti-inflammatory treatment with prednisolone eye drops (1%, four times a day) and systemic prednisone (0.5 mg/kg/day) for four weeks, tapering off progressively. Cataract surgery by phacoemulsification with implantation of an artificial lens was performed in the OD after the acute phase of inflammation. Postoperative fundus examination revealed a lesion of active chorioretinitis at the posterior pole, surrounded by an old pigmented scar. Antiparasitic and anti-inflammatory treatment was continued until complete healing of the lesion. The evolution was favorable, with an improvement in visual acuity to 4/10ths OD and disappearance of intraocular inflammation. No recurrence was observed after one year's follow-up.

DISCUSSION

Ocular toxoplasmosis is the leading cause of infectious posterior uveitis in immunocompetent subjects [1, 2]. It is caused by infection with the protozoan Toxoplasma gondii, which can be transmitted by ingestion of contaminated meat, vegetables or water polluted with oocysts, or by contact with infected cats [2]. The seroprevalence of toxoplasmosis varies around

the world, depending on dietary habits and environmental hygiene [2]. In France, it is estimated at 51.7% [1].

Ocular toxoplasmosis can be congenital or acquired. The congenital form results from maternal infection during pregnancy and is transmitted to the fetus via the placenta. The acquired form can occur after a primary infection or reactivation of a latent infection [2]. Clinical manifestations of ocular toxoplasmosis vary, ranging from anterior to posterior uveitis, intermediate uveitis, scleritis, keratitis, and glaucoma [3]. The most frequent and characteristic form is focal posterior uveitis, manifested by a focus of necrotizing chorioretinitis, often associated with an old pigmented scar, and accompanied by vitreous inflammation and retinal vasculitis [2].

The diagnosis of ocular toxoplasmosis is based primarily on clinical data but can be confirmed by biological and imaging tests. Blood serology detects the presence of IgG and IgM anti-toxoplasma antibodies, which indicate an old or recent infection, respectively. Aqueous humor serology, obtained by anterior chamber puncture, is used to calculate the Goldmann-Witmer index, which reflects the local synthesis of specific antibodies and is considered the reference test for the diagnosis of ocular toxoplasmosis [2]. Cerebral magnetic resonance imaging (MRI) can be useful in searching for toxoplasmic brain lesions, which may be associated with ocular toxoplasmosis, especially in immunocompromised subjects [4]. Fluorescein angiography (FA) and optical coherence tomography (OCT) allow visualization of retinal and choroidal lesions, as well as macular complications such as edema, pigment epitheliopathy, or epiretinal membrane [5, 6].

Treatment of ocular toxoplasmosis aims to eliminate the parasite, control inflammation, and prevent complications. Antiparasitic treatment is based on a combination of pyrimethamine and sulfadiazine, with folinic acid supplementation to reduce hematological toxicity. Other molecules may be used in cases of intolerance or resistance, such as clindamycin, atovaquone, azithromycin, or trimethoprim-sulfamethoxazole [2, 7]. Anti-inflammatory treatment combines local and systemic corticosteroids, tapering off progressively. Cataract surgery may be indicated in cases of lens opacification preventing visualization of the posterior segment or in cases of insufficient visual recovery after medical treatment. Surgery should be performed after the acute phase of inflammation and under antiparasitic and anti-inflammatory cover [8].

The reported case illustrates the diagnostic and therapeutic difficulty of unilateral ocular toxoplasmosis associated with a total white cataract. This is a rare presentation, which may be confused with other causes of inflammatory cataract, such as rubella, cytomegalovirus, herpes or syphilis. The diagnosis was made on the basis of blood and aqueous humor serology, and fundus examination after cataract surgery. The patient received antiparasitic and anti-inflammatory treatment, which controlled the infection and limited visual sequelae. This case highlights the importance of early and appropriate management of ocular toxoplasmosis, which can cause severe and irreversible complications.

Ocular toxoplasmosis is a frequent and potentially serious pathology, requiring clinical and biological vigilance. Diagnosis is based on clinical, serological, immunological, and imaging criteria. Treatment is aimed at eradicating the parasite, reducing inflammation, and preventing complications. Unilateral total white cataract is a rare presentation, posing diagnostic and therapeutic challenges. This case study demonstrates the value of a multidisciplinary approach and appropriate management to improve the visual prognosis of patients with ocular toxoplasmosis.

CONCLUSION

This case of unilateral ocular toxoplasmosis revealed by a total white cataract highlights the importance of a multidisciplinary approach in the management of this pathology. The diagnostic difficulties encountered underline the need for a thorough analysis, including serological and imaging investigations, and highlight the efficacy of antiparasitic treatment combined with anti-inflammatory therapy in the management of this condition. A better understanding of these atypical presentations will contribute to early and appropriate management, thus improving the visual prognosis of patients with ocular toxoplasmosis.

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