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Bilateral Idiopathic Solitary Granuloma of the Uveal Tract: Diagnosis and Treatment

Wonchon Lin², Robert M Beardsley², Alison H Skalet², David J Wilson², James T Rosenbaum^{1,2}, and Phoebe Lin^{2,*}

¹Devers Eye Institute-Legacy Health System, Portland, OR, USA

²Casey Eye Institute-OHSU, Portland, OR, USA

Abstract

We present a case of sequential bilateral idiopathic solitary granuloma of the uveal tract in a 51 year-old woman, who underwent enucleation in one eye due to complications of this condition, but was then successfully treated in the contralateral eye with anti-tumor necrosis-alpha therapy followed shortly by intraocular steroids and a steroid-releasing implant. Her visual acuity at its worst was 20/200 due to vitreous haze and cystoid macular edema, but then stabilized after successful treatment with a final visual acuity of 20/25 in her only seeing eye at 1 year follow-up. This represents the first known biopsy-proven case of bilateral idiopathic solitary granuloma, which additionally, has responded favorably to treatment.

Keywords

Ciliary body granuloma; Infliximab; Necrotizing granulomatous disease; Uveitis

Introduction

Idiopathic solitary granuloma of the uveal tract is an extremely rare entity. A single case series of 11 enucleated eyes with solitary granulomas of the ciliary body leading to phthisis is the only reference found through a search of the National Library of Medicine [1]. No systemic association or infectious etiology has been identified, and no disease-altering treatment has been reported. The following case describes the first reported patient with bilateral idiopathic solitary granuloma of the uveal tract. It also represents the first description of successful treatment sparing enucleation with a good visual outcome.

Case Description

A 51 year old otherwise healthy woman presented in 2006 with a 9 month history of redness, headache, photophobia, and blurry vision in the right eye (OD). She was found to have sectoral anterior scleritis, anterior and intermediate uveitis, and a ciliary body mass OD

*Corresponding author: Phoebe Lin, Casey Eye Institute, 3375 SW Terwilliger Blvd, Portland, OR 97239, USA, Tel: 503-494-0007; linp@ohsu.edu.

Conflict of Interest

The authors have disclosed no conflict of interest.

(Figure 1A, 1B). Purified protein derivative (PPD) skin test, RPR/FTA, and serology for toxocara, toxoplasmosis, brucella, and leptospira were all negative. Systemic imaging including a computed tomography (CT) scan of the chest was unrevealing. Transvitreal biopsy revealed reactive lymphohistiocytic and plasmacytic hyperplasia with negative fungal and bacterial cultures. She was placed on 1 mg/kg oral prednisone for 2 months without a significant response and was subsequently lost to follow up. The patient returned in 2012 with NLP vision and severe pain in the right eye. Enucleation was performed. Histopathology was consistent with annular necrotizing granuloma of the ciliary body, also known as idiopathic solitary granuloma (Figure 1C, 1D). Acid fast bacilli, bacterial, and fungal histopathological stains were negative at the time.

The patient returned six months after enucleation with new onset blurry vision, redness, and periorbital pain of the contralateral eye. On examination, her vision was 20/50 OS. She had 2+ anterior chamber cell and vitreous cell, nasal anterior scleritis extending for 4 clock hours, and cystoid macular edema (CME) with a central macular thickness (CMT) of 440 μm (Figure 2A, 2C). Ultrasound biomicroscopy (UBM) demonstrated a nasal ciliary body mass corresponding to the location of the scleral injection, which measured 2 mm in thickness and 8 mm in largest basal diameter initially. She was treated with topical prednisolone, periocular triamcinolone, oral prednisone (1 mg/kg) with a taper, and subsequently 3g daily of oral mycophenolate mofetil. Despite two months of treatment, the patient had increasing pain, inflammation, and increased CME with a CMT of 653 μm . Her visual acuity worsened to 20/80 OS. UBM showed growth of the ciliary body mass to 3 mm $\times$ 9 mm (Figure 2B). Mycophenolate was replaced with methotrexate 20 mg SC weekly, and infliximab (4.7 mg/kg intravenously) was started. While her symptoms improved and the ciliary body mass decreased in size within 1 week after starting infliximab, vitreous haze and CME continued to worsen. Her visual acuity declined to 20/200 OS.

Due to declining vision and unclear clinical response to treatment, trans-scleral incisional biopsy of the ciliary body mass and vitreous aspiration were performed. The biopsy demonstrated marked fibrosis with sparse neutrophils denoting clinical response to treatment (Figure 2E). Bacterial, fungal, and mycobacterial cultures were negative. In addition, viral (HSV, CMV, VZV), fungal, mycobacterial, and bacterial PCR were negative. The enucleated right globe was reevaluated with universal PCR (for mycobacterial, bacterial, and fungal PCR), and found to be negative again. Since an infectious etiology could not be found, intravitreal triamcinolone was administered, resulting in rapid resolution of the patient's CME and vitritis. The ciliary body mass appeared significantly reduced in size on ultrasound biomicroscopy (UBM) (Figure 2F). The patient switched from infliximab to adalimumab because the latter can be given subcutaneously and has a better safety profile in the treatment of inflammatory eye disease in our experience [2].

After regression of the ciliary body lesion, the patient required multiple intravitreal triamcinolone or dexamethasone implant injections for recurrent, isolated CME, which eventually required surgical fluocinolone acetonide implant placement, cataract surgery, and subsequent surgical glaucoma tube shunt. Her final visual acuity was 20/25 OS with persistent quiescence 1 year after surgery and sustained resolution of her CME (Figure 2D). She remains on adalimumab 40 mg subcutaneously every 2 weeks alone.

Discussion

This is the first reported case of bilateral sequential idiopathic granuloma of the uveal tract. The patient had a classic histopathologic appearance of this entity in her enucleated right globe, which, together with her negative workup, established a diagnosis of idiopathic solitary granuloma of the uveal tract. Interestingly, areas of necrosis were still present six years after clinical onset of disease on histopathology. In previously reported cases, the longest duration between clinical onset and enucleation was 4 years [1]. Uniquely, our patient presented with nearly identical clinical findings and an associated ciliary body mass in the contralateral eye 6 years after presentation in her first eye. Successful treatment of this condition has never been previously described. All previous reports described profound vision loss within months and enucleation shortly thereafter [1].

Tumor necrosis factor-alpha (TNF- α) is a cytokine that is strongly implicated in granuloma formation [3–6]. Upon development of this condition in her contralateral eye 6 years after her first eye, our patient failed to respond to topical, oral, periocular corticosteroids alone or in combination with antimetabolites prior to treatment with infliximab. Although infliximab resulted in rapid regression of symptoms and ciliary body mass size within 1 week, CME worsened. However, this subsequently improved with the addition of intravitreal triamcinolone. Worsened intraocular inflammation and CME after treatment of the ciliary body mass with infliximab was thought to be due to massive inflammatory mediator release from a rapidly involuting granulomatous mass. The lack of significant inflammation on biopsy after rapid regression was felt to be due to successful treatment with immunomodulatory agents. A combination of treatments utilizing TNF- α inhibitors followed closely by local or systemic corticosteroids for a solitary granuloma of the ciliary body should be strongly considered after an infectious etiology has been thoroughly excluded.

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Figure 1.

Right eye clinical presentation, imaging, and histopathology. (A) Slit lamp photo of the right eye in 2006 demonstrating a nasal scleritis. (B) Ultrasound biomicroscopy of the right eye showing a ciliary body mass. (C) Enucleated right globe in 2012 demonstrating a prominent neutrophilic and lymphocytic infiltrate within the sclera and ciliary body (arrowheads), as well as organized microabscesses (arrows). (D) Higher magnification view of microabscess demonstrates areas of necrosis with giant cells and dense leukocytic infiltrates.

Figure 2.

Left eye clinical presentation and imaging before and after treatment. (A) Slit lamp photo of the left eye in 2012 demonstrating a nasal scleritis and (B) 3.1×8.8 mm ciliary body mass on ultrasound biomicroscopy (UBM). (C) Cystoid macular edema (CME) shown on spectral domain-optical coherence tomography (SD-OCT). (E) Transcleral biopsy of residual ciliary body mass after initiation of infliximab (prior to triamcinolone treatment) demonstrating fibrosis and scant neutrophilic infiltration. (D) Resolution of CME on SD-OCT after infliximab and intravitreal triamcinolone treatment. (F) Resolution of ciliary body mass after infliximab treatment demonstrated by UBM.