Panuveitis complicated by an inflammatory retinal mass

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Introduction

The treatment of uveitis predominantly involves the use of anti-inflammatory and immunosuppressive agents. However, these drugs have potential side effects. Long-term exposure to topical steroids may eventually result in glaucoma and cataracts. In addition, the use of immunosuppressants can increase the risk of developing malignancies. In this article, we report a case of panuveitis with an inflammatory retinal mass that was treated by vitrectomy.

Case presentation

A 28-year-old woman attended our clinic complaining of a shadow in the field of vision of her left eye for several days. Her visual acuity was 1.2 on the right and 1.0 on the left. The slit-lamp examination showed no signs of inflammation in the anterior segment of either eye. The vitreous in the left eye, however, contained scattered opacities. As a result, fluorescein angiography was performed for a detailed examination of the eye. The results showed fluorescein leakage in the peripheral vessels and a focal retinal lesion in the temporal fundus. A diagnosis of uveitis was made in the left eye.

Systemic corticosteroids were prescribed to the patient. However, an overly rapid reduction of the drugs led to the recurrence of uveitis. On 2-month follow-up, the patient's

visual acuity was 0.8 on the right and 1.0 on the left. Posterior synechiae were noted at 11 o'clock on the iris, and scattered vitreous cells were evident in the right eye on examination. There were no significant signs of inflammation in the anterior segment in the left eye. However, moderate vitreous opacities were observed, and a 3×3 disk diameter (DD), gray–white lesion with fuzzy edges was found in the temporal retina. The patient was then diagnosed with bilateral uveitis with an inflammatory retinal mass in the left eye. An MRI of the head showed no intraocular tumors. The tests for serum rheumatoid factor, C-reactive protein, and antistreptolysin (ASO) were negative. The patient was again treated with systemic corticosteroids, but the therapeutic dose was reduced at a slower rate compared with the last treatment.

Two months later, the patient's acuity was 1.2 in the right eye and 1.0 in the left eye. There were no significant findings in the right eye. Scattered vitreous cells could still be visualized in the left eye. The temporal lesion in the retina was reduced in size. The potential side effects of long-term, systemic corticosteroid usage were considered in relation to the benefits of the treatment. As a result, the steroid treatment was stopped to avoid adverse reactions. The visual acuity of the left eye was maintained at 1.0 for another 2 months. At this time, the patient returned to the clinic complaining of decreased vision. Her visual acuity had decreased to 0.6. The slit-lamp examination showed an increase in the number of cells and worsening inflammation in the vitreous. A fibrotic band extending from the vitreous to the optic disk was observed. The patient was treated with glucosamine indomethacin and a periocular injection of 20 mg triamcinolone.

After 2 months of treatment, the visual acuity of 1.0 returned. One and a half months after this point, however, her VA dropped to 0.08. The vitreous had become severely opacified, and the fundus could not be clearly visualized. The optic disk and fovea were encapsulated by a fibrotic

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membrane. A 4×4 DD, white lesion was found in the inferior temporal retina (Figs. 1 and 2). A fluorescein angiogram demonstrated fluorescein leakage in the optic nerve, macula, and peripheral vessels, as well as a focal retinal lesion in the temporal fundus (Figs. 3 and 4). A B-scan showed a punctate, weakly echogenic, movable mass that was adhered to the wall of the eye. A strip of membrane with strong echogenicity was visualized in the mass (Fig. 5).

The patient was again treated with systemic steroids. Two months later, her visual acuity had risen to 0.4. The ineffectiveness of the nonsurgical therapeutic options for controlling the uveitis in the patient's left eye was indicative of temporal retinitis. Because of this diagnosis, a surgical intervention was ordered. The patient underwent a vitrectomy and focal laser treatment of the lesion. All nonsurgical therapy was discontinued. Further follow-up examinations showed that the vitreous had cleared, and the patient's visual acuity rose to 0.8. Laser spots surrounding the distinct edges of the lesion could be visualized (Fig. 6). One and a half years after the surgery, the patient's visual acuity had improved to 1.0. Uveitis had not recurred since the surgery (Fig. 7).

Discussion

The widely used medical therapies for uveitis include topical or systemic corticosteroids, nonsteroidal anti-inflammatory drugs (NSAIDs), and immunomodulators. These treatments have shown efficacy for treating acute inflammation and for reducing the recurrence of chronic uveitis and cystoid macular edema (CME) [1, 2]. However, the complications of medical therapy are numerous. For example, complicated cataracts and secondary glaucoma are associated with the long-term usage of

Fig. 2 Left eye photo showing a grayish–yellow lesion on the temporal retina jointed with the vitreous

corticosteroids. In addition, an increased risk of developing secondary tumors is associated with the long-term use of immunomodulators. Furthermore, uveitis tends to recur when the drug dosage is decreased, so the treatment dosage needs to be increased to remain efficacious. Severe cases of uveitis can lead to blindness as a result of disease recurrence, the ineffectiveness of medical therapy, and complications. Starting in 1978, Diamond and Kaplan [3] performed pars plana vitrectomies in patients with uveitis. This surgical management of severe uveitis has provided novel methods for the diagnosis and treatment of the disease. The pars plana vitrectomy procedure can be applied to clear vitreous opacities and hemorrhages, reduce CMEs, repair complex retinal detachments, and reduce intravitreal cytokines, chemokines, and antibody–antigen complexes [4]. In addition, the procedure can decrease the usage of systemic medications and confirm the type and cause of the uveitis.

Fig. 1 Left eye photo showing vitreous haze and blurred vision of optic nerve

Fig. 3 Fluorescein angiogram demonstrating fluorescein leakage in the optic nerve and macula

Fig. 4 Fluorescein leakage in the periphery vessels and focal retinal lesion on the temporal fundus

Which types of uveitis require treatment with a pars plana vitrectomy? Yusuf Ozerturk [5] asserted that the main indications of the procedure include the presence of persistent and concentrated vitreous opacities, hemorrhage, tractional retinal detachment, proliferative vitreoretinopathy, posterior ciliary membrane, epiretinal membrane, macular pucker, cystoid macular edema, and complicated cataracts. The secondary indications include two episodes of uveitis less than 2 months apart while under long-term immunosuppressive therapy and/or intolerance of drug treatment. Vitrectomy treatments have been associated with especially good outcomes for childhood uveitis [6]. In the current report, the patient suffered from repeated attacks even under medical treatment for 1 year. The inflammatory mass in the temporal retina distinguished this case from other cases of uveitis. This lesion was considered to be the cause of the

Fig. 5 B-scan showed a punctate, weakly echogenic, movable mass that was adhered to the wall of the eye. A strip of membrane with strong echogenicity was visualized in the mass

Fig. 6 Left eye photo. After vitrectomy and focal laser treatment around the lesion, there was a decrease of inflammation in the vitreous. Visual acuity improved to 0.8 half a year post-surgery. Laser spots surrounding the distinct edges of the lesion could be visualized

recurrences. We performed a vitrectomy on this patient, cleared the inflammatory mass, and photocoagulated the lesion. The patient stopped taking corticosteroids after the surgery. Her vision became stable at 1.0, and she had experienced no inflammatory recurrences at the 1-year follow-up. Our decision was proven to be correct.

The vitrectomy procedure is capable of clearing inflammatory lesions in the vitreous body, including vitreous opacities and antigen–antibody complexes. Persistent inflammation in the vitreous body has been associated with the excitation of secondary immune responses [7]. In patients with uveitis, the vitreous body is full of inflammatory cells, including antigens, antigen–antibody complexes, and inflammatory cytokines (such as interleukins and growth factors). It is an inflammatory mediator pool. Therapeutic vitrectomies are performed in patients with uveitis to clear the visual axes of opacities and to remove inflammatory cells, antigen–antibody complexes, and inflammation cytokines. The surgery may increase visual acuity and decrease the rate of recurrence. In addition, the vitrectomy surgery may increase the choroidal and retinal permeability, therefore allowing corticosteroids and NSAIDs to more easily enter the vitreous cavity and thus decrease the required dosage of these medical treatments

Fig. 7 Left eye photo. One and a half years after the surgery, the patient's visual acuity had improved to 1.0. Uveitis had not recurred since the surgery

[8]. Moreover, chronic uveitis can lead to retinal ischemia and hypoxia. These conditions can lead to VEGF expression, neovascularization, and the development of a proliferative membrane. The vitrectomy procedure can be applied to remove neovascular membranes and the resulting retracted retina. Because the procedure can remove inflammatory mediators in the vitreous body and relieve retinal retractions, it can also alleviate macular lesions [9, 10]. Furthermore, it increases drug penetration in the retinal tissues, thereby enhancing the effect of corticosteroid treatment for macular edema [8].

Based on the above hypotheses and reports, we question whether early vitrectomy treatments are associated with more favorable outcomes for patients with uveitis. This idea is a worthy proposal. However, the factors that influence uveitis and the complications of the vitrectomy procedure prevent us from evaluating the patient's post-surgical condition as well as the effectiveness of the treatment. Thus, more cases and multicenter, randomized controlled studies will be needed to evaluate the effects of vitrectomies for the treatment of uveitis.

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Conflict of interest The authors report no conflicts of interest.

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