Treatment of Probable Vogt-Koyanagi-Harada with Single Intravitreal Triamcinolone Acetonide

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Brief report

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Abstract

Background A 36-year-old woman with a history of poorly controlled diabetes was diagnosed with probable Vogt-Koyanagi-Harada (VKH). We are reporting the use of intravitreal triamcinolone acetonide (0.4 mg) to both eyes to successfully treat the ocular manifestations of VKH.

Findings Nine days after injection, subretinal fluid in the right eye improved and 13 days later, the serous detachment had almost completely resolved. One month after injections, both the right and left eye showed decreased leakage and fewer punctate lesions on fluorescein angiography. Ocular examination remained stable other than development of ocular hypertension bilaterally, which was treated with topical hypertensive drops. Two years later, patient developed a cataract in the right eye, for which the patient underwent phacoemulsification. Three years after treatment, visual acuity remains 20/20 while imaging studies and bilateral full field electroretinogram remained normal.

Conclusion Intravitreal steroids can be considered as treatment in VKH in situations where systemic corticosteroids are contraindicated, such as patients with a history of poorly controlled diabetes. Complications of local steroids need to be carefully considered, even after a single injection. In some patients short-term treatment of VKH with local corticosteroid may result in long-term visual stability.

Introduction

Vogt-Koyanagi-Harada (VKH) is a systemic autoimmune disorder that causes panuveitis in addition to systemic symptoms and signs such as meningismus, hypoacusis, poliosis, vitiligo, and alopecia.[1] VKH often occurs without extraocular manifestations, especially if treated adequately early and has been termed “probable” VKH, by the First International Workshop on VKH.[2] The pathophysiology of VKH is largely unknown but is presumed to involve a T-cell mediated response against melanocytes leading to granulomatous inflammation. A known association exists with the HLA-DRB1*0405 allele.[3] The condition has a predilection for females and certain populations such as Native Americans, Asians, and Hispanics.[4, 5] Treatment almost always consists of systemic corticosteroids for panuveitis and bilateral multifocal serous retinal detachment,[6] often followed by long-term steroid-sparing immunosuppression to address recurrences and/or chronic retinal pigment epithelium (RPE) dysfunction.[7]

In this case, we present a diabetic patient with VKH that was successfully managed in a nontraditional manner without systemic immunosuppression using a local injection.

Case Report

A 36-year old woman presented with decreasing vision for 3 weeks in the right eye associated with pain on eye movements. Best corrected visual acuity in the right eye was 20/80. Examination of the right eye showed trace anterior chamber cell, trace anterior vitreous cell, central subretinal fluid and optic disc edema. In the left eye, best corrected visual acuity was 20/20 and the anterior chamber was deep and

quiet. OCT findings in the right eye demonstrated multifocal areas of subretinal fluid and intraretinal fluid, while the OCT imaging from the left eye was within normal limits.

On fluorescein angiography (FA), the right eye exhibited disc leakage as well as pooling with punctate hyperfluorescent spots within the macula, and the left eye had faint areas of leakage within the macula. On B-scan ultrasonography, multifocal, serous retinal detachments with choroidal thickening were seen posterior to the equator on the right eye.

Of note, the patient had a medical history significant for type II diabetes mellitus, which had been treated with metformin and insulin. After consultation with the patient's endocrinologist, treatment with systemic corticosteroids was avoided because of the concern for diabetic complications. The patient received 0.4 mg intravitreal injections of triamcinolone acetonide to both eyes. The decision was made to inject the left eye largely based on FA findings. Subsequent OCT 6 days post-injection and B-scan results 13 days post-injection showed much improved subretinal fluid in the right eye and increase in intraocular pressure bilaterally was noted bilaterally. Ocular hypertension was treated with dorzolamide and latanoprost. It was recommended that the patient consider immunomodulatory therapy with adalimumab. However, in the context of improving ocular symptoms and the patient's desire to become pregnant, the patient declined this recommendation. Two years after injection, patient also developed a cataract in the right eye, for which the patient underwent successful cataract surgery with sub-Tenon's triamcinolone acetonide. Three years after presentation, the patient was diagnosed with mild diabetic retinopathy. Thirty months after injections, full-field electroretinogram (ff-ERG) was performed in both eyes and was within normal limits At 36 months, the vision in both eyes was 20/20, anterior and posterior segment examination was normal, and OCT was unremarkable in both eyes. FA showed no leakage. The patient received no other treatments.

Discussion

The main site of ocular inflammation in VKH is believed to be the choroid and anterior uvea.[8] Common treatment includes immunosupressive agents for 6 months to 2 years to prevent recurrence.[9, 10] Corticosteroids are always used as initial treatment to achieve rapid quiescence. Biologic agents, antimetabolites, and T-cell inhibitors have been studied as a means to prevent recurrence and decrease the use of systemic steroids.[1, 11] Intravitreal steroids have been used adjunctively to maintain control of inflammation.[12, 13]

Systemic corticosteroids are employed with caution in patients with diabetes mellitus due to the possibility of induced hyperglycemia.[14] Steroid-induced hyperglycemia can require alterations to diabetes management that may require close monitoring with endocrinology. The patient described here experienced great difficulty in glycemic control even on relatively low steroid doses, and the patient's endocrinologist strongly advised the avoidance of systemic steroids.

Andrade et al reported the use of 4 mg intravitreal triamcinolone for treatment of serous detachment in VKH in 2 patients with less than 10 months follow-up. The study used intravitreal injections due to the severity of serous retinal detachment and provided one of the first examples of treating ocular VKH without the use of systemic corticosteroids.[15] Andrade et. al concluded that intravitreal injection successfully treated the short-term complications of VKH. Several other studies have endorsed the use of intravitreal injections as adjuvant therapy in addition to systemic corticosteroids.[11, 16] This study shows sustained inflammatory control 36 months after treatment, further supporting the use of intravitreal triamcinolone in patients where systemic steroids cannot be used. It is important to note that there was minimal disease in the left eye at the time of treatment with only mild multifocal pinpoint fluorescein leakage. It is certainly possible that this patient's excellent response may in part be due to very early treatment.

Similarly, another study explored the use of sub-Tenon's triamcinolone acetonide as an isolated treatment for 27 eyes with VKH. The authors found that 21 out of the 27 eyes achieved complete resolution of VKH, thus proving to be an effective treatment for patients without systemic manifestations of VKH.[17] The current patient also received prophylactic sub-Tenon's triamcinolone during cataract surgery. Recently, sub-Tenon injections of triamcinolone have been shown in a prospective randomized study to be less effective than intravitreal injections of triamcinolone or dexamethasone in the control of uveitic macular edema. However, sub-Tenon's triamcinolone acetonide injections have less potential adverse effects than intravitreal injections.[18]

Once initial inflammation in VKH is controlled, long-term inflammation in the convalescent and chronic recurrent phases may lead to depigmentation, resulting in sunset glow fundus, and reduced visual function. In addition to persistent clinical findings and lack of normalization of posterior segment imaging, electrophysiology can show decreased retinal function in cases where inflammation persists.[19] FfERG abnormalities have been associated with persistent inflammation.[15, 19] Chronic immunosuppression is often recommended to all patients with VKH for fear of subclinical inflammation leading to irreversible vision loss. This case showed normal findings on ffERG at 30 months after triamcinolone injection and normal clinical exam, fluorescein angiography, and OCT findings at 36 months after injection, suggesting that in select cases, chronic immunosuppression is not required.

In summary, this case study demonstrates the efficacious use of intravitreal injections and sub-Tenon's triamcinolone acetonide as an alternative to systemic corticosteroids and immunomodulatory therapy in a patient with presumed VKH. The favorable disease course and the long-term control of inflammation suggests that local therapy alone may be considered for treatment in select cases.

Declarations

Ethics approval and consent to participate:

Not applicable

Availability of data and material:

Not applicable

Patient Consent:

Consent was obtained from the patient before the publication of the case report.

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Competing interest:

Thomas A. Albini, MD: Adverum Biotechnologies, Allergan, B+L/Valeant Pharmaceuticals, Beaver Visitec, Clearside Biomedical, Inc., Eyepoint Pharmaceuticals, Genentech, Novartis, RegenexBio (Consulting); Applied Genetic Technologies Corp, Novartis (Data Safety Monitoring Committee)

Author Contributions:

All authors were involved in the conception and writing of this manuscript. All authors have read and approved the final manuscript.

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Figures

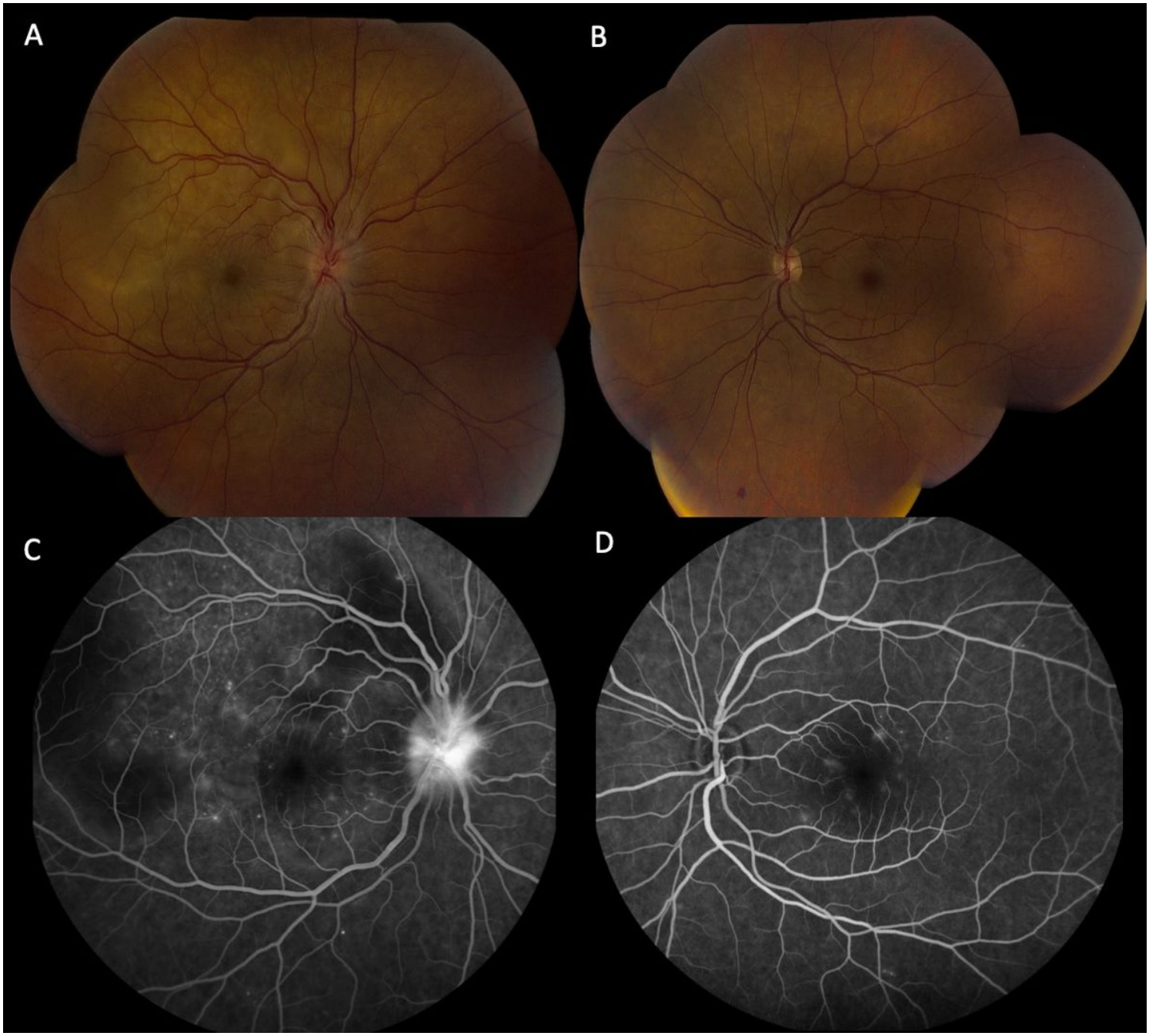

Figure 1

Multimodal imaging of a 36-year old woman with VKH at initial presentation. A) Color fundus photograph of the right eye disclosed multiple serous neurosensory retinal detachments. B) Color fundus photograph of the left eye was unremarkable. C) Fluorescein angiography of the right eye showed multiple pinpoint leakages at the disc. D) Fluorescein angiography of the left eye did not show hyperreflectivity at the disc but did show some mild pinpoint hyperfluorescence.

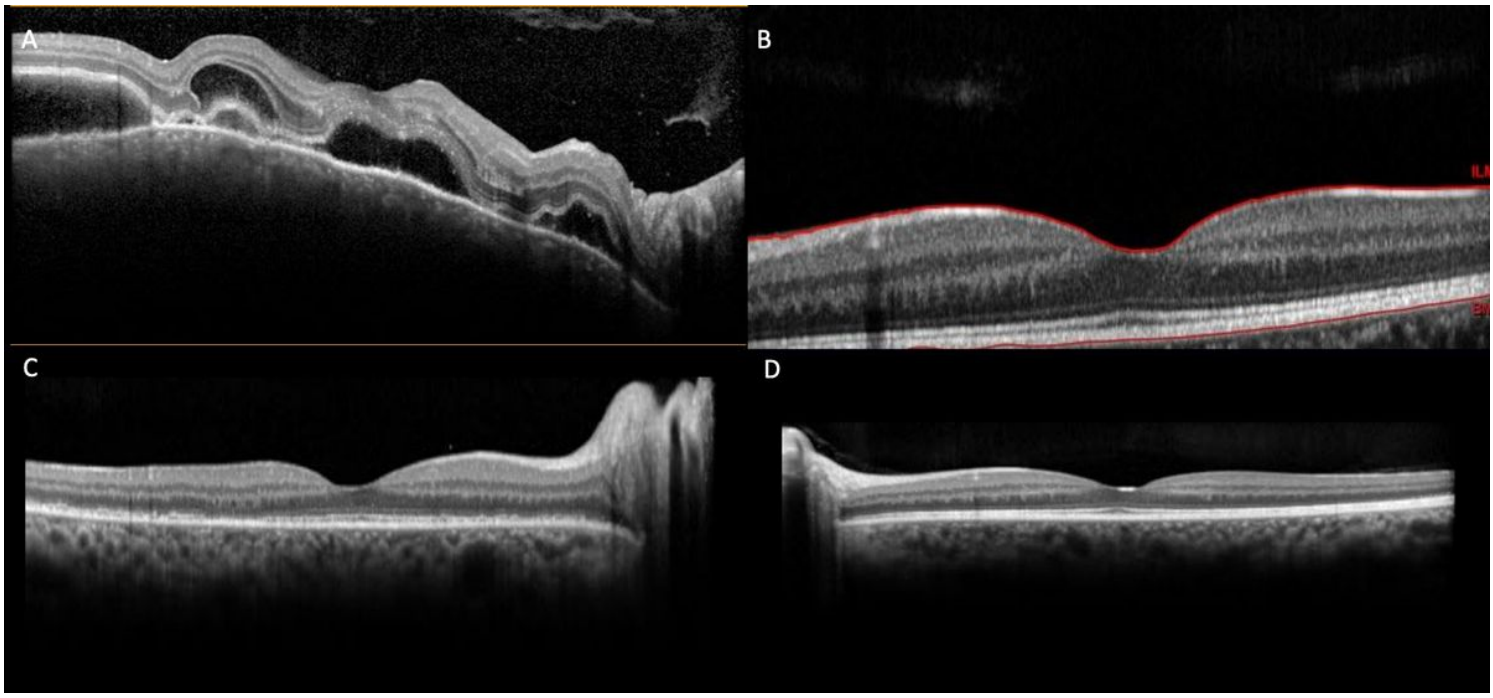

Figure 2

OCT images of 36-year-old woman with VKH. A) Right eye showing multifocal neurosensory retinal detachments characteristic of VKH and bowed appearance of RPE suggestive of choroidal thickening pre-intravitreal injection. B) Left eye pre-intravitreal injection showing no subretinal fluid accumulation. C) Right eye showing resorption of subretinal fluid 2 weeks post-injection D) Left eye 2 weeks post-injection