

The Role of Adding Intravitreal Dexamethasone Implant to the Standard Management of Serpiginous Choroiditis for Achieving Rapid Remission: A Case Report

Almoayad M Makrami ¹, Yazeed J Alhaqbani ¹, Dhoha M Alhamad¹, Talaat J Hamdi², Abdulaziz S Khoshaim ¹

¹Dhahran Eye Specialist Hospital, Eastern Health Cluster, Dhahran, Saudi Arabia; ²Ophthalmology Division, Jeddah University, Jeddah, Saudi Arabia

Correspondence: Abdulaziz S Khoshaim, Email Khoshaim.abdulaziz@gmail.com

Background: This case highlights the potential of combining intravitreal dexamethasone implants as first line of management with reduced dose of systemic steroid therapy to achieve rapid remission in acute serpiginous choroiditis. To prevent systemic adverse effects and obtain rapid control of serpiginous lesions, as necessary in the case presented, local therapy using a dexamethasone intravitreal implant may be considered as a complement to systemic treatment.

Case Presentation: A 42 year old woman with steadily declining vision in her right eye for the previous four months presented to the emergency department. On the Snellen chart, the best-corrected visual acuity was 20/28 in the left eye and 20/100 in the right eye. The intraocular pressure (IOP) of the right and left eyes was 15 and 16 mmHg, respectively. Anterior segment examination was unremarkable. Fundus examination of the right eye revealed a gray finger-like lesion with an active border. The left eye showed a small yellowish-finger-like lesion involving the nasal macula. Disruption in the ellipsoid zone in the right eye and the parafoveal region in the left eye was demonstrated using optical coherence tomography (OCT). Fundus fluorescein angiography revealed bilateral, finger-like branching lesions were seen on fundus fluorescein angiography (FFA). Fundus Autofluorescence (FAF) showed hypoauto-fluorescence lesions with hyper-autofluorescence edges. Both eyes were diagnosed with active serpiginous choroiditis, after excluding any active infections through blood work-up. The patient was started oral prednisolone 0.5 mg/kg tapering; however, because the patient would be traveling for three weeks, the systemic oral steroid with an intravitreal dexamethasone implant in each eye. After nine days, there was noticeable improvement in the visual acuity of the right eye with normal intraocular pressure. OCT showed minimal restoration of the ellipsoid zone in the right eye, with resolved inflammatory material in both eyes (Figure 1). After starting Azathioprine, disease activity was suppressed for six months without relapsing.

Conclusion: This case raises a question about the benefit of combined therapy for quick vision restoration, inhibiting further destruction of outer retinal layers during the management of acute attack and reduction of overall systemic steroids dose together with its complications versus the risk of local steroids administration and cost-effectiveness. Additional research is required to validate this finding.

Keywords: serpiginous choroiditis, dexamethasone intravitreal implant, uveitis, remission

Background

SC is a chronic bilateral choroidal inflammation known as a cause of atrophy to choriocapillaris and the overlying retinal pigment epithelium (RPE).^{1,2} Usually, it is a recurrent disease that typically affects both eyes asymmetrically.³ It has a variety of appearances, characteristically extending in a wavy border from the optic nerve into the adjacent retina.³ If treatment is not received, the condition typically progresses through episodes of exacerbation and remission before leading to atrophy and choroidal damage. Varying epidemiological research about the prevalence of SC, with higher reporting in Asia, showing a range of 0.2% to 5% of all uveitis patients.³⁻⁶

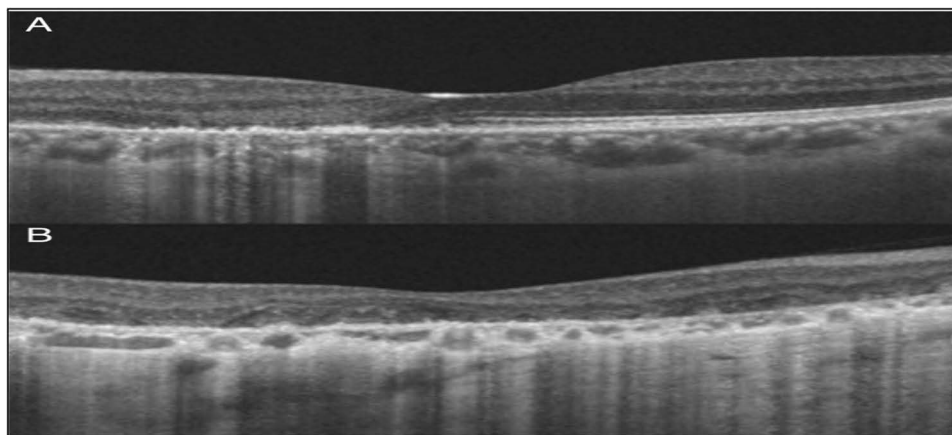


Figure 1 OCT of both eyes showing resolved inflammatory material after the treatment. (A) Left eye; (B) right eye.

Oral corticosteroids are the standard treatment for SC, and they are instrumental during acute attacks to halt disease activity. Steroids are thought not to impact the disease's long-term trajectory.¹ Immunosuppression is a useful therapeutic approach to control the disease and prevent exacerbations.⁷ This method is performed cautiously because of the horrifying adverse effects associated with using some of these drugs. An alternative method management is the use of intravitreal steroids. It is specifically used to prevent the systemic side effects of steroids or when using systemic corticosteroids is contraindicated. It was discovered to have long-lasting control over SC upon remission and quick control over SC during the active phase.^{8,9}

We present a case of acute SC with a lesion endangering the fovea in one eye and foveal involvement in the other. Foveal involvement and the patient's social situation highlight the importance of quick vision restoration and disease activity remission.

Case Presentation

This case study evaluated the efficacy of DEX implant as a standard treatment for acute SC in order to achieve quick remission. A lady who is 42 years old and medically free, not on any medication, with steadily declining vision in her right eye for the previous four months presented to the emergency department. On the Snellen chart, the best-corrected visual acuity was 20/28 in the left eye and 20/100 in the right. IOP of the right and left eyes was 15 and 16 mmHg, respectively. Examinations of the anterior segment showed normal results. A fundus examination of the right eye revealed a grey finger-like lesion showing underlying blood vessels in the macula extending around the disc involving the fovea with an active border. The left eye showed a small yellowish finger-like lesion involving the nasal macula, threatening the fovea (Figure 2). OCT illustrated the loss of the ellipsoid zone involving the fovea in the right eye and

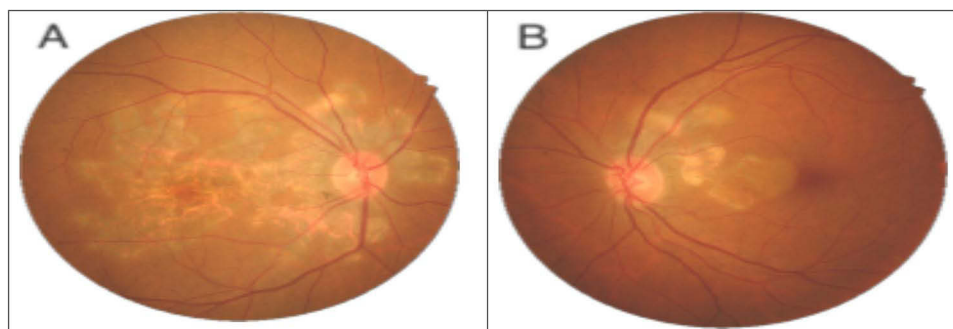


Figure 2 (A) Right eye shows a grey finger-like lesion showing underlying blood vessels in the macula extending around the disc involving the fovea with an active border. (B) The left eye shows a small yellowish finger-like lesion involving nasal macula, threatening the fovea.

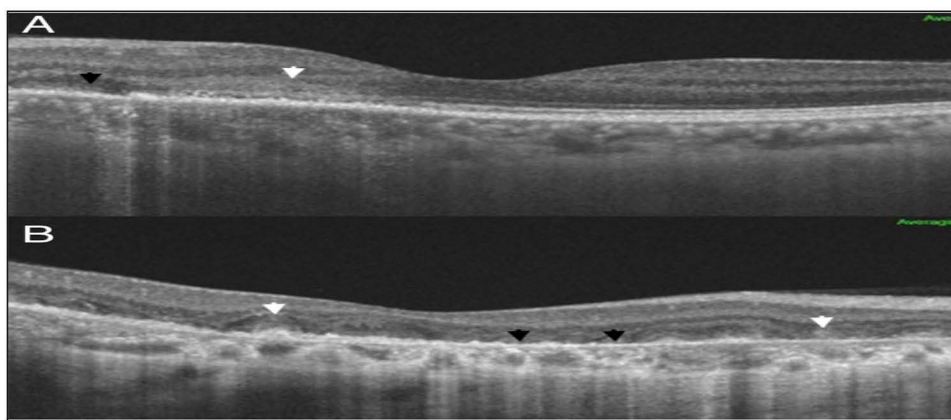


Figure 3 OCT shows: (A) parafoveal (B) foveal loss of Ellipsoid Zone (black arrowheads) with areas of increased reflectivity of the outer retina (white arrowheads) representing active inflammation of the Both eyes.

parafoveal in the left eye, with areas of increased reflectivity of the outer retina representing active inflammation in both eyes (Figure 3).

FFA demonstrated bilateral finger-like branching lesions radiating from the disc involving the macula (with foveal involvement in the right eye early and late phase shown (Figure 4) and threatening the fovea in the left eye) in the laminar phase. The lesions exhibited central part atrophy with visible underlying choroidal vessels and hyper-fluorescent edges. Leakage was observed in the late phase of FFA in both eyes. FAF showed hypo-autofluorescent lesions with hyper-autofluorescent edges indicating activities (Figure 5).

The patient underwent a uveitis work-up with negative results. The work-up included a purified protein derivative, Syphilis work-up, a complete blood count, anti-nuclear antibodies, rheumatoid factor, and human-leukocyte antibody B-27. A diagnosis of active serpiginous choroiditis in both eyes was established. The patient was started on oral prednisolone 40 mg in tapering dose, decreasing by 10 mg per week, given for a total of one month; however, because the patient would be traveling in three weeks, it was decided to augment the systemic oral steroid 0.5 mg/kg tapering with an intravitreal dexamethasone 0.7 mg implant in each eye, which was given one day apart. After nine days, there was a noticeable improvement in the right eye's visual acuity on the Snellen chart, which reached 20/30, and the left eye reaching 20/25, with normal intraocular pressure. OCT showed minimal restoration of the ellipsoid zone in the right eye, with resolved inflammatory material in both eyes. After starting 50 mg of azathioprine twice a day, the disease activities were suppressed for six months without relapsing.

Discussion and Conclusions

The exact pathogenesis of SC is unknown; however, an inflammatory process called choroidal lymphocytic inflammation has been linked to the atrophy of the choroid, RPE, and, ultimately, the photoreceptor.¹ An essential step in management is to rule out infectious causes of the disease before starting steroid treatment, as this can worsen the infection.¹ This was accomplished in our case by thoroughly investigating the patient before beginning treatment, which included a chest X-ray, purified protein derivative, gold standard QuantiFERON-TB, rapid plasma reagin, venereal disease research laboratory, fluorescence treponemal antibodies, erythrocyte sedimentation rate, and C-reactive protein.

According to Vianna et al, the standard treatment for scleritis involves long-term use of systemic steroids and immunosuppressive agents to accelerate remission of acute episodes and prevent recurrences. Their findings indicate that within three weeks of initiating treatment, all patients experienced a reduction in ocular inflammation and an improvement in visual acuity (VA), highlighting the efficacy of systemic therapy in achieving early clinical benefits.² Intravenous methylprednisolone injection is advised to achieve rapid remission in cases with a high chance of active disease expanding to impact the fovea. This treatment approach was used in a prior trial, wherein two patients' disease activity ceased after 36 hours. Notably, an intravitreal triamcinolone injection was given concurrently with a low dose of methylprednisolone to one patient, which may have introduced a confounding factor to the therapeutic effects that

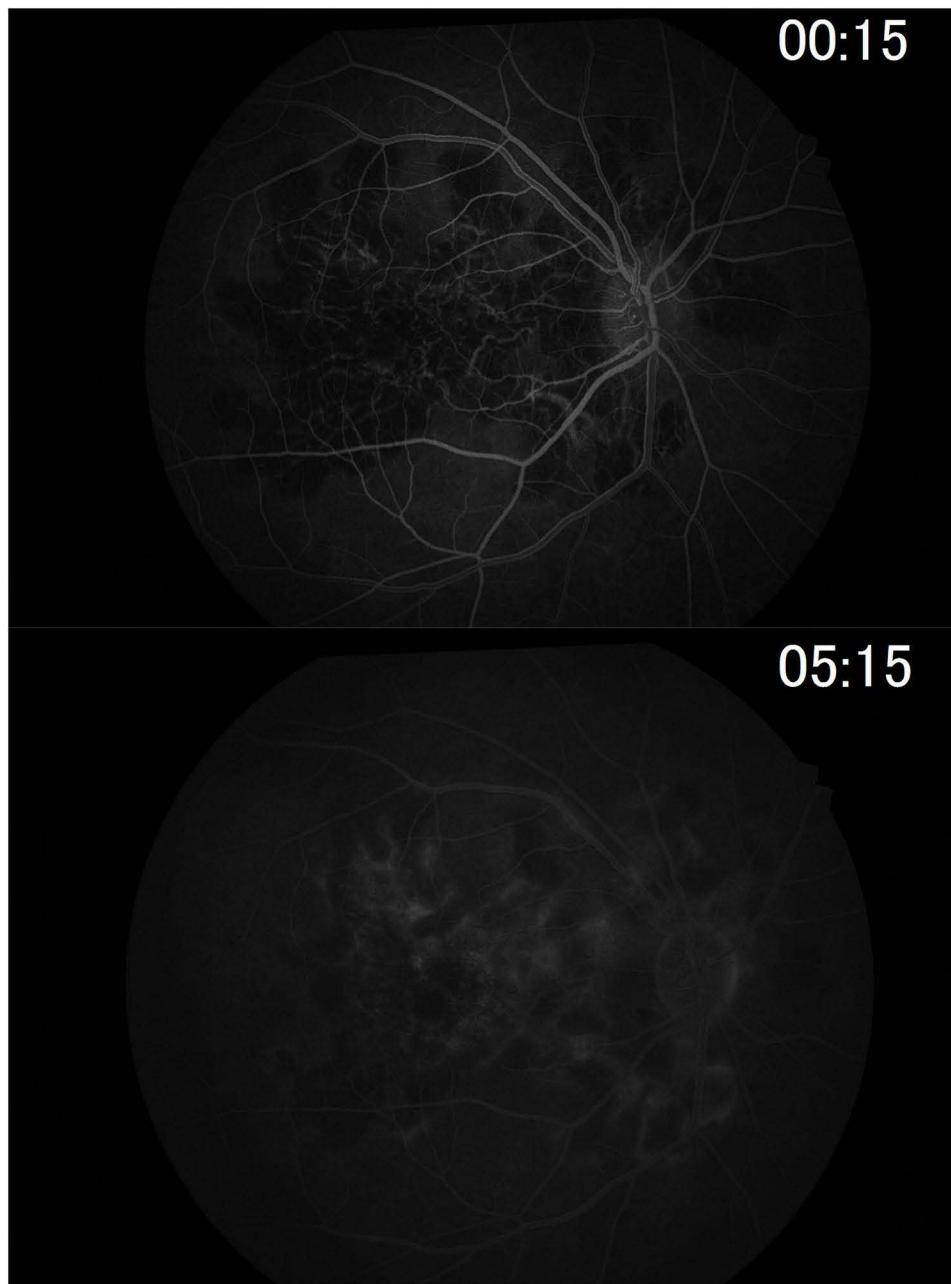


Figure 4 FFA of the right Eye early and late phase, showing multiple areas of hypofluorescence and hyperfluorescence in the late phase (leakage).

were seen.¹⁰ In SC patients receiving systemic corticosteroids and/or other immunosuppressive agents, local administration of corticosteroids, such as intravitreally and in the subtenon space, can reduce intraocular inflammation, reduce the need for systemic corticosteroids or immunomodulatory agents, and expedite the tapering of systemic treatments.¹¹ This treatment strategy was noted to be effective in our case. According to earlier studies, fluocinolone acetonide implants or intraocular injections of triamcinolone acetonide were efficacious in managing SC. In the Adigüzel et al trial, a single intravitreal injection of triamcinolone acetonide was found to be sufficient to manage active serpiginous choroiditis and sustain remission over a six-month follow-up period without causing any noteworthy side effects.⁸ In the study by Pathengay et al, disease recurrence was prevented for 10 months.⁹ Seth RK et al managed inflammation for 14 months with fluocinolone implant and triamcinolone. However, the treated eye experienced a refractory increase in intraocular pressure that necessitated trabeculectomy.¹² In this case, a dexamethasone implant combined with a lower

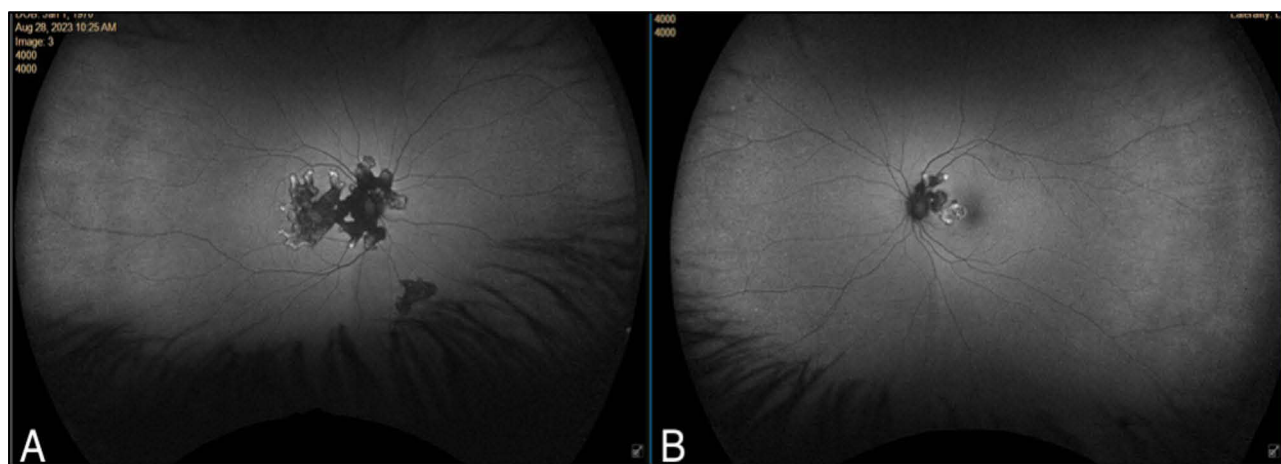


Figure 5 Fundus Autofluorescence (FAF) shows hypo-autofluorescence lesions with hyperautofluorescence edges indicating activities. (A) Right eye; (B) left eye.

dosage of oral steroids was sufficient to maintain remission for six months and manage disease activity in just nine days. Miserocchi E et al used this therapeutic approach, treating eight eyes from seven patients with intravitreal dexamethasone implants in patients already receiving maximal tolerated systemic therapy. In an average of 42 days, this strategy was beneficial in suppressing the disease activity. During the course of an 18-month follow-up, three patients required multiple intravitreal implant injections. The additional intravitreal dexamethasone injection was associated with a significant decrease in the mean oral prednisone dosage, which went from 8.8 mg to 2.8 mg.¹³

Because of the patient's visual demands, limitation of time, and foveal involvement, we elected to use an aggressive combined treatment of local as well as systemic steroids and immunosuppressive treatment. Astonishingly, she became free of disease activity as fast as 9 days after presentation, and remission was maintained during the 6 months of follow-up until systemic medications were tapered. The patient's disease activity was demonstrated with the FFA which showed active disease that was not mild in nature, as well as due to the decreased vision in the right eye that was profound. This raises a question about the benefit of combined therapy for quick vision restoration, inhibiting further destruction of outer retinal layers during the management of acute attack and reduction of overall systemic steroids dose together with its complications versus the risk of local steroids administration and cost-effectiveness.

Additional Research Is Required to Validate This Finding.

Abbreviations

SC, Serpiginous choroiditis; DEX, Intravitreal dexamethasone; IOP, Intraocular pressure; OCT, Optical coherence tomography; FAF, Fundus autofluorescence; FFA, Fundus fluorescein angiography; RPE, retinal pigment epithelium.

Consent

Written informed consent for publication of their details was obtained from the patient.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

There is no funding to report.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Jabs DA, Brezin AP, Levinson RD.; Standardization of Uveitis Nomenclature (SUN) Working Group. Classification Criteria for Serpiginous Choroiditis. *Am J Ophthalmol*. 2021;228:126–133. doi:10.1016/j.ajo.2021.03.038
2. Vianna RN, Ozdal PC, Deschênes J, Burnier Jr MN. Combination of azathioprine and corticosteroids in the treatment of serpiginous choroiditis. *Can J Ophthalmol*. 2006;41(2):183–189. doi:10.1139/I06-006
3. Dutta Majumder P, Biswas J, Gupta A. Enigma of serpiginous choroiditis. *Indian J Ophthalmol*. 2019;67(3):325–333. doi:10.4103/ijo.IJO_822_18
4. Chang JH, Wakefield D. Uveitis: a global perspective. *Ocul Immunol Inflamm*. 2002;10(4):263–279. doi:10.1076/ocii.10.4.263.15592
5. Jones NP. The Manchester uveitis clinic: the first 3000 patients – epidemiology and casemix. *Ocul Immunol Inflamm*. 2015;23(2):118–126. doi:10.3109/09273948.2013.855799
6. Fanlo P, Heras H, Pérez D, et al. Profile of patients with uveitis referred to a multidisciplinary unit in Northern Spain. *Arch Soc Esp Ophthalmol*. 2017;92(5):202–209. doi:10.1016/j.oftal.2016.10.023
7. Christmas NJ, Kt O, Dm O, Folk JC. Long-term follow-up of patients with serpiginous choroiditis. *Retina*. 2002;22(5):550–556. doi:10.1097/00006982-200210000-00004
8. Adigüzel U, Sari A, Ozmen C, Oz O. Intravitreal triamcinolone acetonide treatment for serpiginous choroiditis. *Ocul Immunol Inflamm*. 2006;14(6):375–378. doi:10.1080/09273940601025974
9. Pathengay A. Intravitreal triamcinolone acetonide in serpiginous choroidopathy. *Indian J Ophthalmol*. 2005;53(1):77–79. doi:10.4103/0301-4738.15295
10. Nazari Khanamiri H, Rao NA. Serpiginous choroiditis and infectious multifocal serpiginoid choroiditis. *Surv Ophthalmol*. 2013;58(3):203–232. doi:10.1016/j.survophthal.2012.08.008
11. Fung AT, Tran T, Lim LL, et al. Local delivery of corticosteroids in clinical ophthalmology: a review. *Clin Exp Ophthalmol*. 2020;48(3):366–401. doi:10.1111/ceo.13702
12. Seth RK, Gaudio PA. Treatment of serpiginous choroiditis with intravitreal fluocinolone acetonide implant. *Ocul Immunol Inflamm*. 2008;16(3):103–105. doi:10.1080/09273940802023778
13. Miserocchi E, Berchicci L, Iuliano L, Modorati G, Bandello F. Dexamethasone intravitreal implant in serpiginous choroiditis. *Br J Ophthalmol*. 2017;101(3):327–332. doi:10.1136/bjophthalmol-2015-307820

International Medical Case Reports Journal

Publish your work in this journal

The International Medical Case Reports Journal is an international, peer-reviewed open-access journal publishing original case reports from all medical specialties. Previously unpublished medical posters are also accepted relating to any area of clinical or preclinical science. Submissions should not normally exceed 2,000 words or 4 published pages including figures, diagrams and references. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/international-medical-case-reports-journal-journal>

Dovepress

Taylor & Francis Group