Bilateral bullous central serous chorioretinopathy treated with PDT and eplerenone

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ABSTRACT

Purpose: To report a case evaluating PDT and eplerenone therapy in a patient with bilateral bullous central serous chorioretinopathy.

Observations: A 30-year-old male was referred for worsening bilateral bullous central serous chorioretinopathy (B bullous CSCR) despite oral eplerenone therapy. Photodynamic therapy (PDT) was performed in the right eye with significant improvement of bullous retinal detachment, near-complete resolution of subfoveal subretinal fluid, and improvement of vision from 20/200 to 20/25. The left eye had persistent subretinal fluid despite continued eplerenone therapy. Neither eye worsened when eplerenone was withdrawn. Total follow up was 3.5 years.

Conclusions and Importance: This case demonstrates a significant and durable effect of PDT in bullous CSCR and suggests a lack of response to eplerenone.

1. Introduction

Central serous chorioretinopathy (CSCR) is a relatively common retinopathy characterized by increased choroidal vascular hyperpermeability and retinal pigment epithelium (RPE) damage resulting in subretinal fluid (SRF). Bullous CSCR (bCSCR) is a rare variant causing greater morbidity due to exudative retinal detachment with shifting fluid. Therapeutic options include discontinuation of offending agents such as steroids, psychotherapy for anxiety, photodynamic therapy (PDT), and argon laser though some cases may spontaneously resolve. Studies of eplerenone and other mineralocorticoid receptor antagonist in the therapy of CSCR have shown mixed results. Furthermore, the rarity of bCSCR has somewhat precluded definitive standard of care treatment options.

The present case of bilateral bCSCR was previously managed with eplerenone. Neither eye worsened after its discontinuation. A significant and durable effect of PDT was observed in the right eye over 3.5 years of follow up compared to the fellow eye which had persistent fluid.

2. Case report

A 30-year-old Caucasian male was referred for worsening bilateral bCSCR despite oral treatment with eplerenone 50 mg daily for the last 4 months. A bullous detachment occurred while on treatment one month prior to presentation. He was an otherwise healthy farmer without history of exogenous corticosteroid use or any other medications. Lab workup revealed mildly elevated cortisol levels, however no evidence of Cushing’s Disease was found after subsequent referral to endocrinology.

BCVA was 20/200 in the right eye and 20/30 in the left eye. Neither eye had cellular infiltration of the anterior or posterior segments. Fundoscopy in the right eye showed focal RPE changes throughout the posterior pole with a large bullous retinal detachment extending inferiorly with shifting fluid. The left eye had similar findings though to a lesser degree (Fig. 1). Macular optical coherence tomography (OCT) showed bilateral subretinal fluid with RPE detachments and severely thickened choroids (Fig. 1). Indocyanine green angiography revealed diffuse areas of leakage and hyper permeability of the choroid throughout each eye consistent with CSCR (Fig. 1).

The patient subsequently underwent PDT with 6.3 mJ delivered over 83 seconds to several areas of leakage in the right eye (Fig. 1). The vision improved to 20/25 and OCT confirmed near complete resolution of the SRF over a period of 3 months (Fig. 3). PDT was considered for the left eye, but deferred given stable symptoms with 20/30 vision. Eplerenone was continued for 3 more months before discontinuation and the patient was followed over a time period of 3.5 years. There was no recurrence of SRF or bullous detachment in the right eye following the single session.
of PDT and the left eye experienced no worsening despite stopping the eplerenone (Fig. 2).

3. Discussion

Bullous central serous chorioretinopathy (bCSCR) is an atypical variant of CSCR characterized by widespread RPE dysfunction resulting in exudative retinal detachment (ERD).

It carries an overall poor prognosis and can often be difficult to treat as seen in the present case with persistent symptoms and worsening fluid despite 4 months of oral eplerenone. Several methods have shown variable efficacy in bCSCR treatment including argon laser, PDT, transpupillary thermotherapy, eplerenone, anti-VEGF, and surgical interventions including scleral thinning. For example, some have shown that argon laser treatment leads to quicker resolution of SRF, yet other series failed to demonstrate benefit. PDT may be safer than argon laser due to improved preservation of outer neurosensory retinal layers, less risk of scotoma or secondary CNV and its ability to penetrate through elevated retina given its longer wavelength. A limited series of cases have demonstrated successful treatment of bCSCR with both half-fluence and half-dose PDT. Full fluence PDT was used in the present case due to the extrafoveal locations of leakage, severity of vision loss and the height of sub retinal fluid refractory to chronic treatment with eplerenone. Further study is needed to investigate the optimal treatment protocol with PDT in cases of bCSCR.

Retrospective studies have shown some benefit to eplerenone in chronic CSCR. However, its use has been called into question as a recent prospective, randomized, double-blind clinical trial revealed that eplerenone did not show benefit over placebo in improving BCVA after 12 months of treatment. Further, the results of the SPECTRA trial revealed that half-dose PDT was superior to eplerenone therapy in short-term management of chronic CSCR. Long term retrospective studies have also reported superiority of PDT compared to eplerenone regarding resolution of SRF out to one year. Only a limited number of cases have reported success with mineralocorticoid receptor (MR) antagonists in bCSCR. The majority of these cases involved exogenous steroid use. In cases provoked by known exogenous steroid use, MR antagonists may theoretically be more beneficial, given their mechanism of action. However, it is unclear if the results of previous case reports can be attributed to MR antagonist therapy, the withdrawal of corticosteroid therapy, the natural course of CSCR, or a combination of these.

The worsening disease in the present case suggests eplerenone therapy provided no protection against the occurrence of bCSCR. There was no worsening of disease noted after its withdrawal. The lack of rebound fluid suggests eplerenone was ineffective though we cannot necessarily infer this as there is no current literature demonstrating a rebound effect in CSCR after withdrawal of eplerenone therapy. This could either be due to a lack of reported evidence or due to the overall poor efficacy of eplerenone in the management of chronic CSCR reported in recent trials. The eye treated with PDT experienced a durable effect over 3.5 years and suggests the improvement was not a result of natural history given the persistent fluid in the fellow eye over the same follow up period. PDT and eplerenone could also have a synergistic effect, but there is no previous documented literature to support this possibility.

4. Conclusions

This case represents an opportunity to study bilateral involvement of a rare condition. However, direct comparison between the two eyes is limited in that asymmetric involvement allowed more potential for improvement in the right eye due to a “floor effect”. Also, the exudative retinal detachment reportedly occurred after months of eplerenone use, but we do not have verification with imaging prior to the patient’s presentation. Nevertheless, the intervention with PDT in one eye and long term follow up after the discontinuation of eplerenone provided
Fig. 2. Macular OCT showing response to photodynamic therapy in the right eye with resolution of subretinal fluid (column A) compared with lack of significant change in left eye despite eplerenone use (column B) at presentation, one month, two months, and 5 months of follow up. Right eye improved from 20/200 on presentation to 20/25 after PDT therapy while the left eye remained stable at 20/30 despite stopping eplerenone at 3 months follow up.

Fig. 3. Top row shows images of right eye initial bullous detachment with 20/200 vision (A), OCT raster over inferotemporal arcade vessels on near-infrared image (B), and b-scan OCT demonstrating height of subretinal fluid (C). Bottom row shows corresponding images 3 months after photodynamic therapy with improvement in vision to 20/25 and resolved inferior bullous retinal detachment (D-F).
some potentially valuable insights. First was the questionable limited effect of eplerenone since there was no fluid reaccumulation after its discontinuation. Second was the significant and durable response to PDT in the treated eye. In this case there was a bilateral exposure to systemic eplerenone, however the final outcome highlights the influential effect of PDT in resolving bullous retinal detachment in CSCR.

Patient consent

Written consent to publish this case has not been obtained. This report does not contain any personal identifying information.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

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