A retrospective study of a single practice use of ocriplasmin in the treatment of vitreomacular traction

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Abstract

Purpose: To evaluate success with intravitreal injection of ocriplasmin in releasing symptomatic vitreomacular traction (VMT).

Methods: A retrospective review of consecutive series of patients in a single vitreoretinal practice. Patients with symptomatic distortion and loss of vision secondary to VMT were included in the study. Patients received a single injection of ocriplasmin (JETREA®) and were followed-up after 1 month with optical coherence tomography.

Results: Eight patients (8 eyes) were included (2 males and 6 females) in the study. Five of 8 eyes (62.5%) experienced complete release of the VMT; one of 8 eyes (12.5%) had partial release of VMT and two of 8 eyes (25%) did not have release of VMT. The two patients with no release of their VMT had the same vision. Of the 5 patients with complete release of VMT, 3 patients had a one line worsening of their vision, 1 had a 4 line improvement of vision, and 1 stayed the same. The patient with only partial release of their VMT had a 1 line worsening of vision.

Conclusions: Intravitreal ocriplasmin is a promising treatment option for vitreomacular traction syndrome in symptomatic patients.

Keywords: Vitreomacular traction, Ocriplasmin (JETREA), Macular hole, Metamorphopsia, Vision loss

Introduction

With improvement of vitreoretinal imaging devices over the past two decades, the ability to diagnose vitreomacular traction (VMT) has significantly increased. VMT can be a sight threatening condition, with patients reporting onset of metamorphopsia and loss of vision. As the eye ages, the vitreous gel liquefies and contracts away from its posterior connections at the retina, optic disk, and retinal vessels. This process is called a posterior vitreous detachment (PVD). Posterior vitreous detachment is detected in half of subjects at 50 years of age and almost all of the subjects at 80 years of age or older.2

VMT occurs when the vitreous body begins to liquefy and does not fully release or separate from its collagen fibril attachments to its central posterior interface, the macula. The clinical need to treat symptomatic VMT is an important aspect to the retina specialist’s practice, as VMT is not only visually significant, but is also thought to be associated with other pathologic conditions of the eye such as exudative age related macular degeneration, epiretinal membrane, macular edema, and retinal vein occlusions.3–5 Treatment of VMT involves addressing this protein fibril attachment to the macula.4

Until recently retina specialists had only two options, observation to see if the fibrils would release spontaneously over time, or trans pars plana vitrectomy (TPPV) surgery, where mechanical release of the fibrils would be addressed. Observation has the risk of ongoing stress to the macular cells as they remain distorted while the chance of spontaneous release is low. Surgery to mechanically release the VMT with TPPV has the associated risks of infection, hemorrhage, retinal detachment, increased intraocular pressure, and cataract formation.5,6

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The idea of injecting a protease substance to enzymatically cleave these protein attachments led to the development and recent release of ocriplasmin (JETREA®) in October of 2012. Ocriplasmin is a truncated form of the human serine protease plasmin and has proteolytic activity against fibronectin and laminin, two major components of the vitreoretinal interface.7

Phase 3 multicenter, randomized, double-blind, trials with single intravitreal injection of ocriplasmin (125 ug) versus a placebo injection in patients with symptomatic vitreomacular adhesion results showed resolution of macular adhesion occurring in 26.5% of ocriplasmin-injected eyes versus 10.1% of placebo-injected eyes (p < 0.001). Nonsurgical closure of macular holes was achieved in 40.6% of ocriplasmin-injected eyes, as compared with 10.6% of placebo injected eyes (p < 0.0001). The best-corrected visual acuity was more likely to improve by a gain of at least three lines on the eye chart with ocriplasmin than with placebo. Ocular adverse events (e.g., vitreous floater, photopsia, or injection-related eye pain or conjunctival hemorrhage) occurred in 68.4% of ocriplasmin injected eyes and in 53.5% of placebo injected eyes (p < 0.001). Thus, intravitreal injection of the vitreolytic agent ocriplasmin resolved vitreomacular traction and closed macular holes in significantly more patients than did injection of placebo but was associated with a higher incidence of ocular adverse events, which were mainly transient.7

This article is a retrospective review of the success with ocriplasmin in a consecutive series of patients in a single retina practice.

Methods

A retrospective review of a single, large physician group vitreoretinal only practices (including 5 physicians) interventional study using ocriplasmin (JETREA®) for the treatment of symptomatic VMT. Patients who presented with symptomatic distortion and loss of vision secondary to VMT were included in the study. Vision was measured with the use of a Snellen Eye Chart. All patients were checked at their one month follow-up for the release of the VMT. The VMT was diagnosed using the Spectral Domain OCT Heidelberg (Heidelberg Engineering, Carlsbad, CA). Following informed consent a single injection of JETREA® 125 ug was administered under sterile technique (povidone iodine, lid speculum placement, etc.) as previously published. The injection was performed 3.5–4.0 mm pars plana, and the patient was confirmed to have count fingers vision or better immediately after the injection. The patients presented with initial diagnosis of visually significant VMT. Patients with a history of anti-VEGF treatment, wet macular degeneration, diabetic retinopathy or macular hole were excluded. Patients without at least a one month follow-up were excluded.

Results

Eight patients (8 eyes) were included (2 males and 6 females). Four of the eyes involved the right eye and 4 eyes were the left eye. There were no patients with bilateral involvement. The average age of patients was 76.6 years. 62.5% of patients (5/8 eyes) experienced complete release of the VMT. 12.5% of patients (1/8 eyes) experienced partial release of VMT. 25% of patients (2/8 eyes) did not have release of VMT. The two patients who did not experience release of their VMT had the same vision in one eye and the other patient experienced two lines worsening of vision at their one month follow-up. Of the 5 patients with complete release of VMT, 3 patients had a one line worsening of their vision, 1 had a 4 line improvement of vision, and 1 stayed the same. The patient with only partial release of their VMT had a 1 line worsening of vision (Figs. 1–6).
Figure 2. Patient one, 5 weeks following ocriplasmin injection, showing complete release of VMT.

Figure 3. Patient two with visually significant VMT at time of ocriplasmin injection.
Figure 4. Patient 2, one month after ocriplasmin injection showing only partial release of VMT.

Figure 5. Patient 3 at time of ocriplasmin injection for VMT.
Discussion

Ocriplasmin (JETREA®) is a clinically significant effective drug for the retina specialist’s armamentarium for the treatment of visually significant VMT. Although ocriplasmin was associated with resolution of VMT in just over one-quarter of patients in the pivotal trials, the improvement in visual acuity was modest.9,10

Safety data of the MIVI-TRUST (Microplasmin for Vitreous Injection (MIVI), Traction Release Without Surgical Treatment (TRUST)) showed that the majority of adverse events after injection were generally mild and occurred in the first week after treatment with the most commonly reported events including vitreous floaters, eye pain, photopsia, blurred vision, and decreased vision.11 Some of our patients experienced initial decrease in vision as a result of VMT release. The rate was comparable to data from the published clinical trial.7 Our study did note a success rate of 62.5% with vision improvement in only one patient at the one month follow-up point. However, the anatomic success was higher than seen in other phase 3 trials. Regarding therapeutic effect and pharmacokinetics, a recent study showed that active ocriplasmin concentrations in vitreous samples decrease with increasing time from injection, with enzyme levels in the day 7 being comparable to the control group.12 Therefore, the most effect is to be expected the first week after ocriplasmin administration.

Limitations of our study include the small patient number and the retrospective nature of the study. Also, while JETREA® may have been offered to other patients who presented with VMT, insurance approval may have limited our ability to use it in all cases. Financial consideration with the cost of the drug versus the benefit is also a discussion we have with our patients, particularly given the fact that the success rate is limited. These are additional sources of bias inherent to this type of treatment.

In summary, we believe that ocriplasmin is a promising treatment option for vitreomacular traction syndrome symptomatic patients.

Conflict of interest

There is no conflict of interest to declare.

References