CASE REPORT

Delayed full-thickness macular hole closure without vitreomacular traction release following ocriplasmin injection

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SUMMARY

We report a case of a 77-year-old Caucasian woman, treated with ocriplasmin injection for vitreomacular traction (VMT) and full-thickness macular hole (FTMH), who had a persistence outer retinal defect on her 28-day review, without VMT resolution, then presented 3 months later with complete macular hole closure, with persistence of vitreomacular adhesion. This case raises the question on the validity of the 28-day fixed date to assess final outcome of ocriplasmin injection for FTMH associated with VMT, and sheds new lights on the behaviour of the posterior hyaloid in cases of vitreolysis by a chemical agent such as ocriplasmin.

BACKGROUND

This case represents an unusual outcome after ocriplasmin injection for VMT, where treatment was deemed a failure at 28 days because of no release of traction and no macular hole closure.

CASE PRESENTATION

We report a case of a woman with FTMH and VMT who was treated with one injection of ocriplasmin. On her 28-day visit, there was no release of the VMT, and incomplete closure of the macular hole, however, the patient was lost to follow-up for 3 months, and on return for assessment, examination showed a complete resolution of macular hole with persistence of VMT. Visual acuity improved from 6/36 to 6/12 at the final visit and the patient did not report distortion or vision disturbance on her final visit. Optical coherence tomography (OCT) scan confirmed the presence of mild persistent vitreomacular adhesion.

INVESTIGATIONS

OCT and best-corrected visual acuity (BCVA).

TREATMENT

Ocriplasmin intravitreal injection.

OUTCOME AND FOLLOW-UP

Three-month follow-up.

DISCUSSION

Ocriplasmin (Jetrea, ThromboGenics) is a truncated form of human plasmin manufactured using recombinant DNA technology. It is indicated in adults for the treatment of vitreomacular traction (VMT), including when associated with full thickness macular hole (FTMH) of diameter $\leq 400 \mu$.

Figure 1 Optical coherence tomography (OCT) of the right eye showing the initial presentation prior to treatment with ocriplasmin.

The dose for intravitreal injection is 0.125 mg administered once.¹

Eligible patients receiving the treatment are reviewed at 28 days following the treatment, for final assessment, and a vitrectomy is usually planned in case of failure of VMT release or of macular hole closure.

We report a case of a 77-year-old woman with FTMH $<400 \mu$ and VMT, who was treated with one injection of ocriplasmin ([figure 1](#)). The patient's BCVA had deteriorated to 6/60, as seen on her 28-day visit; there was no release of the VMT and incomplete closure of the macular hole ([figures 2 and 3](#)).

The patient was lost to follow-up for 3 months, and on return for assessment, examination showed closure of the macular hole with persistence of a mild VMT that was similar to the aspect on OCT scan seen on her 28-day assessment ([figures 4 and 5](#)). Visual acuity improved from 6/36 to 6/12 at the final visit and the patient reported no further distortion or vision disturbance.

No ocular side effects or complications such as lens instability, retinal detachment or formation of retinal breaks were observed.

Figure 2 Optical coherence tomography (OCT) of the right eye 28 days following treatment with ocriplasmin.

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Figure 3 Optical coherence tomography (OCT) of the right eye 28 days following treatment with ocriplasmin.

Vitreotomy with inner limiting membrane (ILM) peeling remains the treatment of choice for macular hole with or without VMT, with good anatomic and functional results, and scarce postoperative complications. Data provided by clinical trials have shown that peeling of the ILM significantly increases MH closure rates and is also associated with significantly lower percentages of reoperation and reopening. Therefore, ILM peeling is a cost-effective technique and the procedure of choice for all patients with idiopathic FTMH susceptible to undergo surgical treatment.^{2 3} Use of ILM peel with subsequent gas tamponade contributes to the improvement of anatomic and visual outcomes.⁴

Ocriplasmin (Jettrea) is recommended by the National Institute for Health and Care Excellence as a possible treatment for adults with VMT who also have:

- ▶ No epiretinal membrane;
- ▶ A macular hole (up to 400 µm); or
- ▶ Severe sight problems.

The primary endpoint of the MIVI-Trust studies was resolution of vitreomacular adhesion at day 28. Secondary endpoints were total posterior vitreous detachment and non-surgical closure of a macular hole at 28 days, avoidance of vitrectomy and change in BCVA.⁵

Resolution of VMT is a key factor in deciding the visual outcome, whether in the improvement direction by closure of the macular hole, or the worsening direction by persistence of FTMH.

In a study of 46 patients with VMT, who were good candidates for ocriplasmin treatment, Dimopoulos *et al*⁶ found that 20 patients exhibited spontaneous resolution during the follow-up period (median: 594 days, 95% CI 567 to 719 days), the majority after 6–12 months of observation (95% CI 266 to 617 days). The group with spontaneous VMT resolution and a mean improvement of one line in BCVA included a few patients losing vision by macular hole formation.

Figure 4 Optical coherence tomography (OCT) of the right eye 4 months after treatment with ocriplasmin.

Figure 5 Optical coherence tomography (OCT) of the right eye 4 months after treatment with ocriplasmin.

In the absence of resolution, patients lost, on average, one early treatment diabetic retinopathy study (ETDRS) letter per year and, interestingly, younger age was found to increase the chance of spontaneous resolution.

Odrobina *et al* followed 19 patients with VMT over 8 months, with epiretinal membrane (ERM) present in six cases; at the end of the follow-up period, 9 of 13 patients (69%) with VMT and no ERM had complete posterior vitreous detachment (PVD) and release of VMT. None of the patients with ERM and VMT developed PVD.

This paper demonstrates that the rate of spontaneous resolution of VMT over time is far more significant than the rate shown in the MIVI studies, and reiterates the value of observation in these cases.⁷

In our case, resolution of the VMT did not occur 4 months after the treatment; however, the macular hole was closed completely with persistent VMT without a great deal of traction on the foveal tissue, possibly due to a collapse or breakage of the vitreous strands pulling on the posterior hyaloid.

This case report highlights the need for longer follow-up of patients treated with ocriplasmin without VMT resolution at 28 days from treatment, questions the value of VMT release as a main indicator of success of treatment and might lead to fewer early vitrectomies for VMT associated with macular hole.

Further case reports are required to confirm such observation.

Learning points

- ▶ Twenty-eight days might be too early for assessment of release of vitreomacular traction (VMT) treated with ocriplasmin.
- ▶ VMT release might not be needed to have a full-thickness macular hole closure.
- ▶ Change in vitreous structure could help VMT settlement without its resolution.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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