

## SHORT COMMUNICATION

# Spontaneous resolution of vitreomacular traction associated with diabetic macular edema

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**PURPOSE.** *Little information is available about the natural history of vitreomacular traction (VMT) associated with diabetic macular edema. A few cases of spontaneous resolution of VMT associated with diabetic macular edema have been described, but have not been documented by optical coherence tomography (OCT). The authors report the spontaneous resolution of VMT associated with diabetic macular edema 1 month after the end of panretinal photocoagulation therapy (PRP).*

**METHODS.** *Case report: A 66-year-old woman presented with complicated proliferative diabetic retinopathy and diabetic macular edema associated with VMT, documented by OCT, in the right eye. Left eye examination showed complete PRP and ischemic maculopathy. PRP was immediately realized in the right eye in regard to the presence of complicated proliferative diabetic retinopathy.*

**RESULTS.** *One month after the end of PRP, right eye visual acuity improved. OCT examination showed complete release of foveal posterior hyaloid traction, and significant reduction in foveal thickness. The follow-up was 1 year. At the end of follow-up, visual acuity slightly improved again; only a small residual foveal retinal thickening remained.*

**CONCLUSIONS.** *The authors report spontaneous resolution of VMT associated with diabetic macular edema, probably facilitated by PRP, with concurrent reduction of macular thickness and visual improvement. As spontaneous resolution may occur in some eyes with diabetic macular edema associated with VMT, a period of observation after the end of the PRP may be considered prior to vitrectomy. (Eur J Ophthalmol 2004; 14: 430-3)*

**KEY WORDS.** *Diabetic macular edema, Optical coherence tomography, Panretinal photocoagulation therapy, Vitreomacular traction syndrome*

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## INTRODUCTION

Little information is available about the natural history of vitreomacular traction (VMT) associated with diabetic macular edema. A few cases of spontaneous resolution of VMT associated with diabetic macular edema have been described, but have not been doc-

umented by optical coherence tomography (OCT) (1). We report the spontaneous resolution of VMT associated with diabetic macular edema 1 month after the end of panretinal photocoagulation therapy (PRP). Sebag et al (2) showed that PRP can induce posterior hyaloid detachment. In the present case, the resolution of VMT is likely to have been facilitated by PRP.

## Case report

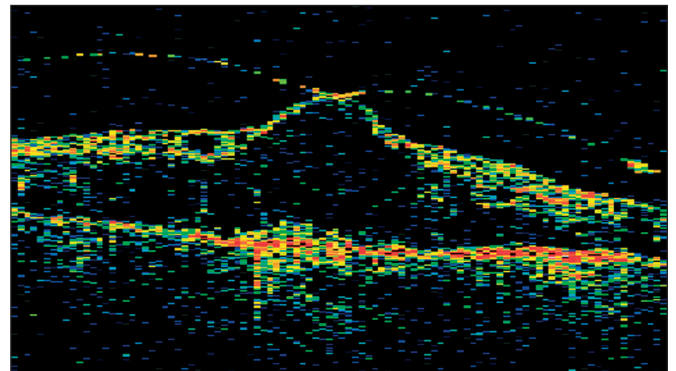
The patient was a 66-year-old woman with a 7-year history of diabetic cystoid macular edema in the right eye, previously treated by perifoveal grid unsuccessfully 5 years prior to examination. Best-corrected Snellen visual acuity was 20/250 in the right eye. Funduscopy examination revealed complicated proliferative diabetic retinopathy in the right eye. On biomicroscopy, the macula had a thickened appearance, and the posterior hyaloid seemed to be slightly glistening and thickened. No posterior vitreous detachment was noted. The six radial 6-mm-long OCT scans centered on the fovea of the right eye showed a protruding thickened fovea with cystoid changes (Fig. 1). The posterior hyaloid on OCT was thick and hyperreflective, partially detached from the posterior pole, but attached to the top of the raised macular surface and to the optic disk. The slopes of the elevated macula were steep, suggesting the presence of VMT. In regard to the presence of complicated proliferative diabetic retinopathy, PRP was immediately begun and performed within 1 month, and pars plana vitrectomy was initially scheduled to relieve the VMT.

One month after the end of PRP, the patient reported spontaneous improvement in vision in the right eye, in spite of stable glycemic and blood pressure measures. Best-corrected visual acuity improved to 20/200 in the right eye. At fundus examination, complicated proliferative diabetic retinopathy remained unchanged, PRP was considered complete, but macular thickening appeared to be decreased. All six radial OCT scans revealed complete release of foveal posterior hyaloid traction, and significant reduction in foveal thickness (Fig. 2).

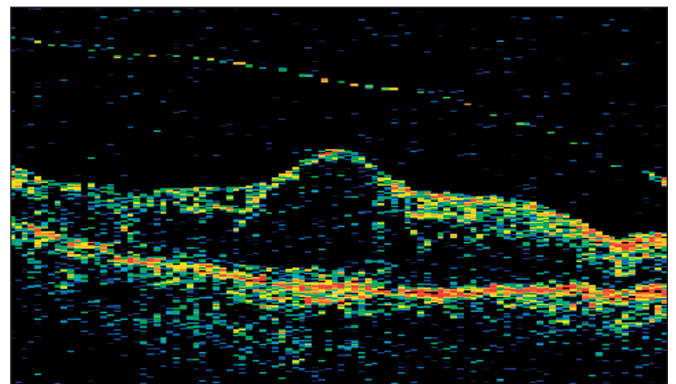
Ten months later, best-corrected visual acuity improved to 20/80 in the right eye. Fundus examination revealed regression of new vessels on the disk, and major decrease of macular thickening. All six radial OCT scans confirmed complete release of posterior hyaloid attachment to the fovea, with small residual foveal thickening (Fig. 3).

## DISCUSSION

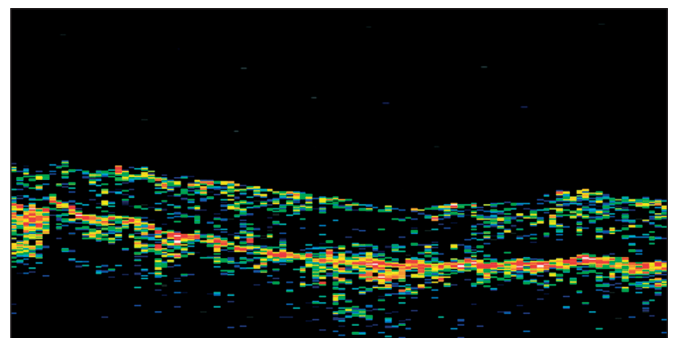
Diabetic macular edema associated with VMT is a rare clinical pattern (1). Retinal examination usually



**Fig. 1** - Optical coherence tomography (OCT) image of the right eye at the time of admission. The scan is normalized and standardized to a 6-mm scan length. The OCT image demonstrates macular thickening and a thick, hyperreflective posterior hyaloid, partially detached from the posterior pole, but attached to the top of the raised macular surface. The posterior hyaloid is located 352  $\mu\text{m}$  anterior to the retina. Central foveal thickness is 705  $\mu\text{m}$ .



**Fig. 2** - Optical coherence tomography image of the right eye, 1 month after the end of panretinal photocoagulation therapy. The scan is normalized and standardized to a 6-mm scan length. There is complete release of vitreomacular traction. The posterior hyaloid is located 525  $\mu\text{m}$  anterior to the fovea. Central foveal thickness is decreased to 552  $\mu\text{m}$ .



**Fig. 3** - Optical coherence tomography image of the right eye 10 months after the end of panretinal photocoagulation therapy. The scan is normalized and standardized to a 6-mm scan length. Central foveal thickness is decreased to 264  $\mu\text{m}$ .

shows a diffuse cystoid macular edema, associated with a thickened, taut, and glistening posterior hyaloid, which exerts traction on the fovea (1). OCT images demonstrate a thick, hyperreflective posterior hyaloid, which is taut over the posterior pole, but remains attached to the disk and to the top of the elevated macular surface (3). Retinal thickness greatly increases and often includes large intraretinal hyporeflexive cystic-like cavities (3). VMT syndrome can be distinguished in OCT from a perifoveal detachment of the posterior hyaloid. In a perifoveal detachment, the posterior hyaloid, which is slightly detached from the posterior pole, is either not visible on OCT or little reflective (3). VMT syndrome should also be distinguished from an epiretinal membrane, which is visible on OCT as a thick, hyperreflective band just at the surface of the retina, with increased backscattering compared to retinal tissue.

The natural evolution of idiopathic VMT syndrome has been recently documented. Spontaneous resolution occurs in 11% of patients with idiopathic VMT syndrome during a median follow-up period of 60 months (4).

A case of spontaneous resolution of VMT secondary to intermediate uveitis has been described and documented with OCT (5). Best-corrected visual acuity was initially 20/70 in the left eye. The OCT image demonstrated vitreomacular traction temporal to the fovea, and cystic intraretinal spaces in the fovea. One month later, the posterior hyaloid was largely detached from the retina, but a focal area of adhesion remained temporal to the fovea. Four months after the initial visit, best-corrected visual acuity was 20/30 in the left eye. The OCT image confirmed complete detachment of the posterior hyaloid, diminished retinal thickening, and restoration of the normal foveal contour (5).

Few cases of spontaneous resolution of VMT associated with diabetic macular edema have been reported, and these cases have not been documented by OCT (1). Considering the particular vitreous structural alterations in diabetes, including the possible occurrence of infiltrations of the hyaloid posterior by glial, epithelial cells, and trophic factors, leading to strong tractions on the fovea, the course of VMT associated with diabetic macular edema may be different from that secondary to intermediate uveitis, or from idiopathic VMT syndrome.

Our patient presented with diabetic macular edema associated with VMT, which was confirmed by the six

OCT scans. In the present case, the spontaneous resolution of VMT associated with diabetic macular edema was objectively documented by OCT examination. The course of VMT associated with diabetic macular edema was similar to the one secondary to intermediate uveitis, but the spatial pattern of macular adhesion in the present case (adhesion at the fovea) was different from that of Sulkes et al's report (focal adhesion temporal to the fovea).

In order to assess the state of the vitreoretinal interface following PRP, Sebag et al (2) clinically studied 30 eyes of 19 patients with type I diabetes, varying severity of retinopathy, and no posterior vitreous detachment. A total of 15 eyes underwent PRP, and 15 eyes were left untreated. Follow-up was 4 to 7.5 years. The incidence of posterior vitreous detachment was 53% after PRP and 7% in untreated eyes. These data suggest that posterior vitreous detachment occurs following PRP, independent of the severity of diabetic retinopathy or prior vitreous hemorrhage. Yamaguchi et al (6) reported spontaneous vitreofoveal separation in a patient presenting with diabetic macular edema without VMT syndrome 1 month after PRP.

These data could be explained by a possible PRP-induced vitreous liquefaction and weakening of the vitreoretinal adhesion. Influx of serum proteins and enzymes into the vitreous that arise from the photo-coagulated choriocapillaris may induce vitreous liquefaction (2). PRP could injure Müller cells and hyalocytes, which synthesized and maintained extracellular matrix at the vitreoretinal interface, and also may provoke shrinkage and contraction of the collagen fibrils at the posterior vitreous cortex, leading to weakening of the vitreoretinal adhesion (2).

In the present case, spontaneous resolution of VMT associated with diabetic macular edema was reported 1 month after the end of PRP, and is likely to have been facilitated by PRP.

Vitrectomy in diabetic macular edema associated with VMT syndrome has been reported to be beneficial in the long term (1, 3). In this case report, the reduction of macular thickness and visual improvement, which occurred at the same time as the spontaneous resolution of VMT, and slightly increased during the follow-up period, are likely to be due to the resolution of VMT. Then, the visual benefit of vitrectomy in diabetic macular edema associated with VMT syndrome (1, 2) could be explained in large part by the

release of the VMT.

Yamaguchi et al (6) reported three cases of spontaneous resolution of diabetic cystoid macular edema associated with vitreofoveal separation. The follow-up was 3 to 33 months. The authors did not mention the presence of a thickened, taut, and glistening posterior hyaloid associated with macular edema, which defines clinically diabetic macular edema associated with VMT, in these patients. Moreover, as showed on OCT images, macular edema was not associated with a thick and hyperreflective posterior hyaloid in regard to the fovea. So, these patients presented with a perifoveal detachment of the posterior hyaloid exerting some degree of vitreomacular traction, rather than a diabetic macular edema associated with VMT syndrome. These data suggest that the posterior hyaloid may exert some degree of vitreomacular traction also in eyes without VMT syndrome. However, this is strongly debated, and other authors demonstrated that vitrectomy in eyes with diabetic macular edema without VMT syndrome has only a transient beneficial effect (3).

This report illustrates an uncommon case of improvement of diabetic macular edema after PRP. As spontaneous resolution may occur in some eyes with diabetic macular edema associated with VMT, a period of observation with OCT evaluations for several weeks after the end of PRP may be considered prior to vitrectomy.

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