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SHORT COMMUNICATION

A case of diabetic retinopathy with both retinal neovascularization and complete posterior vitreous detachment

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PURPOSE. *Report of a case with retinal neovascularization developing in the setting of diabetic retinopathy despite complete posterior vitreous detachment (PVD).*
CASE REPORT. *A 76-year-old man had had type II diabetes mellitus for more than 30 years. Weiss' ring was detected by direct and indirect ophthalmoscopy. PVD was thus considered to be complete. On the other hand, fluorescein angiography showed two areas of hyperfluorescence at the margin of the retinal nonperfusion area.*
CONCLUSIONS. *The present case underscores the importance of periodic follow-up using fluorescein angiography, given the probability of retinal neovascularization development and proliferative changes for many years even in diabetic retinopathy associated with complete PVD. (Eur J Ophthalmol 2006; 16: 644-6)*

KEY WORDS. *Diabetic retinopathy, Retinal neovascularization, Complete posterior vitreous detachment, Panretinal photocoagulation, B-mode echography*

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INTRODUCTION

It is generally accepted that the probability of developing retinal or optic disc neovascularization in diabetic retinopathy is remote in the setting of complete posterior vitreous detachment (PVD), because there is no retinal foothold (1). We present herein an interesting case with retinal neovascularization developing in the setting of diabetic retinopathy despite complete PVD, identified using biomicroscopic examination, direct and indirect ophthalmoscopy, fundus photography, and B-mode echography.

Case report

A 76-year-old man had had type II diabetes mellitus (DM) for more than 30 years. The left eye had been treated with panretinal photocoagulation (PRP) for retinal neovascularization, identified by fluorescein angiography, after extracapsular cataract extraction in April 1991. Although vitreous hemorrhage was detected in September of the same year, retinal neovascularization had disappeared on fluorescein angiography obtained the following year (Fig. 1A).

In August 2003, according to clinical findings, i.e., Weiss' ring detected by direct and direct and indirect ophthalmoscopy (Fig. 3, A and B), the patient underwent optical coherence tomography (OCT) (Fig. 4). The vitreous membrane in the macula had completely disappeared, and the posterior vitreous membrane was detached at least to the equator based on B-scan echographic findings (Fig. 3C). PVD thus was considered to be complete.

On the other hand, as fluorescein angiography showed two areas of hyperfluorescence at the margin of the retinal nonperfusion area, the hyperfluorescence was judged to represent retinal neovascularization (Fig. 1, B and C) and abnormal vessel was identified in the same area (Fig. 2). Given the patient's clinical course, weighed against past fluorescein angiographic examination results, we consid-

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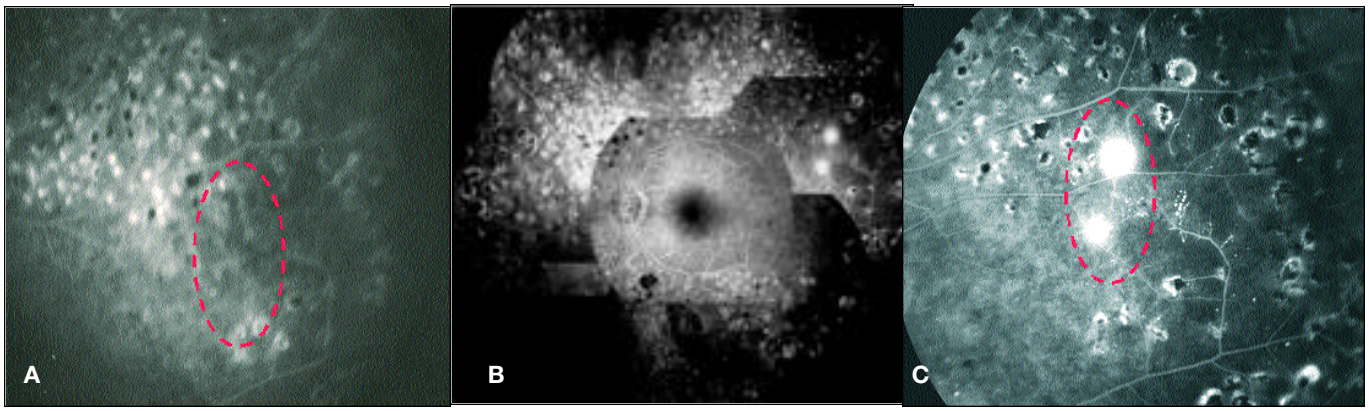


Fig. 1 - (**A**) *The hyperfluorescence was not identified at this point in 1992.* (**B**, **C**) *Two areas of hyperfluorescence in the same area of* (**A**) *were identified after the posterior vitreous membrane was detached.*

ered retinal neovascularization to have developed during the previous 11 years, despite PVD having already been completed.

DISCUSSION

In this case, the factor responsible for PVD development was believed to be precipitation of an anterior shift of vitreous due to cataract surgery and PRP. This speculation is supported by the findings of Sebag et al (2) and Tagawa et al (3), who reported that PRP strongly induces PVD development in the setting of diabetic retinopathy.

Kakehashi et al (4) reported variations of PVD and categorized some retinal diseases into each PVD type. No case of proliferative diabetic retinopathy was included in classification of complete PVD. However, in this case of proliferative diabetic retinopathy, the vitreous membrane in the macula had completely disappeared, and the posterior vitreous membrane was detached at least to the equator based on B-scan echographic findings. If we tried to explain this state from only vitreoschisis, we could not see positive Weiss ring such as in Figure 3, A and B.

It was thought that in our present case, despite the lack of a foothold in the retina because of the complete PVD, retinal neovascularization could have been triggered by the surviving vitreous cortex (5).

Recently, in using triamcinolone acetonide in vitrectomy (6), we have often noted preretinal membranes even in cases with complete PVD prior to vitrectomy or artificial PVD created during surgery. The possibility exists that vestiges of thin membranes, which may be residual vitreous cortex, can serve as a foothold for the development of retinal neovascularization.

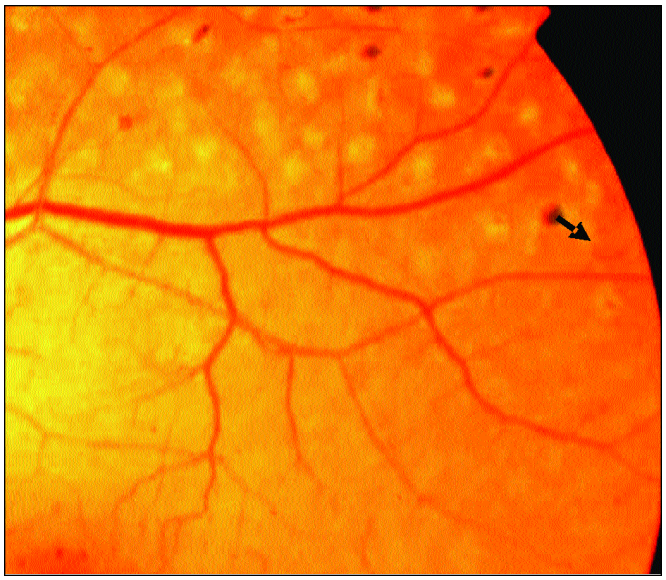


Fig. 2 - *Abnormal vessel was identified in the same area of hyperfluorescence in Figure 1,* **B** *and* **C**.

On the other hand, Kishi (7) speculated that the secretion of vitreous procollagen persisted, even after excision of the vitreous.

As continuous secretion of procollagen is thought to be unaltered in cases with complete PVD, this vitreous procollagen may serve as the foothold needed for the development of retinal neovascularization. Vitrectomy and retinal photocoagulation both improve retinal oxygenation and reduce retinal neovascularization (8, 9). We believe that PVD plays the same role as vitrectomy. For this reason, retinal neovascularization in eyes with PVD was very rare.

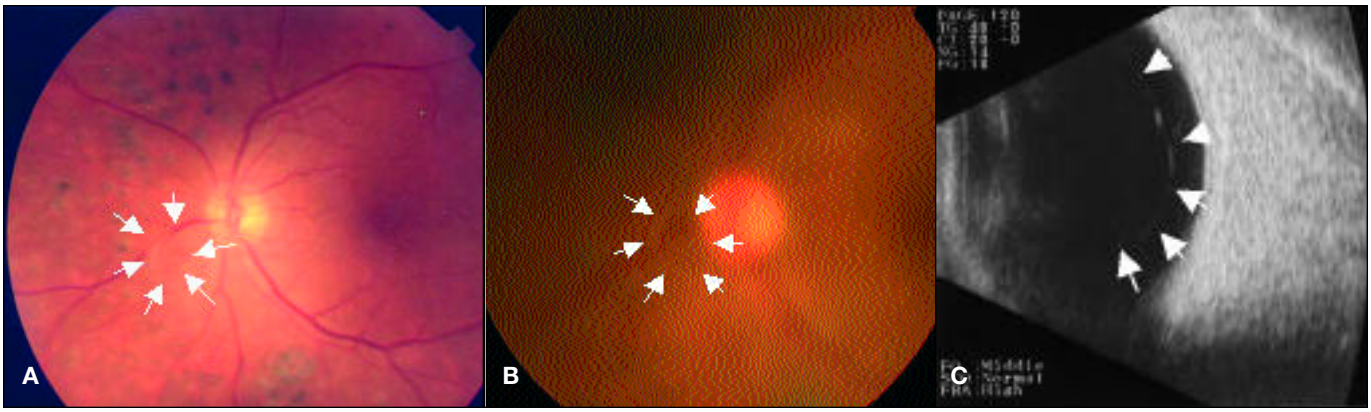
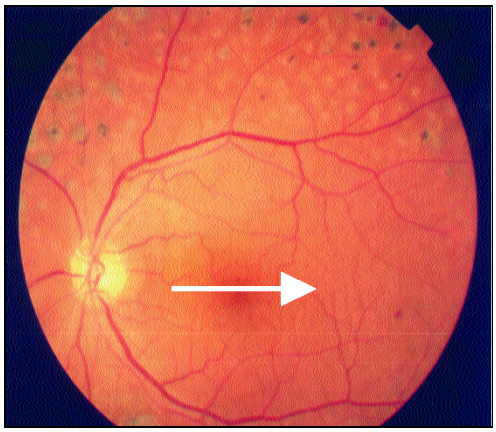


Fig. 3 - *The complete posterior vitreous detachment was confirmed with Weiss' ring* (**A, B**) *and B-scan echography* (**C**).



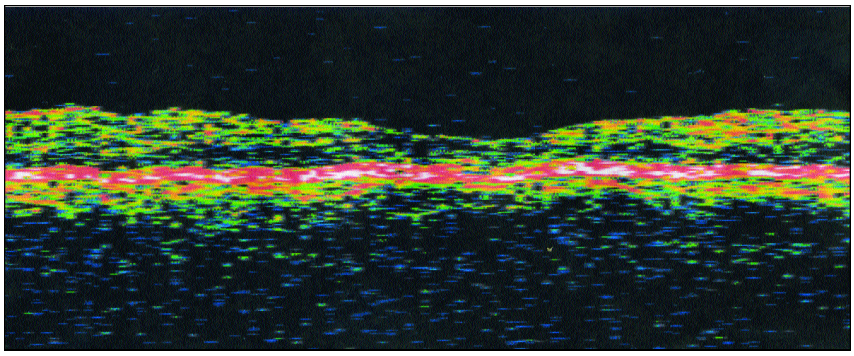


Fig. 4 - *The vitreous membrane at least on the macula had disappeared on optical coherence tomography.*

Our experience with this present case underscores the importance of periodic follow-up using fluorescein angiography, given the probability of retinal neovascularization development and proliferative changes for many years even in diabetic retinopathy associated with complete PVD.

No authors have any proprietary interest.

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