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Case report

Giant retinal pigment epithelial tear associated with fluid overload due to end-stage diabetic kidney disease

Yusuke Kameda [a, *], Akira Hirose [a], Tomohiro Iida [b], Yasuko Uchigata [c], Shigehiko Kitano [a]

[a] Department of Ophthalmology, Diabetes Center, Tokyo Women's Medical University School of Medicine, 8-1 Kawada-cho, Shinjyuku-ku, Tokyo, 162-8666, Japan
[b] Department of Ophthalmology, Tokyo Women's Medical University School of Medicine, 8-1 Kawada-cho, Shinjyuku-ku, Tokyo, 162-8666, Japan
[c] Diabetes Center, Tokyo Women's Medical University School of Medicine, 8-1 Kawada-cho, Shinjyuku-ku, Tokyo, 162-8666, Japan

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ABSTRACT

Purpose: To report a case of a giant retinal pigment epithelial (RPE) tear associated with fluid overload in a patient with diabetic macular edema (DME) and kidney disease.
Observations: A 60-year-old man with type 2 diabetes mellitus and end-stage diabetic kidney disease who had gained weight because of fluid overload complained of a visual disturbance in the left eye that had started a few days earlier. The left fundus showed a RPE defect in two temporal quadrants under an extensive serous retinal detachment (SRD) with exacerbation of the original DME. Seven days later, he was admitted for severe edema and pleural effusion. No overt signs of congestive heart failure were noted. On admission, the RPE defect had markedly widened to involve the macula. Spectral-domain optical coherence tomography images showed substantial intraretinal fluid and an extensive SRD with rolled edges of the retinal pigment epithelium, which led to the diagnosis of a RPE tear. The fluid under the SRD was absorbed on the fourth hospital day and the substantial intraretinal fluid resolved on the eleventh day after systemic management of fluid overload only without ophthalmic treatment. The change in the appearance of the RPE area was minimal and the visual field defect remained even after 6 months.
Conclusion and importance: A RPE tear may develop in association with fluid overload in patients with diabetes.

1. Introduction

Since Hoskin and associates[1] first reported retinal pigment epithelial (RPE) tears, accumulated evidence has suggested that RPE tears could occur in the following situations: spontaneously,[2] after treatment of choroidal neovascularization (CNV) and age-related macular degeneration (AMD)-associated pigment epithelial detachments by laser photocoagulation,[2,3] or after intravitreal drug injections of vascular endothelial growth factor (VEGF) inhibitors.[4] In rare instances, a RPE tear can develop in patients with central serous chorioretinopathy,[5] trauma,[6] and Vogt–Koyanagi–Harada disease,[7] and in those who undergo glaucoma drainage surgery[8,9] and laser photocoagulation for diabetic retinopathy.[9,10] However, no study to date has reported the development of a RPE tear in association with fluid overload, although fluid overload contributes to the worsening of diabetic macular edema (DME) in several clinical settings.[11–14] To our knowledge, this is the first reported case of a RPE tear that might have developed as the result of fluid overload due to end-stage diabetic kidney disease.

2. Case report

A 60-year-old man with a 9-year history of type 2 diabetes mellitus who was being followed up at our center complained of a visual disturbance in the left eye that had started a few days earlier. Seven months before presentation, he had received a

* Corresponding author. Diabetes Center, Tokyo Women's Medical University School of Medicine, 8-1 Kawada-cho, Shinjuku-ku, Tokyo, 162-8666, Japan.
E-mail address: y09025618059@leaf.ocn.ne.jp (Y. Kameda).

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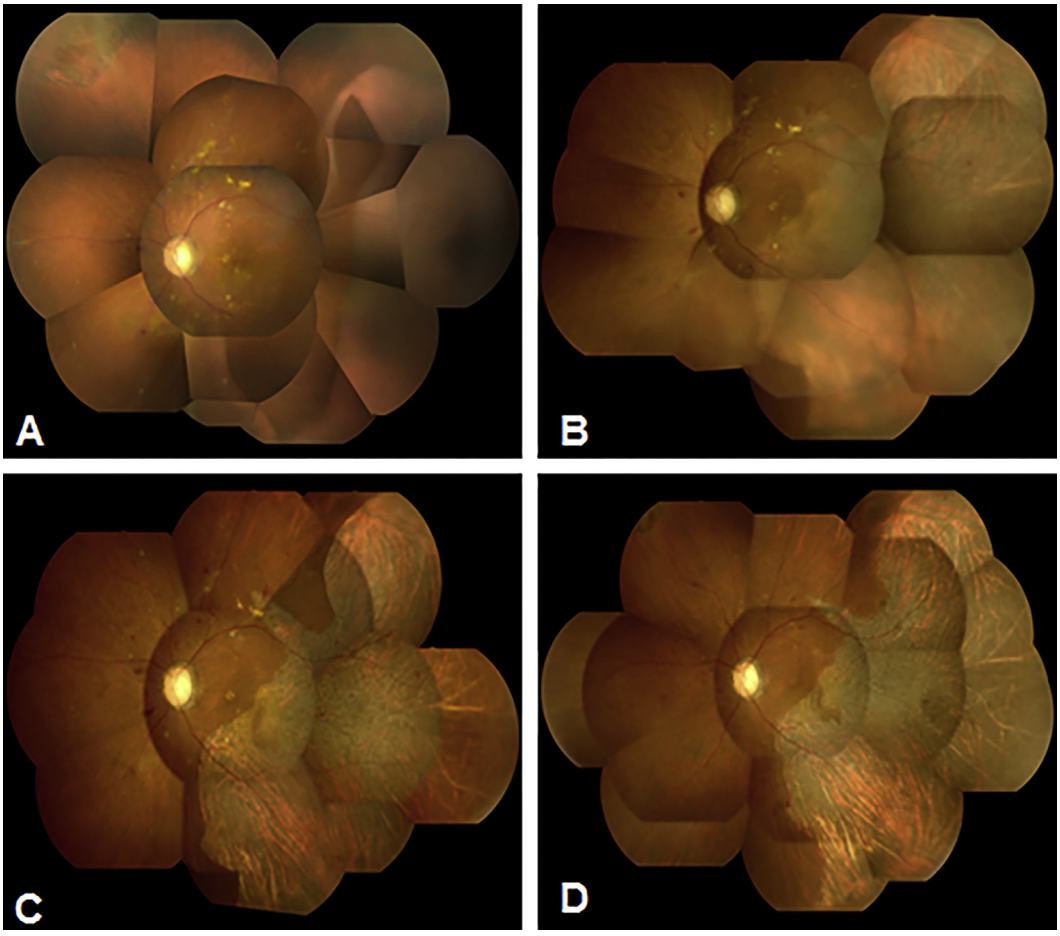

Fig. 1. Composite fundus photography of the left fundus. Immediately (A), 7 days (B), 10 days (C), and 6 months (D) after the retinal pigment epithelial (RPE) tear developed.

posterior sub-Tenon injection of triamcinolone acetonide in the left eye for DME, but DME persisted. Six months before presentation, lattice degeneration with a retinal tear in the superonasal quadrant of the peripheral retina had been treated with laser photocoagulation. The left eye had not undergone any other ophthalmic treatment for several months prior to presentation. The patient had also gained approximately 9 kg because of fluid retention from end-stage diabetic kidney disease over the past 3 months despite taking 40 mg of furosemide daily. On examination, the best-corrected visual acuity (BCVA) was 0.2 in the right eye and 0.03 in the left eye. The fundus examination showed bilateral non-proliferative diabetic retinopathy and evidence of panretinal photocoagulation for rubeotic glaucoma that had been applied only in the right eye. The left fundus had a RPE defect in two temporal quadrants that lay under an extensive serous retinal detachment (SRD) (Fig. 1A). Optical coherence tomography (OCT) showed an increase in the substantial intraretinal fluid bilaterally and an extensive SRD in the left eye. No ophthalmic angiography was performed because of his poor general condition. Seven days later, he was admitted to the Department of Medicine in our center for severe fluid overload as evidenced by the increase in weight, pleural effusion, and lower limb edema. No overt signs of congestive heart failure were noted. On admission, widening of the RPE defect with involvement of the macula was observed (Fig. 1B). On spectral-domain (SD) OCT, the rolled edges of the retinal pigment epithelium in the left eye were noted (Fig. 2A). From the OCT findings, we diagnosed a RPE tear. At the same time, strict medical treatment, including an increased dose of furosemide, addition of a new diuretic, and a salt-restricted diet, was started to treat the fluid overload. He began to lose weight the next day. On the fourth hospital day, 10 days after detection of the RPE tear, the BCVA increased to 0.1 with absorption of fluid under the SRD in the left eye seen on SD-OCT images (Fig. 2B). The area of the RPE defect did not enlarge further (Fig. 1C). On the eleventh hospital day, 17 days after detection of the RPE tear, SD-OCT images of the left eye showed almost complete resolution of the substantial intraretinal fluid and direct attachment of the outer retina to Bruch's membrane (Fig. 2C). The BCVA remained 0.2 in the left eye, and Goldmann perimetry showed the presence of a visual field defect corresponding to the area where the RPE was lost. Eventually, the patient lost about 12 kg and returned to his usual weight after 7 weeks of hospital stay. However, the area where the RPE was absent showed little further change in appearance (Fig. 1D), and the visual field defect remained (Fig. 3) even after 6 months had passed after development of the RPE tear.