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LETTER TO THE EDITOR

Retinal pigment epithelium tear through the fovea with maintained visual acuity of 20/20

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Dear Editor,

Patients with retinal pigment epithelium (RPE) tears have a poor visual prognosis, even if the tear does not involve the subfoveal region [1, 2], but some case reports document stable visual acuity (VA) after a RPE tear involving the fovea [3]. We present a patient with bilateral RPE tears, through the fovea in the right eye and juxtafoveal in the left eye, who maintained a stable VA of 20/20 in both eyes 2 years after the events.

A 60-year-old woman presented with metamorphopsia and a VA decline to 20/63 in her right eye. Ophthalmoscopy, optical coherence tomography (OCT) (Stratus OCT, Carl Zeiss Meditec, Inc., Dublin, CA, USA) and fluorescein angiography (FA) (HRA-2; Heidelberg Engineering, Dossenheim, Germany) demonstrated a serous juxtafoveal pigment epithelium detachment (PED). The patient's right eye was injected with 0.5 mg intravitreal ranibizumab for 3 consecutive months. After the third injection, VA improved to 20/50 and metamorphopsia decreased, but a subfoveal RPE tear of 1.5 disc diameters had appeared, confirmed by ophthalmoscopy, OCT, fundus autofluorescence imaging (HRA-2; Heidelberg Engineering, Dossenheim, Germany) (Fig. 1a), and FA. Residual subretinal fluid was present, and the patient received three further monthly ranibizumab injections, causing the subretinal fluid to disappear on OCT and the VA to return to 20/20.

Six months after the initial presentation, the patient experienced metamorphopsia in the left eye. VA was 20/25, and a serous juxtafoveal PED (1 disc diameter) was discovered. The patient's left eye received six consecutive monthly intravitreal ranibizumab injections. The injections had no effect on VA and PED size, so no further treatment was given. Three months later, VA on the left eye remained at 20/25 but OCT, fundoscopy, autofluorescence (Fig. 1b), and FA demonstrated a RPE tear (1 disc diameter) superotemporally from fovea with minimal subfoveal residual subretinal fluid. At this point, the patient preferred observation and entered a monthly follow-up program. The residual subretinal fluid spontaneously vanished over the next 2 months. The patient remained symptom-free on the left eye and the VA was 20/20 for at least 22 months.

Two years after the bilateral RPE tears, the VA in both eyes remained at 20/20 with no metamorphopsia, scotoma or subjective fluctuations in VA. Surprisingly, microperimetry (Nidek MP1, Nidek Technologies, Padova, Italy) (Fig. 1c, d) showed stable foveal fixation without scotomas in both eyes in the area where no RPE was present. However, a relative scotoma was present where the RPE was folded. Ophthalmoscopy, OCT, and fundus autofluorescence imaging confirmed an unchanged subfoveal RPE tear in the right eye and a juxtafoveal RPE tear in the left eye.

We could not detect a tissue resembling the RPE in the torn areas in either eye by ophthalmoscopy, FA, or sdOCT (3D OCT-1000, Topcon Corporation, Tokyo, Japan); however, the external limiting membrane and the junction between inner and outer segments subfoveally were intact on OCT (Fig. 1e). The presence of a good VA and foveal fixation indicates that the photoreceptors in the fovea are functionally active. One possible explanation of the preserved vision in our case could be a thin depigmented but functionally active RPE layer in the areas of the RPE tears. Another possible explanation might be that absence of RPE does not necessarily lead to the death of the photoreceptor cells [4]. Perhaps the preserved function of the photoreceptors could be explained by a human equivalent of the foveal photopic visual cycle that has been demonstrated in non-human vertebrates [5]? As our patient experienced bilateral RPE tears, a genetic predisposition to RPE tears

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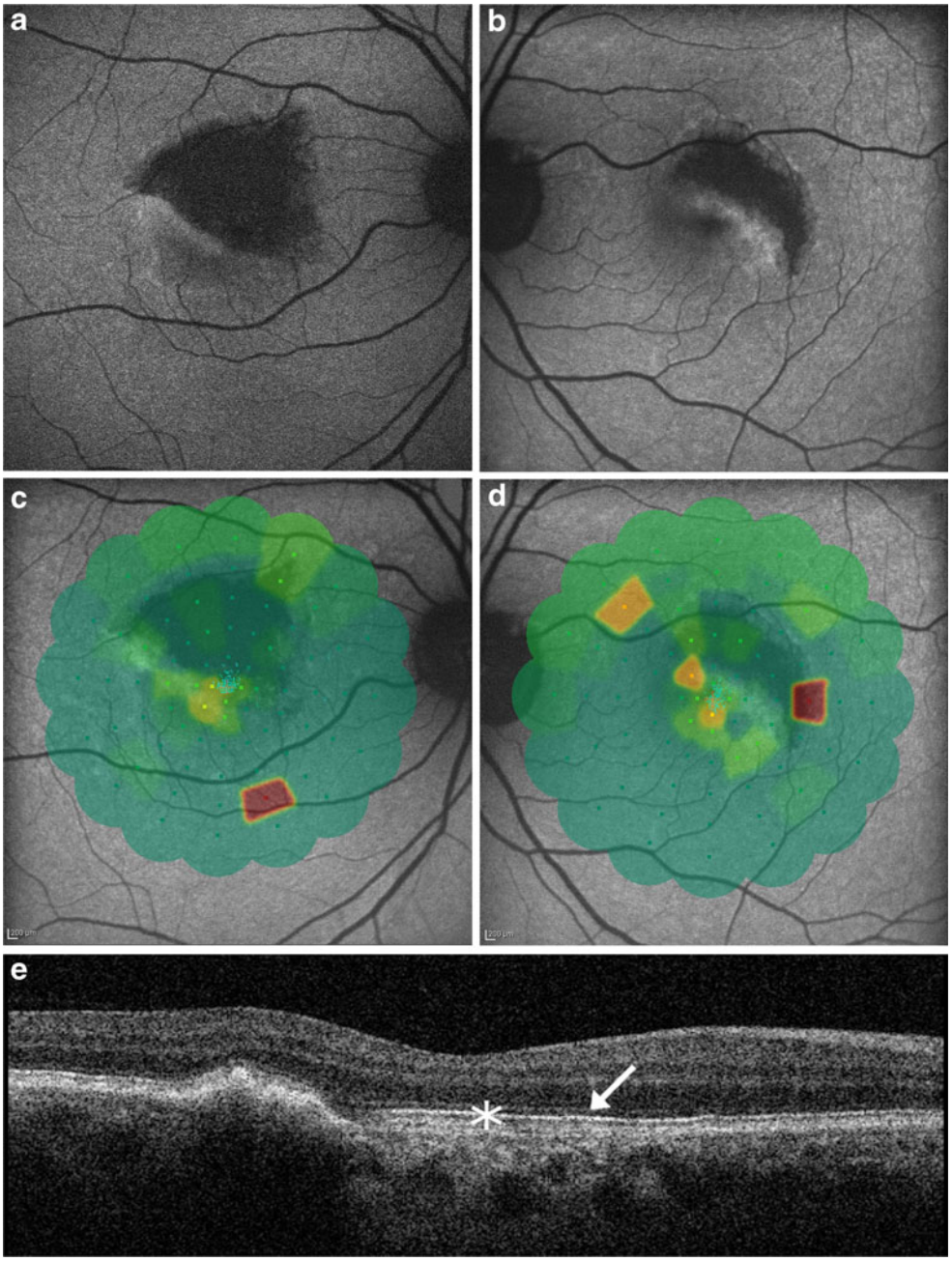

Fig. 1 After the RPE tears, the autofluorescence images demonstrate absence of foveal and juxtafoveal RPE with rolled RPE inferior to the fovea in the right eye (**a**) and absence of superotemporal RPE and subfoveal rolled RPE in the left eye (**b**). Interpolated color maps of microperimetry after the RPE tears show good retinal sensitivity and maintained foveal fixation of the right (**c**) and left eye (**d**) at 26 and 22 months respectively. SdOCT of the right fovea (**e**) 2 years after the RPE tear shows an intact inner/outer segment junction (*asterisk*) and external limiting membrane (*arrow*)

cannot be excluded, and possibly favourable remodelling ability has allowed our patient to maintain her good VA for a long period of time.

We demonstrate a case of discrepancy between an obviously altered macular macrostructure and a nearly normal macular function. Histological studies could help us better understand the foveal physiology and function.

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References

1. Chang LK, Sarraf D (2007) Tears of the retinal pigment epithelium: an old problem in a new era. Retina 27:523–534
2. Sarraf D, Reddy S, Chiang A, Yu F, Jain A (2010) A new grading system for retinal pigment epithelial tears. Retina 30:1039–1045
3. Bressler NM, Finklestein D, Sunness JS, Maguire AM, Yarian D (1990) Retinal pigment epithelial tears through the fovea with preservation of good visual acuity. Arch Ophthalmol 108:1694–1697
4. Tso MO, Woodford BJ (1983) Effect of photic injury on the retinal tissues. Ophthalmology 90:952–963
5. Mata NL, Radu RA, Clemmons RC, Travis GH (2002) Isomerization and oxidation of vitamin a in cone-dominant retinas: a novel pathway for visual-pigment regeneration in daylight. Neuron 36:69–80