

Retinal pigment epithelial tear following intravitreal ranibizumab injections for neovascular age-related macular degeneration

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Abstract

Background To report the development of retinal pigment epithelial (RPE) tear after intravitreal injection of ranibizumab (Lucentis, Novartis, Basel, Switzerland).

Methods Case report with presentation of the fundus photography, fluorescein angiography (FA) and optical coherence tomography (OCT) findings.

Results A 70-year-old man received intravitreal injections of ranibizumab for the treatment of occult choroidal neovascularisation (CNV) with fibrovascular pigment epithelial detachment due to age-related macular degeneration. One day after the third intravitreal ranibizumab injection, fundus examination showed a RPE defect at the foveal region. FA and OCT confirmed the presence of RPE tear sparing the fovea. No further progression of the RPE tear was observed after withholding subsequent ranibizumab injection and his right eye visual acuity remained at 20/100 at 3 months from the last injection.

Conclusions As with other anti-vascular endothelial growth factor treatment for CNV, RPE tear might occur after intravitreal ranibizumab injection even after previous uneventful intravitreal injections.

Keywords Age-related macular degeneration · Anti-VEGF · Choroidal neovascularisation · Ranibizumab · Retinal pigment epithelial tear

Introduction

Retinal pigment epithelium (RPE) tear can develop during the natural history of neovascular age-related macular degeneration (AMD), or as a complication after different therapies, such as laser photocoagulation and photodynamic therapy (PDT) for treating choroidal neovascularisation (CNV), especially in eyes with occult CNV and pigment epithelial detachment (PED) [3, 4, 6]. Recently, cases of RPE tear following intravitreal anti-vascular endothelial growth factor (VEGF) injections including bevacizumab and pegaptanib have also been reported [2, 4, 7, 8, 10]. We report a patient who developed acute RPE tear following repeated intravitreal ranibizumab injections for occult CNV with PED due to AMD.

Case report

A 70-year-old man presented with progressive visual loss of his right eye for one month. His left eye had a disiform scar due to neovascular AMD with best-corrected visual acuity (BCVA) of 20/200. On presentation, his right eye BCVA was 20/100 and fundus examination showed a two-disc-diameter PED involving the fovea. Fluorescein angiography (FA) and optical coherence tomography (OCT) demonstrated an occult CNV with adjacent PED (Fig. 1). After discussion on the treatment options, he was treated with intravitreal pegaptanib injections. FA and OCT after three pegaptanib injections showed limited treatment response with increased size of PED and persistent CNV leakage. With the availability of ranibizumab, the patient then opted for intravitreal ranibizumab injections two months after the third pegaptanib injection. The patient received three intravitreal ranibizumab injections in monthly

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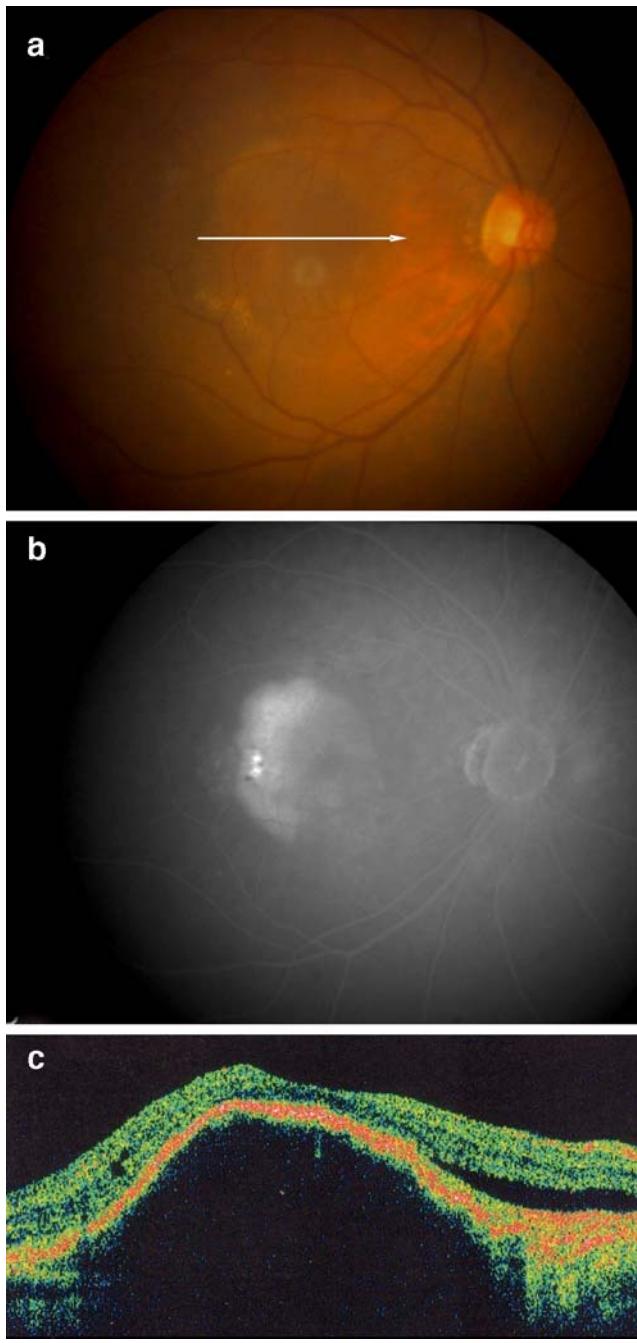


Fig. 1 (a) Right eye fundus photo, (b) fluorescein angiography, and (c) optical coherence tomography (OCT) prior to ranibizumab injection showing a subfoveal occult choroidal neovascularisation with pigment epithelial detachment. The white arrow indicates the location and direction of the corresponding OCT scan

intervals. OCT showed a slight increase in the size of PED after the first two ranibizumab injections and on day 1 after the third injection, fundus examination showed a RPE defect at the foveal region. FA and OCT confirmed the presence of RPE tear without involving the fovea (Fig. 2). Further ranibizumab injection was withheld and at 3 months after the last ranibizumab injection, there was no progression of the RPE tear and his right eye BCVA remained at 20/100.

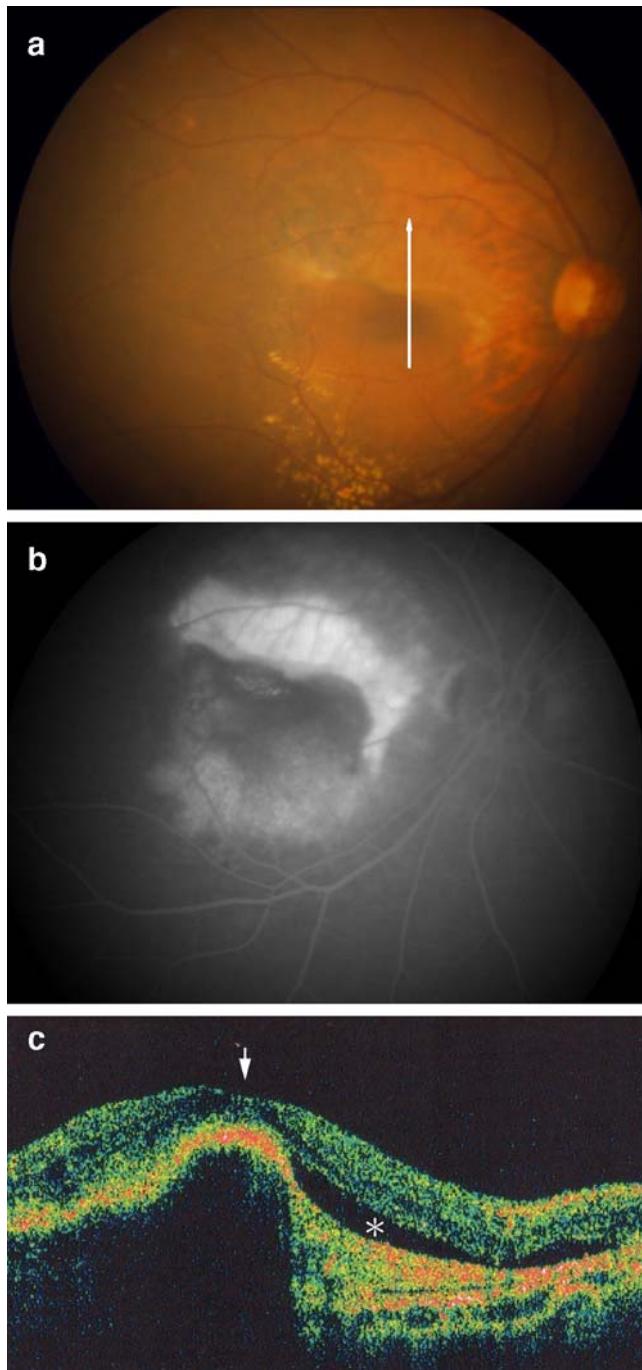


Fig. 2 (a) Right eye fundus photo, (b) fluorescein angiography (FA), and (c) optical coherence tomography (OCT) one day after the third intravitreal ranibizumab injection showing an area of retinal pigment epithelium (RPE) defect superior to the fovea. The white arrow indicates the location and direction of the corresponding OCT scan. Mid-phase FA demonstrated an area of hyperfluorescence corresponding to the area of RPE tear with a hypofluorescent area inferior to the RPE defect representing the area of contracted RPE. OCT showed an area with absent RPE signal and an increase in signal depth (marked by the asterisk) due to the loss of overlying RPE. A hyper-reflective band of contracted RPE was noted at the centre of fovea (short arrow)

Comment

Development of RPE tear has been reported after PDT and intravitreal anti-VEGF injections including bevacizumab and pegaptanib [2, 4, 5, 7, 8, 10]. We are unaware of any report of RPE tear developing after intravitreal ranibizumab injection. In the recently published ANCHOR and MARINA trials, RPE tear was not reported as one of the adverse events among the patients [1, 9]. Although the development of RPE tear in our patient could be due to the natural history of neovascular AMD, its development shortly after ranibizumab injection suggested a possible association. Previous pegaptanib injections might also result in the development of RPE tear. However, since the RPE tear developed five months after the last pegaptanib injection, its role for this complication is unlikely. The possible pathogenesis of RPE tear may be due to increased hydrostatic pressure in the sub-RPE space or shearing force associated with CNV expansion or contraction at the CNV-RPE adhesion complex after ranibizumab injection. Intravitreal ranibizumab treatment for neovascular AMD is a possible risk factor for the development of RPE tear, like other anti-VEGF agents. This complication should therefore be explained to patients prior to ranibizumab therapy as well as treatment using other anti-VEGF agents. Patients should also be monitored carefully for the development of RPE tear as it could occur after repeated uneventful intravitreal injections as illustrated in our case.

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