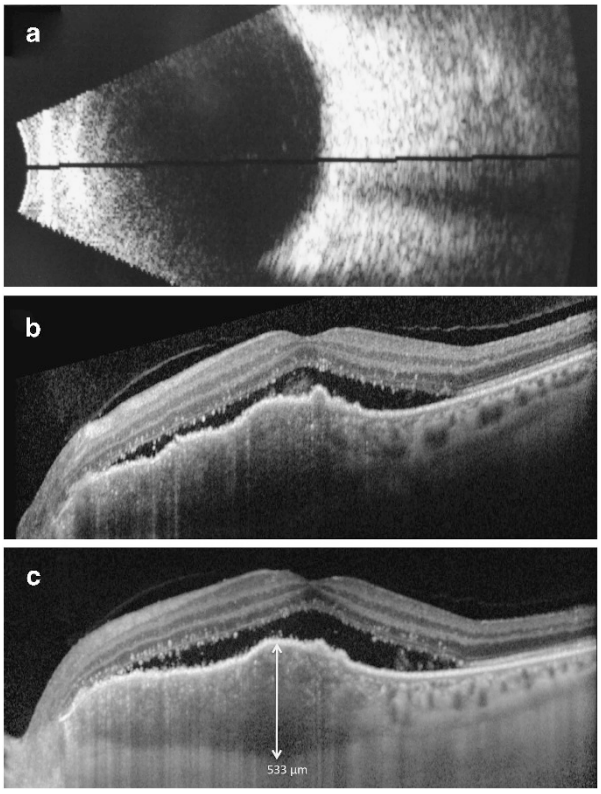

Figure 2 (a) Ultrasonography of the left eye is normal. (b) SD-OCT imaging demonstrates sub-macular fluid, an irregular appearance of the RPE, and choroidal thickening. (c) EDI demonstrates a 533-μm-thick mass disrupting the choroidal anatomy.

detachment overlying this region. No distinct mass was appreciated ophthalmoscopically.

Fluorescein angiography showed early delayed choroidal filling in the area of mottled pigmentation, late multiple pinpoint foci of hyperfluorescence, and late optic disc hyperfluorescence (Figure 1). SD-OCT images demonstrated submacular fluid and an irregular RPE contour. B-scan ultrasonography revealed normal findings without mass. In contrast, EDI SD-OCT images clearly delineated a hypo-reflective choroidal mass, measuring 553 μm at its thickest region, and 4.5 by 4.0 mm in diameter (Figure 2).

The patient was diagnosed with a presumed choroidal metastasis and was scheduled for treatment, but she subsequently suffered myocardial infarction and expired.

Comment

This is a case of a subtle choroidal metastasis where EDI SD-OCT demonstrated a lesion that was otherwise inapparent on clinical examination, ultrasonography, and regular (non-EDI) SD-OCT imaging. The tumor reported here was hyporeflective and altered the normal choroidal contour on both non-EDI and EDI SD-OCT. On EDI SD-OCT, the choroidal thickness was definitively thickened in the region of the metastasis, and the exact dimensions of the lesion could be measured. Torres *et al*[2] recently reported a series of EDI SD-OCT of 23 choroidal tumors, including small choroidal metastases that were visualized on examination but undetectable by ultrasound. In contrast, our patient did not have an obvious choroidal tumor visible on either examination or ultrasound.

In a large series of patients who had EDI SD-OCT of choroidal nevi, it was noted that quality of EDI SD-OCT images was sometimes suboptimal in lesions located away from the macula and optic nerve, as well as larger lesions.[3] The use of EDI SD-OCT may therefore not always be helpful in detecting choroidal metastases or other tumors, depending on the size and location of the tumor. However, as demonstrated in this case, EDI SD-OCT can be a useful technique for detecting and measuring subtle choroidal tumors of the posterior pole.

Conflict of interest

The authors declare no conflict of interest.

References

1 Spaide RF, Koizumi H, Pozzoni MC. Enhanced depth imaging spectral-domain optical coherence tomography. *Am J Ophthalmol* 2008; **146**(4): 496–500.
2 Torres VL, Brugnoni N, Kaiser PK, Singh AD. Optical coherence tomography enhanced depth imaging of choroidal tumors. *Am J Ophthalmol* 2011; **151**(4): 586–593.
3 Shah SU, Kaliki S, Shields CL, Ferenczy SR, Harmon SA, Shields JA. Enhanced depth imaging optical coherence tomography of choroidal nevus in 104 cases. *Ophthalmology* 2012; **119**(5): 1066–1072.

AJ Witkin[1], DH Fischer[1], CL Shields[2], D Reichstein[2] and JA Shields[2]

[1]Mid Atlantic Retina, Retina Department of Wills Eye Institute, Philadelphia, PA, USA
[2]Ocular Oncology Service, Oncology Department of Wills Eye Institute, Philadelphia, PA, USA
E-mail: ajwitkin@gmail.com

Eye (2012) **26,** 1598–1599; doi:10.1038/eye.2012.201; published online 5 October 2012

Sir,

Alternative diagnosis for cases presented as vPED treated with high-dose ranibizumab

We read with great interest the case series presented by Chan *et al*,[1] and agree that vascularised pigment epithelial detachments (vPEDs) do not flatten easily with anti-vascular endothelial growth factor (VEGF) treatment. As the authors discuss, the prospect of using a higher than conventional dose to treat this type of choroidal neovascular membrane needs evaluation, however, we question whether the cases demonstrated did in fact have vPEDs.

Case 1 shows a well-defined circular smooth area of fluorescence consistent with a serous PED next to an area of retinal pigment epithelial mottling. This may represent an adjacent area of occult, and or atrophy, judging from the colour photograph and optical coherence tomography (OCT). It is most likely that this is a retinal angiomatous proliferation (RAP) lesion that can respond well to conventional dose anti-VEGF treatment. Case 2 also appears to show serous PED. With Case 3 it is reported that there is a retinochoroidal anastomosis at the margin of the vPEDs. The colour photograph and OCT suggest that the lesion is a serous PED associated with RAP. Again in our experience this would settle well with conventional dose anti-VEGF treatment.[2]

Vascularised PEDs have been defined as areas of irregular elevation of the pigment epithelium and consist of a stippled hyper fluorescent appearance on angiography. These are not usually as bright or discrete as serous RPE detachments in the early phase of angiography.[3,4] Furthermore, they gradually brighten and the vascular network might be visible on ICG.

Serous PEDs can occur without a vascular component in the context of lots of drusen and do not respond to ranibizumab. They also can occur with RAP, with polypoidal choroidal vasculopathy and as part of a mixed 'wet' AMD picture. Indocyanide green angiography (ICG) can be useful to identify the lesion type but is best performed with high-resolution ICG with early video, such as is possible with the Heidelberg systems. As no ICG is shown, it is hard to comment on the quality of what was seen.

It is pleasing to see that the cases reported all did well but we would be interested to know whether the authors had any other cases of suspected vPED that did not respond or indeed the outcome of other types of choroidal neovascularisation that were also treated with high-dose ranibizumab. We agree that further analysis of a larger cohort is required but would require strict inclusion criteria on what constitutes a vPED before recommending monthly high-dose ranibizumab.

Conflict of interest

J Talks has received travel expenses and or attended advisory boards for Allergan, Novartis, Bayer, Alamera Sciences. The remaining authors declare no conflict of interest.

References

1 Chan CK, Abraham P, Sarraf D. High-dose ranibizumab therapy for vascularized pigment epithelial detachment. *Eye* 2012; **26**(6): 882–885.
2 Sykakis E, Malandrakis M, Pushpoth S, Browning A, Gupta R, Talks J. Intravitreal ranibizumab and intravitreal triamcinolone with PDT for the treatment of retinal angiomatous proliferation. A retrospective comparative study. *AMD Clinical Trials III* ; 2 May 2011; Newcastle Upon Tyne, UK (ARVO abstract 2011: 1660/A55).
3 Macular Photocoagulation Study Group. Subfoveal neovascular lesions in age-related macular degeneration. Guidelines for evaluation and treatment in the macular photocoagulation study group. *Arch Ophthalmol* 1991; **109**(9): 1242–1257.
4 Barbazetto I, Burdan A, Bressler NM, Bressler SB, Haynes L, Kapetanios AD *et al*. Photodynamic therapy of subfoveal choroidal neovascularization with verteporfin: fluorescein angiographic guidelines for evaluation and treatment—TAP and VIP report No. 2. *Arch Ophthalmol* 2003; **121**(9): 1253–1268.

SJ Talks, R Gupta and A Browning

Department of Eye, Royal Victoria Infirmary, Newcastle upon Tyne, UK
E-mail: james.talks@nuth.nhs.uk

Eye (2012) **26,** 1599–1600; doi:10.1038/eye.2012.207; published online 19 October 2012

Sir,

Response to Talks *et al*

We would like to thank Talks *et al*[1] for their interest in our article entitled 'High-dose ranibizumab therapy for vascularized pigment epithelial detachment'[2] and their letter to the editor that questions the presence of vascularized retinal pigment epithelial detachment (PED) in the three published cases. Although we understand their concern, we stand by our classification of PED in these three cases. Our study has incorporated strict inclusion and exclusion criteria as well as multi-modal imaging for patient enrollment and assessment of the fundus lesions throughout the study.

The classification of PED is complicated and requires a historical overview. Serous PEDs are well circumscribed lesions that fill rapidly and homogeneously on fluorescein angiography (FA) and that fail to show any overt signs of CNV.[3] Gass[4] defined a vascularized serous PED as a serous PED with overt signs of CNV such as a hot spot or a notch. In Figures 1 and 2, a large serous PED component is certainly present but there is high suspicion for a CNV focus by virtue of the irregular fluorescence (which shows focal leakage and a hot spot in the late phase of the FA) present at the nasal edge of the PED in Figure 1 and the presence of a hot spot at the temporal edge of the serous PED in Figure 2. Moreover, the serous PED is large and irregular in each case and cystoid macular edema and subretinal fluid (SRF) are present with optical coherence tomography (OCT) imaging, consistent with the presence of an underlying CNV focus. The presence of a cluster of hard exudates along the temporal margin of the PED in Figure 2 further supports the presence of CNV underlying the PED in case 2. Thus, the findings of multi-modal imaging are consistent with the diagnosis of a vascularized serous PED for both cases 1 and 2.

We further make the distinction of a vascularized serous PED *vs* a fibrovascular PED in which an RPE detachment is present but a distinct serous PED is not identified. A fibrovascular PED was defined during the course of the Macular Photocoagulation Study[5] and the subsequent Treatment of Age-Related Macular Degeneration With Photodynamic Therapy Investigation and Verteporfin in Photodynamic Therapy Trial[6] as an area of RPE elevation with stippled hyperfluorescence and late staining on FA.[5] Indeed, in case 3 the authors were able to identify stippled filling of the PED with an obvious leaking 'hot spot' on the