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Sir,

Photodynamic therapy of subretinal neovascularization in radiation retinopathy

Radiation retinopathy is a delayed-onset, slowly progressive vaso-occlusive retinal disorder that develops after the head and orbital area have been exposed to radiation. In this study, we report a case of unusual subretinal neovascularization observed after external beam radiation. The subretinal neovascularization was resolved, and visual acuity was improved after photodynamic therapy (PDT) with verteporfin.

Case report

A 35-year-old female visited our clinic with decreased visual acuity in the left eye, which had started about 5 months earlier. She had an epithelial cell tumour, located on the left side of nasopharynx, and had received radiation therapy 3 years before this visit. Radiation therapy was carried out for 5 days per week for 6 weeks with a daily radiation dosage of 200 cGy. Radiation therapy was carried out 30 times with a dose of 6000 cGy in total. Adjunctive chemotherapy was performed with a methotrexate/cyclophosphamide regimen.

Her initial corrected vision was 0.5 in the right eye and 0.025 in the left eye measured with Snellen chart. A fundus examination showed multiple cotton-wool patches, retinal haemorrhages, and exudates in both eyes, which were more severe in the left than in the right eye. Fluorescein angiography (FA) of the left eye showed retinal capillary nonperfusion, telangiectactic changes, and microaneurysms in the superotemporal perifoveal area in the early arterial venous phase, and subretinal neovascularization, thought to have originated from an aberrant retinal vessel. As time passed, the subretinal neovascularization became more distinctive and terminally dilated, and formed small bullae-like shapes (Figure 1a). On approaching the late phase, leakage from the telangiectatic vessels, microaneurysms, and the subretinal neovascularization continued. Indocyanine green angiography revealed hyperfluorescent lesion that was previously documented as subretinal neovascularization on fluorescein angiography, and exudative lesions at macula showed a blockage of fluorescence. However, no abnormality of the choroidal vessels suggestive of choroidal neovascularization or choroidal vasculopathy was documented on ICGA. A dome-shaped, hyper-reflective lesion, thought to be neovascular tissue, was found over the intact retinal pigment epithelial layer by optical coherence tomogram (OCT) (Figure 1b).

We performed PDT on the left eye to treat the subretinal neovascularization. Her corrected vision improved to 0.5 after 3 months, and FA 3 months after PDT showed that the subretinal neovascularization had disappeared (Figure 2a). At 3 months after PDT, the macula oedema had decreased and the dome-shaped, highly reflective lesion had disappeared on OCT (Figure 2b). At 6 months after PDT, the patient's visual acuity remained at 0.5 in the left eye.

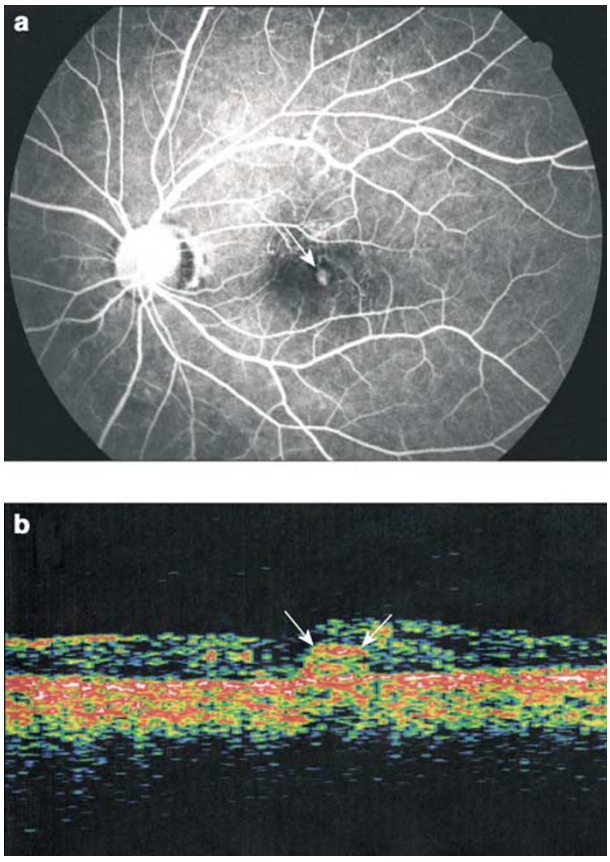

Figure 1 (a) Fluorescein angiogram showing a subretinal new vessel (white arrow). (b) Optical coherence tomogram showing the dome-shaped, hyper-reflective lesion with a relatively intact underlying retinal pigment epithelium (white arrows).

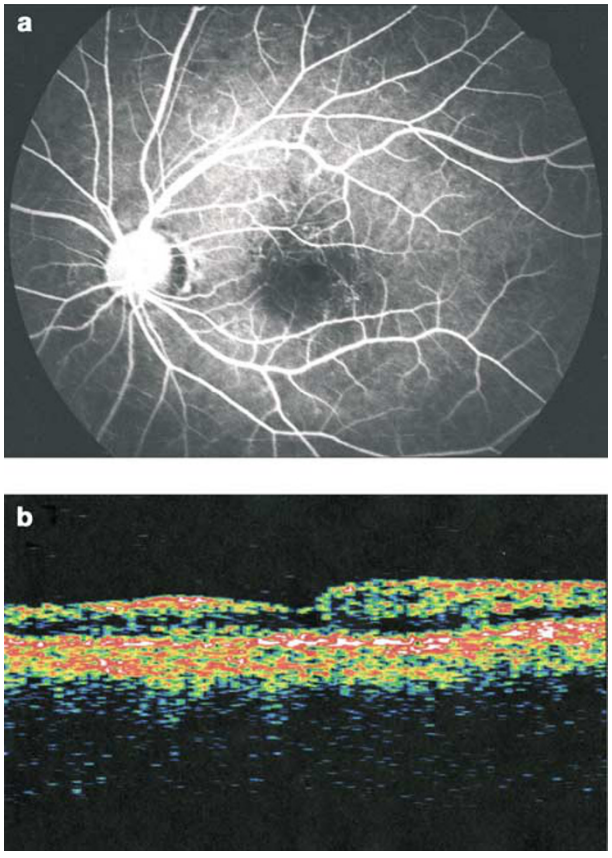

Figure 2 (a) Fluorescein angiogram 3 months after PDT showing the remaining microaneurysms and telangiectasia with the disappearance of subfoveal neovascularization. (b) Optical coherence tomogram 3 months after PDT showing no detectable hyper-reflective lesion and decreased retinal oedema.

Comment

Atypical choroidal neovascularization associated with radiation retinopathy has been reported in previous studies,[1,2] and subretinal neovascularization with compatible histologic findings has been reported.[3] In our case, subretinal neovascularization with terminal dilation originated from an abnormal retinal vasculature. The new vessel resulted in macular oedema accompanied by a decrease in visual acuity. Thus, PDT was indicated in this case. This technique damages the endothelial cell membranes, and may result in endothelial cell death or induce thrombosis with occlusion of the vessels.[4] The complete disappearance of unusual subretinal vessel was achieved with a single PDT trial. We consider this to be a significant result, and interpret it as being due to the immaturity of the new vessel.

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