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LETTER TO THE EDITOR

Enhanced depth imaging optical coherence tomography of the choroid in new-onset acute posterior scleritis

Kyoko Hirukawa · Hiroshi Keino · Takayo Watanabe · Annabelle A. Okada

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Dear Editor,
Posterior scleritis is a painful and potentially blinding inflammatory disease of the posterior segment of the eye [1]. Recently, spectral-domain optical coherence tomography (OCT) with enhanced depth imaging (EDI) has been used to visualize choroidal thickness in inflammatory disorders including Vogt–Koyanagi–Harada disease and posterior scleritis [2–5]. In this report, we describe two patients with new-onset acute posterior scleritis in whom choroidal thickening was observed by EDI-OCT.

The first patient was a 58-year-old woman referred to us for ocular pain and serous retinal detachment in the left eye. On examination, the best-corrected visual acuities (BCVAs) were 1.2 OD and 0.7 OS. The intraocular pressures (IOPs) were normal for both eyes, as was the remainder of the examination for the right eye. However, the left eye showed mild conjunctival injection and serous retinal detachment (Fig. 1a) without anterior chamber or vitreous cells. EDI-OCT (Heidelberg Engineering, Heidelberg, Germany) was performed by scanning along horizontal and vertical planes through the fovea. Subfoveal choroidal thickness was determined by measuring the distance between the outer border of the hyper-reflective line corresponding to retinal pigment epithelium and the outer border of the choroid, and was found to be 202 μm OD and 548 μm OS (Fig. 1b, c). Magnetic resonance imaging showed a thickened posterior eye wall on the left (Fig. 1d). Blood tests were positive for antinuclear antibodies; however, syphilis serologies, antineutrophil cytoplasmic antibody and the angiotensin converting enzyme level were negative or normal. A tuberculin skin test (TST) was also negative. The patient was tentatively diagnosed as having posterior scleritis of noninfectious etiology, and started on 20 mg/day of prednisolone. The serous retinal detachment resolved within 2 weeks of initiating therapy, and the choroidal thickness in the left eye gradually decreased (308 μm at 2 weeks; 276 μm at 1 month). There was no recurrence of ocular pain or inflammation during corticosteroid tapering. By 6 months, the prednisolone had been tapered to 5 mg/day, and the choroidal thickness was found to be 215 μm OD and 226 μm OS (Fig. 1e, f).

The second patient was a 65-year-old woman referred to us for bilateral ocular pain and injection. On examination, the BCVAs were 1.2 OD and 1.2 OS, with normal IOPs OU. Both eyes had conjunctival injection and retinochoroidal folds without anterior chamber or vitreous cells (Fig. 2a, b), and B-mode ultrasonography showed a thickened posterior eye wall bilaterally. Although the C-reactive protein was elevated, other systemic examinations were negative, including the TST. The patient was given a tentative diagnosis of bilateral posterior scleritis of noninfectious etiology, and started on 20 mg/day of prednisolone which was slowly tapered. EDI-OCT performed before treatment showed a subfoveal choroidal thickness of 447 μm OD and 446 μm OS (Fig. 2c, d). The ocular pain and injection improved, and the retinochoroidal folds resolved by 2 weeks. The choroidal thickness was noted to be 393 μm OD and 375 μm OS at 2 weeks, and 372 μm OD and 374 μm OS at 2 months (Fig. 2e–h).

EDI-OCT in these two patients with new-onset acute posterior scleritis showed marked choroidal thickening in affected eyes. Indocyanine green angiography has demonstrated diffuse zonal hyperfluorescence in the choroid of posterior scleritis, indicating increased choroidal vascular permeability in this disease state [6]. We previously reported that choroidal thinning develops after repeated episodes of posterior scleritis [5], suggesting that recurrent inflammation of the sclera can

K. Hirukawa · H. Keino · T. Watanabe · A. A. Okada (✉)
Department of Ophthalmology, Kyorin University School of Medicine, 6-20-2 Shinkawa, Mitaka, Tokyo, Japan 181-8611
e-mail: aokada@eye-center.org

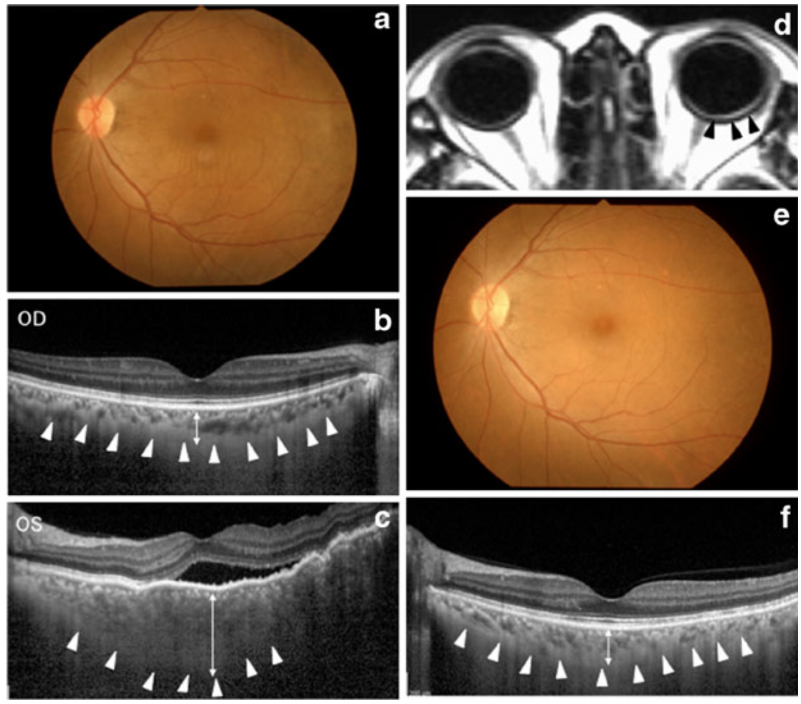

Fig. 1 Patient 1 with new-onset acute posterior scleritis in the left eye. **a** Fundus photograph of the left eye revealing serous retinal detachment and retinochoroidal folds. **b**, **c** Enhanced depth imaging optical coherence tomography (EDI-OCT) at presentation, showing the subfoveal choroidal thickness to be 202 μm OD and 548 μm OS. *White arrowheads* delineate the external choroidal margin. **d** Magnetic resonance imaging showing a thickened posterior eye wall OS (*black arrowheads*). **e**, **f** Fundus photograph and EDI-OCT image of the left eye after 6 months of treatment, at which time the subfoveal choroidal thickness was found to have decreased to 226 μm

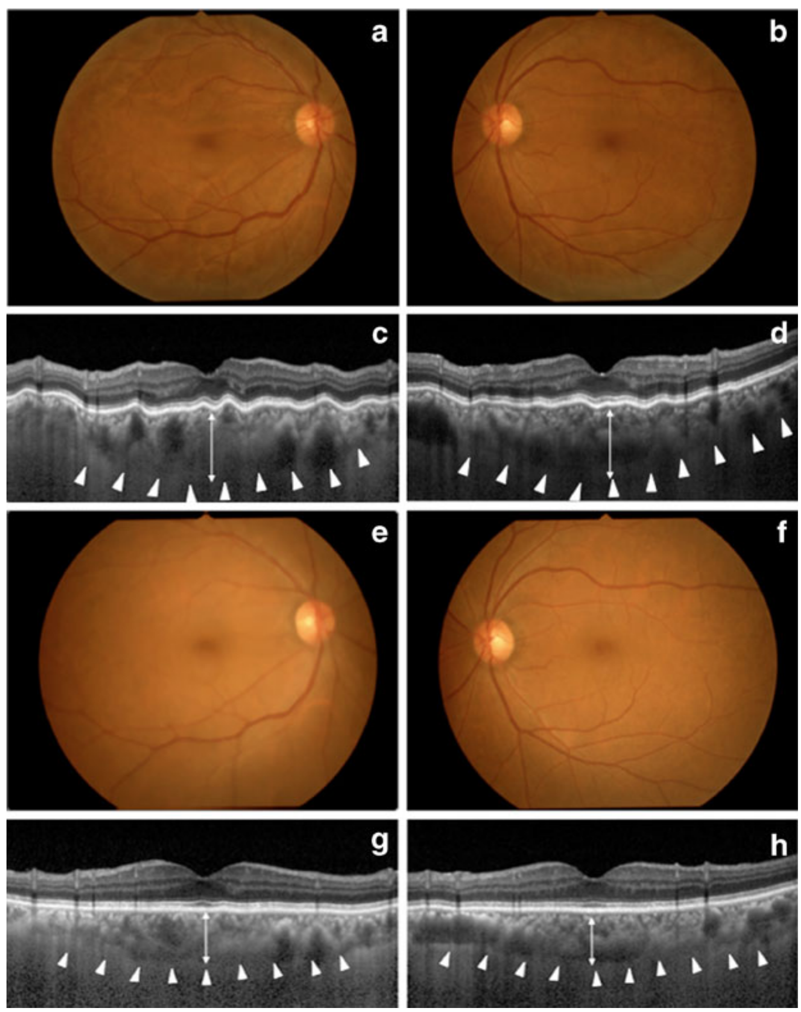

Fig. 2 Patient 2 with bilateral new-onset acute posterior scleritis. **a**–**d** Fundus photographs and EDI-OCT showing retinochoroidal folds in both eyes at presentation. *White arrowheads* delineate the external choroidal margin, and the subfoveal choroidal thickness was measured to be 447 μm OD and 446 μm OS. **e**–**h** Fundus photographs and EDI-OCT images after 2 months of treatment, at which time the subfoveal choroidal thickness had decreased to 372 μm OD and 374 μm OS

induce permanent atrophic alterations to adjacent choroid. Since decreased choroidal thickness correlated with improvement of the acute posterior scleritis with corticosteroid treatment in our patients, we believe that EDI-OCT may be helpful for evaluating inflammation severity and treatment response in this disease.

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