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Preretinal and Intraretinal Exudates in Familial Exudative Vitreoretinopathy

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Hand-held spectral-domain optical coherence tomography (SD-OCT) imaging (Bioptigen, Inc., Research Triangle Park, NC) and RetCam fundus photographs were obtained of a 6-month-old infant with familial exudative vitreoretinopathy. On dilated fundus examination and RetCam fundus photography, the patient appeared to have retinal exudates in the macula of the right eye (Figure 1) and in the fovea and along the superotemporal and inferotemporal arcades of the left eye (Figure 2). Hand-held SD-OCT imaging revealed that there was highly reflective preretinal material in the right eye (Figure 1) and both preretinal and intraretinal material in the left eye (Figure 2) corresponding to the areas of exudates seen in each eye. We hypothesize that this highly reflective preretinal and intraretinal material on SD-OCT is lipid based on the presence of multiple well-delineated hyperreflective lesions with rounded borders and shadowing, which are more common with lipid, and the golden color of these deposits on the fundus examination. Previous OCT studies have shown that exudates are hyperreflective and cast shadows.¹ Alternatively, dehemoglobinized blood could produce a light yellow deposit that would be hyperreflective and shadow on OCT or, less likely, gliosis could produce a pale lesion that was also hyperreflective, although with less shadowing, but neither would be likely to present in multiple isolated adjacent lesions as seen here.

The typical clinical phenotype of familial exudative vitreoretinopathy includes avascular peripheral retina, neovascular changes, vascular tortuosity and dilation, exudation, and vitreoretinal fibrosis.² The exudation has previously been characterized as being subretinal.³ There are no published examples of hand-held SD-OCT imaging in these patients and no previous descriptions of preretinal exudates. Contraction of an unusually adherent posterior hyaloid has been previously reported in familial exudative vitreoretinopathy patients, and the preretinal exudates in both eyes appear to be along sites of vitreoretinal adhesion, suggesting that the exudates are being pulled up with the hyaloid.⁴ The novel use of hand-held SD-OCT imaging in this case was instrumental in the localization of these exudates.

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Fig. 1. Horizontal (**A**) and vertical (**B**) Portable SD-OCT scans of the right eye showing preretinal (yellow arrows) hyperreflective material, likely lipid, casting shadows (blue arrow). Summed voxel projection image (**C**) and RetCam image (**D**) presenting localization of B-scans from (**A**) and (**B**). Lipid material can be observed on RetCam image on macular area. Of note, it was thought to be intraretinal on ophthalmoscopic examination.

Fig. 2. Portable SD-OCT scans of the left eye showing intraretinal (**A**) and preretinal (**B**) hyperreflective material (arrows). Summed voxel projection image (**C**) and RetCam photograph (**D**) presenting localization of B-scans from (**B**).