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Case images title: Lipemia retinalis: An ocular manifestation of a life threatening condition

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1. Case report

A 40-year-old asymptomatic male with no relevant past medical history presented with blurry vision in the left eye. He was found to have subretinal fluid on examination and optical coherence tomography (OCT) consistent with a diagnosis of central serous chorioretinopathy (CSCR), with no associated exogenous corticosteroid use or systemic etiology. His symptoms resolved, and he was then briefly lost to follow up. Six months later, he returned for a routine exam. Visual acuity was 20/20 in both eyes and anterior segment examination was unremarkable. On dilated fundus examination, while the retina appeared well perfused without ischemia, the arteries and veins were light-pink (Fig. 1 A, B). In the left eye, the subretinal fluid had resolved, with minimal retinal pigment epithelial irregularities associated with prior CSCR (Fig. 2 C, Fig. 3 C). A peripheral venous sample was grossly lipemic with milky strands (Fig. 1 C). Lipid panel revealed cholesterol of 302 mg/dL (normal 10–199) and hypertriglyceridemia to 6080 mg/dL (normal 10–149), which were within normal limits two months prior. A diagnosis of lipemia retinalis was made, and the patient was urgently referred to his primary care physician but was lost to follow up before identification of an underlying cause.

2. Discussion

Very severe hypertriglyceridemia, defined as $\geq$ 2000 mg/dL, is a result of primary (genetic) causes or a combination of secondary conditions. Primary causes are typically genetic mutations of lipid metabolism and present early in childhood. Common secondary causes include uncontrolled diabetes mellitus (74%), excessive alcohol use (10%), medication use (7%), and hypothyroidism (2%).[1] Ocular findings of hypertriglyceridemia include, but are not limited to xanthelasma, corneal arcus, iris and retinal xanthomas, and lipemic aqeuous.[2] Lipemia retinalis is a rare ocular finding associated with significantly elevated serum triglycerides. At serum levels of 2500–3499 mg/dL the peripheral vessels appear light-pink, at 3500–5000 mg/dL the posterior pole vessels appear light-pink, and at levels greater than 5000 mg/dL, the fundus itself may have a light pink tone.[2] The presence of triglyceride-laden chylomicrons in the plasma is the reason for the change in color of the vasculature and appears as hyperreflective material with an enlarged vessel caliber on OCT[3] (Fig. 3 B, D). Elevated triglyceride levels have been shown to contribute to a cascade of cardio-metabolic derangements and increase risk for future myocardial infarction, acute coronary syndrome, and stroke events.[1] Therefore, medical treatment that includes fibrates, nicotinic acid, diet change, and potentially exchange transfusion must be initiated urgently.

3. Conclusions

The diagnosis of lipemia retinalis is an indicator of a more serious underlying medical condition. The coinciding diagnosis of central serous chorioretinopathy may ultimately be related to concentration of lipids, chylomicrons, and their influence on the oncotic pressure across a

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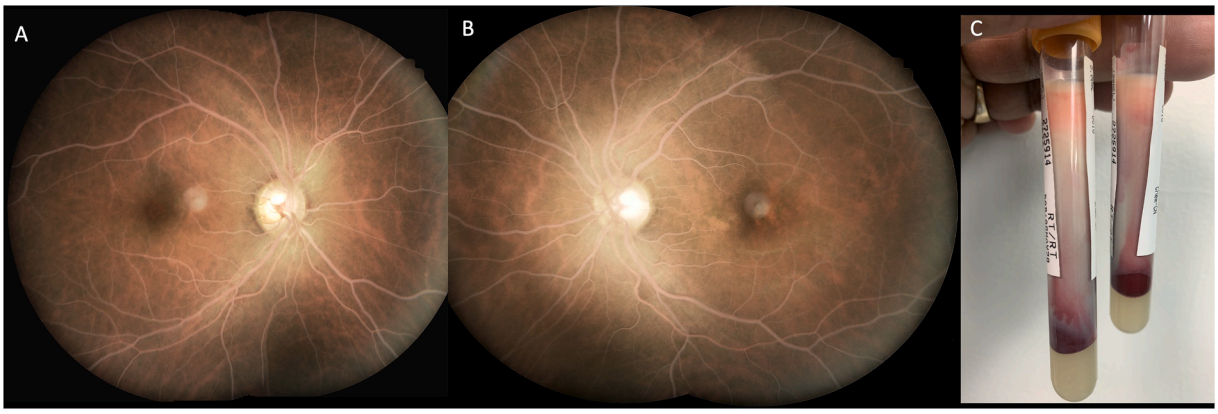

Fig. 1. Fundus photos of the right eye (A) and left eye (B) demonstrating a whitish pink appearance of the retinal vessels. A peripheral venous sample (C) appears grossly lipemic, with a triglyceride level of 6080 mg/dL (normal 10–149), confirming a diagnosis of lipemia retinalis. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

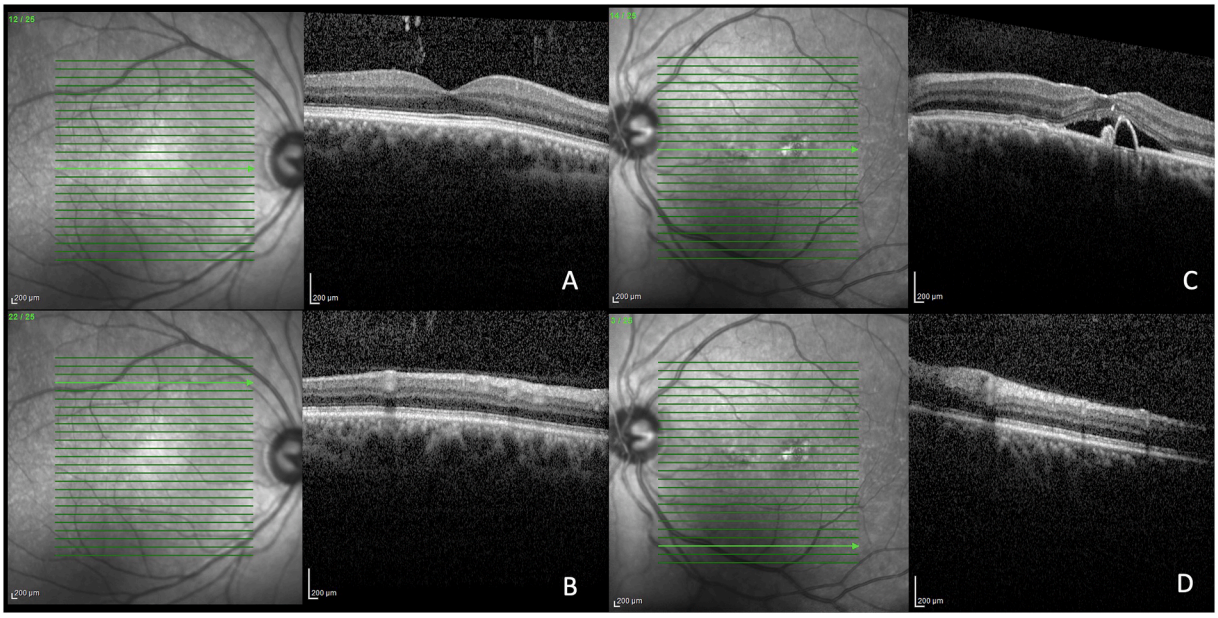

Fig. 2. Optical coherence tomography (OCT) images of the right eye through the fovea (A) and superior retinal vessels (B). OCT through the fovea of the left eye demonstrates subretinal fluid, a localized pigment epithelial detachment, and a thickened choroid, consistent with a diagnosis of central serous chorioretinopathy (CSCR) (C). Left eye OCT with normal appearing retinal vessels in the inferior vascular arcade (D).

presumably hyperpermeable choriocapillaris. Additionally, our patient had normal triglyceride levels two months prior to the elevation, making this an unusually acute presentation prior to any systemic or even ocular symptoms. The ophthalmologist has a unique role in the care of these patients given the asymptomatic nature of the disease early on and has the potential to initiate life-saving intervention.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

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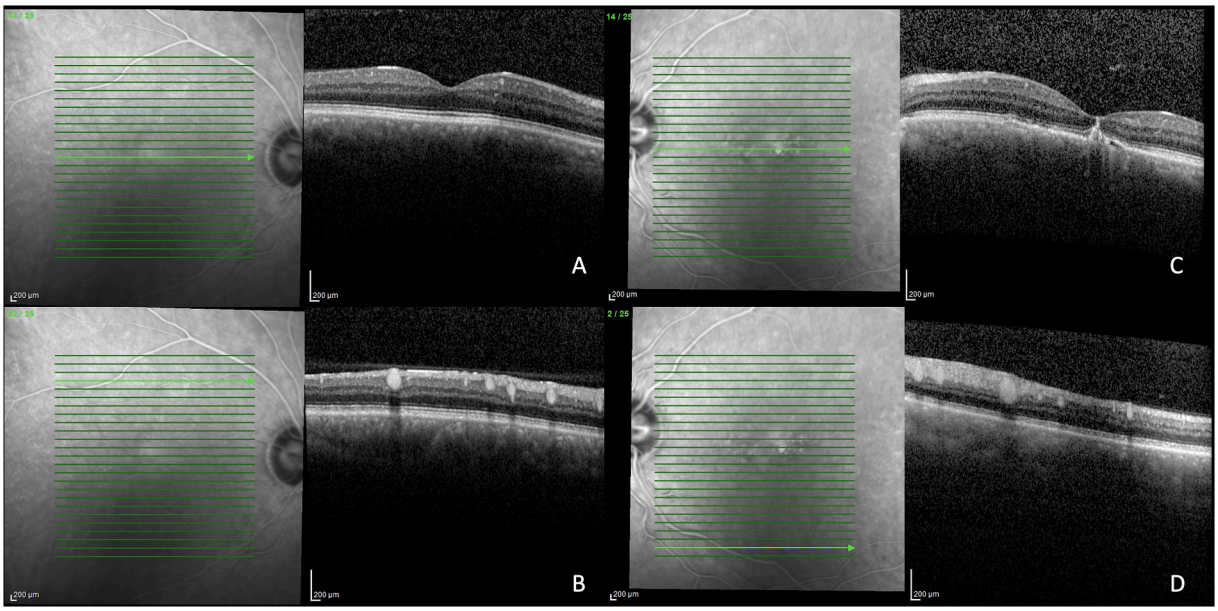

Fig. 3. Optical coherence tomography (OCT) images at 6-month follow up. In the right eye, OCT through the fovea (A) and the superior vascular arcade (B) are notable for enlarged hyperreflective vessels. In the left eye, OCT shows interval resolution of a focal pigment epithelial detachment with subretinal fluid (C), which was consistent with a diagnosis of central serious chorioretinopathy (CSCR). Enlarged hyperreflective vessels are also notable in the inferior arcade in the left eye (D). These findings are correlated with white appearing vessels on corresponding near-infrared images, consistent with a diagnosis of lipemia retinalis.

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