A 46-Year-Old Female with Creamy-White Blood Vessels

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Introduction:

A 46 year old female with a history of insulin dependent diabetes mellitus, hypertension and hyperlipidemia presents for an evaluation for diabetic retinopathy with some fuzzy vision for the past 3 months. No other visual symptoms reported

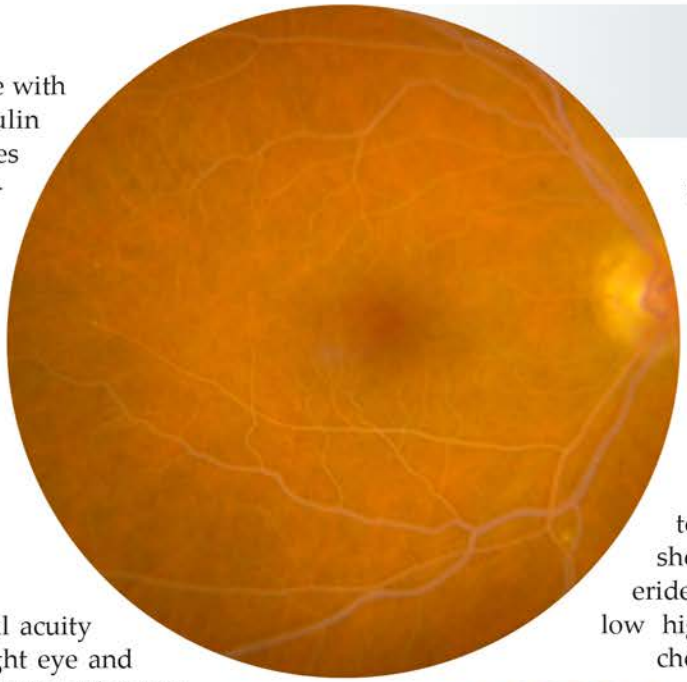


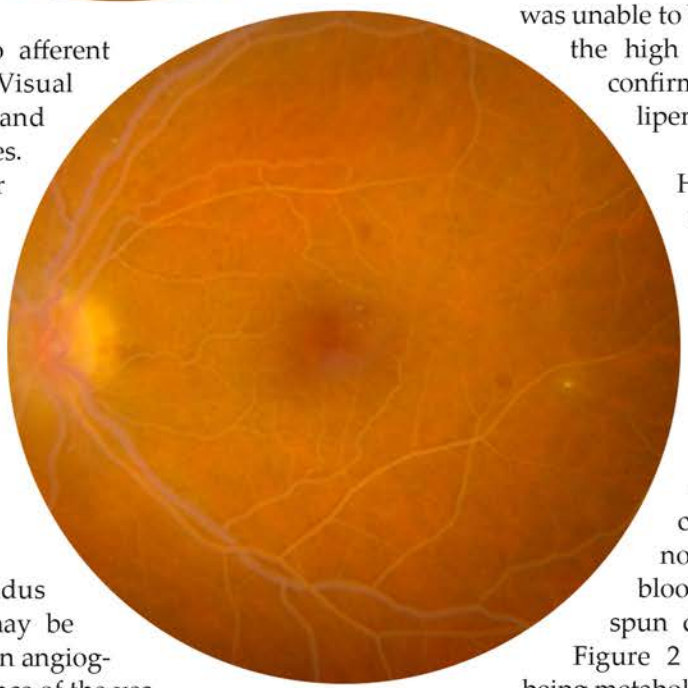
Figure 1A. Fundus photos show vessels that were not red but instead appeared a milky white.

Exam:

Best corrected visual acuity was 20/40 in the right eye and 20/50 in the left eye. Intraocular pressures were within normal limits. No afferent pupillary defect was appreciated. Visual fields were full to confrontation and extraocular motility was full in both eyes. Anterior segment exam was notable for a posterior chamber intraocular lens in both eyes.

Dilated fundus examination revealed normal optic nerve with a 0.2 cup in both eyes. Macula had rare microaneurysms. The vessels were not red but instead appeared a milky white throughout as seen in the fundus photos of both eyes (Figure 1A).

Figure 1B also shows red free fundus images of both eyes. Initially, one may be fooled into thinking these are fluorescein angiography images given the bright appearance of the vessels. However, fluorescein angiography was not performed on this patient. The bright vessels are abnormal given vessels are normally dark in a red free images.



Discussion:

Given the patient's history of hyperlipidemia, the diagnosis of lipemia retinalis was most likley. She was not on any lipid lowering therapy. Her primary care provider was contacted to obtain a lipid panel. The lipid panel showed significantly elevated triglycerides of 799 mg/dL (normal 0-150 mg/dL), low high-density lipoproteins, and normal cholesterol. Lowdensity lipoprotein level was unable to be calculated due to the high triglycerides. This confirmed the diagnosis of lipemia retinalis.

Hyperlipidemia is a risk factor for premature atherosclerosis that can have significant morbidity and mortality. Lipemia with a high concentration of chylomicrons can be visually noticeable after a blood sample has been spun down as shown in Figure 2 but resolves after being metabolized. Although cardiovascular, skin and digestive manifestations of hyperlipidemia are well-known in the

medical community, the ocular manifestations of hyperlipidemia are uncommon. In clinic, signs of hyperlipidemia that are observed include xanthelasma, corneal arcus and retinal artery occlusions secondary to hollenhorst plaque.

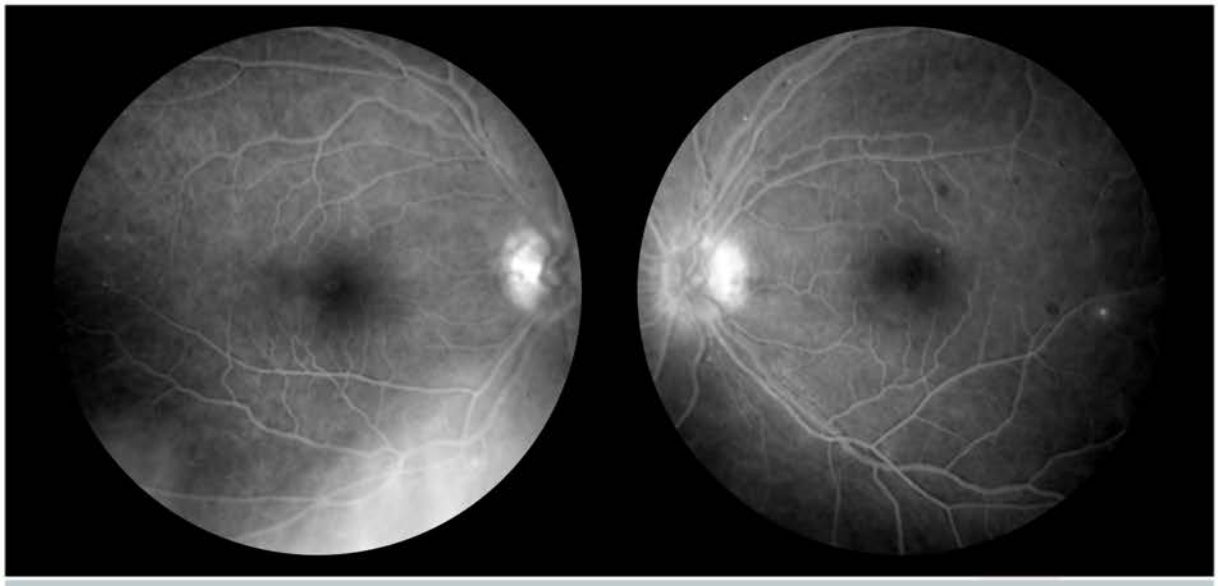


Figure 1B: Monochromatic photos initially look like fluorescein angiography images given the vessels appear bright. However, these images are actually red-free photos in which the vessels are abnormal given the bright appearance. In a normal red-free image, vessels are dark.

Lipemia retinalis is an unusual and rare manifestation of hypertriglyceridemia that was first described by Heyl in 1880.[1] Retinal vessels become cream colored due to the scattering of light by high concentrations of triglycerides leading to triglycerides in chylomicrons.[3,2] Hypercholesterolemia alone does not produce this vascular appearance.[4] Rabbit models show that normalization of serum cholesterol alone does not reverse fundus changes.[4] Normalization of all lipid levels, specifically triglycerides, typically results in reversal of fundus changes as shown in many case reports. Typically visual function remains unaffected. [1,2-6]

Unfortunately, our patient was lost to follow-up.

Figure 2. Lipemic blood sample after ingestion of fatty meal. Left sample with normal serum, right sample with turbid serum from lipemia. (Credit: http://truelyfefitness.com/wp-content/uploads/2013/04/Lipemias.jpg)

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