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Case Report

Lipemia retinalis: Case report

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ABSTRACT

Lipemia retinalis is a condition where the retinal blood vessels appear salmon pink to creamy white in color. It typically happens in individuals with either primary or secondary hyperlipidemia. This distinct appearance is caused by the presence of circulating chylomicrons in the blood.

A 56-year-old female presented with dense, yellowish hypopigmented patches on the upper eyelids of both eyes. She was a known case of hypertension and hyperlipidaemia on irregular medication. The examination revealed lipemia retinalis with creamy coloured vessels. The patient was started on lipid lowering drugs.

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1. Introduction

Lipemia retinalis was first described by Heyl in 1880 and is considered an unusual ocular finding.¹ It occurs in the patient with primary or secondary hyperlipidemia and characterized by salmon pink to creamy white colour of retinal vasculature. The characteristic appearance is due to circulating chylomicrons.²

It begins in the peripheral the retinal vessels.³ It may not affect the vision initial stages, but may cause diminution of vision in advanced stages. Various eye signs can manifest as a result of changes in blood lipid levels. Recognizing these signs is crucial as they indicate primary or secondary hyperlipoproteinemias. We are presenting an intriguing case of lipemia retinalis.

2. Case Report

A 56-year woman visited the ophthalmology outpatient department reporting a hypopigmented patch on both upper eyelids for the one past month, accompanied by eye irritation and dryness. She also mentioned experiencing

decreased vision in her left eye for three months. The patient had a medical history of hyperlipidemia on irregular medication, hypertension, and diabetes mellitus. Her best corrected visual acuity was 6/6 in both eyes. Anterior segment examination showed large patch of xanthelasma on both eye upper lid, small patches medial to medial canthus and inferior lid periorbital skin (Figure 1). Both eye fundus examinations showed creamy colored vessels (Figure 2). A complete lipid profile was conducted and revealed elevated serum cholesterol levels. She also had dyslipidemia, characterized by high LDL (low density lipoprotein) and low levels of HDL (high density lipoprotein) cholesterol (Table 1). The blood sample appeared turbid, suggesting a high concentration of triglycerides. Consequently, the patient was referred to the Department of Internal Medicine for further investigation and treatment regarding hyperlipidemia. She was reinitiated on statin lipid-lowering therapy with atorvastatin 40 mg daily.

3. Discussion

We are presenting a case of lipemia retinalis in a patient with hyperlipidemia and hypertension. Lipemia retinalis is linked to primary or secondary hyperlipoproteinemia. Secondary

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Table 1: Showing lipid profile of patient

Lipid Profile	Value in mg/dl	Reference Value mg/dl
Serum Cholesterol	268	<240
LDL (Low density lipoprotein)	201mg/dl	60–130
HDL (High density lipoprotein)	29mg/dl	>40 mg/dl



Figure 1: Showing xanthelasma upper lid both eyes



Figure 2: Fundus of both eyes showing creamy retinal vessels

hyperlipidemia can be caused by systemic conditions such as diabetes mellitus, nephrotic syndrome, hypothyroidism, alcoholism, and biliary obstruction.⁴

“The National Cholesterol Education Program (NCEP) expert panel identifies lipemia retinalis as one of the outcome of hypertriglyceridemia”.⁵ This condition is characterized by the presence of creamy white to salmon pink coloration in the retinal blood vessels due to the accumulation of chylomicrons, which are large triglyceride rich lipoproteins. Lipemia retinalis serves as a visual indicator of underlying hypertriglyceridemia and can be observed during ophthalmic examination.¹ The findings of lipemia retinalis can vary significantly from day to day, and this variability is closely linked to the triglyceride levels in the blood.⁶ As per the NCEP, the ideal LDL cholesterol level should be below 100 mg/dL, while levels exceeding 190 mg/dL are considered very high.⁵ In the current study, the patient exhibited an elevated LDL cholesterol level of 201 mg/dl, surpassing the normal range of 60–130 mg/dl.

Other ocular manifestations of hyperlipidemia include xanthelasma, retinal artery and vein occlusions, ischemic optic neuropathy, cataracts, and even dry eye syndrome.^{6–8} Less frequently encountered ocular manifestations of

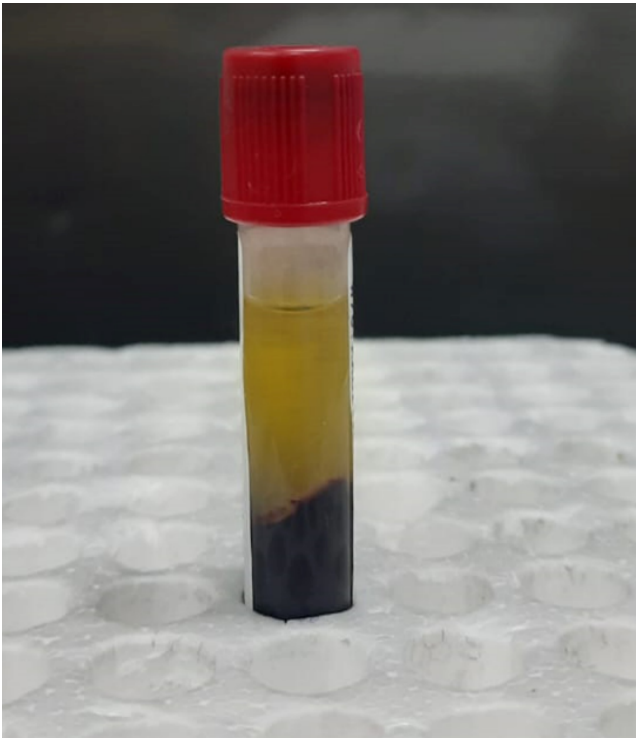


Figure 3: Showing turbid serum

hyperlipidemia include iris xanthomas, retinal xanthomas, lipid keratopathy, and adult-onset Coats’ disease.⁹ Isolated xanthelasma suggests abnormal blood lipid levels in 30–50% of cases. Eruptive xanthomas indicate triglyceride levels exceeding 1500 mg%, whereas lipemia retinalis occurs when triglyceride levels surpass 2500 mg%.^{3,6} Our patient had extensive xanthelasma both eye upper lid and patches of xanthelasma on lower lid and upper cheek (Figure 1). Our patient triglyceride levels were not much higher as she was on lipid-lowering therapy atorvastatin on and off.

In cases of severe hypertriglyceridemia, hypertension is present in approximately 31.3% of instances.^{10,11} In the current case, the patient exhibited both hypertension and elevated serum lipid levels. Hyperlipidemia has the potential to elevate blood viscosity, induce atherosclerotic alterations in retinal vessels, and ultimately lead to retinal ischemia.¹² Nagra Pk reported a patient with untreated hyperlipidemia presenting with central retinal vein occlusion (CRVO) in setting of lipemia retinalis which was managed with fenofibrate. Fundoscopy indicated a

remarkable transformation in the appearance of her retinal vessels, which had returned to their normal reddish hue.⁶

Lipemia retinalis typically does not pose a threat to vision. In the current study, the patient maintained a best corrected visual acuity of 6/6 in both eyes. Typically, individuals with lipemia retinalis retain good vision, and the retinal changes associated with the condition resolve once serum lipid levels are decreased.^{6,10} While lipemia retinalis doesn't directly impact visual acuity, Lu et al. found reduced electroretinography responses, specifically decreased a and b waves in both cone and rod responses.¹³

Mild hyperlipidemia affects thinner peripheral retinal vessels, while severe hyperlipidemia results in changes in both peripheral and central retinal vessels.¹⁴ According to the staging system proposed by Vinger and Sachs, lipemia retinalis is classified into three grades. Grade I (Early LR) is characterized by a white and creamy appearance of peripheral retinal vessels. Grade II (moderate LR) involves creamy-colored vessels extending towards the optic disc. Grade III (marked LR) presents with a salmon-colored retina, where all vessels exhibit a milky color.⁹ Lipid disorders leading to lipemia retinalis increase the risk of life-threatening atherosclerotic diseases.^{15–17} Characteristic retinal findings may serve as the sole indication of lipid disturbances, which are frequently symptomless. Familiarity with this condition enables ophthalmologists to identify it early and provide proper guidance for further treatment. Timely recognition and referral are crucial to prevent complications. Following lipid-lowering treatment, serum cholesterol and triglyceride levels normalize, leading to the resolution of retinal pathology associated with lipemia retinalis.

4. Conclusion

Lipemia retinalis results from hyperlipidemia and can be the sole indicator of asymptomatic but potentially life-threatening lipid disturbances. Ophthalmologists should recognize this rare condition and promptly refer affected patients to a physician. Lipid-lowering therapy can normalize fundus appearance and restore visual acuity.

5. Source of Funding

None.

6. Conflict of Interest

Authors have no conflicts of interest.

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