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Original article

Hyperlipidemia secondary to acitretin therapy for lamellar ichthyosis associated with a NIPAL4 mutation improves on a plant-based diet and relapses on a standard Western diet

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SUMMARY

Oral retinoids are commonly prescribed for many dermatological conditions and may induce hyperlipidemia. We document the case of a 35-year-old man taking acitretin for congenital lamellar ichthyosis associated with a homozygous deleterious mutation in NIPAL4 who developed retinoid-induced hyperlipidemia that responded dramatically to a whole-food plant-based (WFPB) diet. On presentation, his diet consisted of chicken, fish, low fat meats and dairy, grains, and some fruits and vegetables. He then adopted a WFPB diet without making changes to his medications. His serum lipid levels dropped and his exercise capacity improved. Five months later, after discontinuing the plant-based diet and returning to his baseline diet, his hyperlipidemia returned and persisted despite adjustments to his medications. After a year and a half, the patient again adopted a plant-based diet and his lipid levels fell sharply again. A WFPB diet helped improve and control serum lipid levels in a patient with retinoid-induced hyperlipidemia. Future interventions should focus on ways to help patients successfully adopt and maintain a WFPB diet, as increased adherence to a healthy lifestyle is associated with greater health benefits.

Introduction

Oral retinoids may induce hyperlipidemia [1]. We describe a 35-year-old man with lamellar ichthyosis and hyperlipidemia secondary to acitretin, whose serum lipid levels responded dramatically to a whole-food plant-based (WFPB) diet.

Case report

A 35-year-old man with congenital lamellar ichthyosis presented with drug-induced hyperlipidemia, dyspnea on exertion (DOE), previous cigarette smoking, and a family history of ischemic heart disease; he was referred for management of hyperlipidemia. The dermatological findings involving his palms and soles prior to and during oral retinoid therapy are detailed in Figs. 1–3. Genetic analysis (GeneDx, Gaithersburg, MD) revealed the patient was homozygous for the pathogenic G23OR variant in the NIPAL4 gene, known to be consistent with autosomal recessive congenital ichthyosis (ARCI), type 6 (OMIM #612281). His medications included fenofibrate 145 mg daily, acitretin 20–40 mg daily, and urea 40% lotion. On presentation, his diet, which may be described as a "healthy Western diet", consisted of chicken, fish, low-fat meats and dairy, grains, some fruits and vegetables, and limited processed foods, including limited white flour, and snack foods. His fasting serum lipid profile revealed a total cholesterol level (TC) of 9.51 mmol/L, low density lipoprotein level (LDL) of 6.66 mmol/L, high density lipoprotein level (HDL) of 0.93 mmol/L, and triglycerides (TG) of 9.56 mmol/L (Table 1, 3/5/13). Given his hyperlipidemia, the patient was encouraged to

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Fig. 1. Palmar (a) and plantar (b) hyperkeratosis associated with lamellar ichthyosis before acitretin therapy.

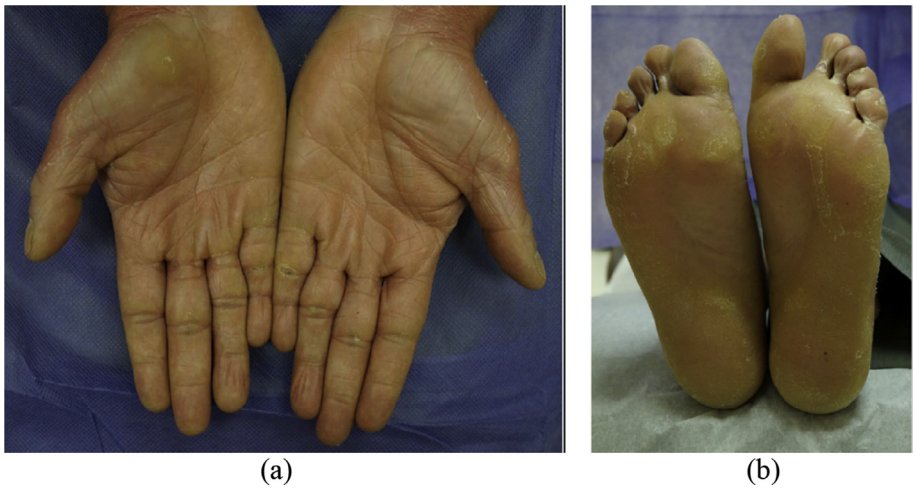

Fig. 2. Dramatic regression of palmar (a) and plantar (b) hyperkeratosis associated with lamellar ichthyosis after acitretin therapy.

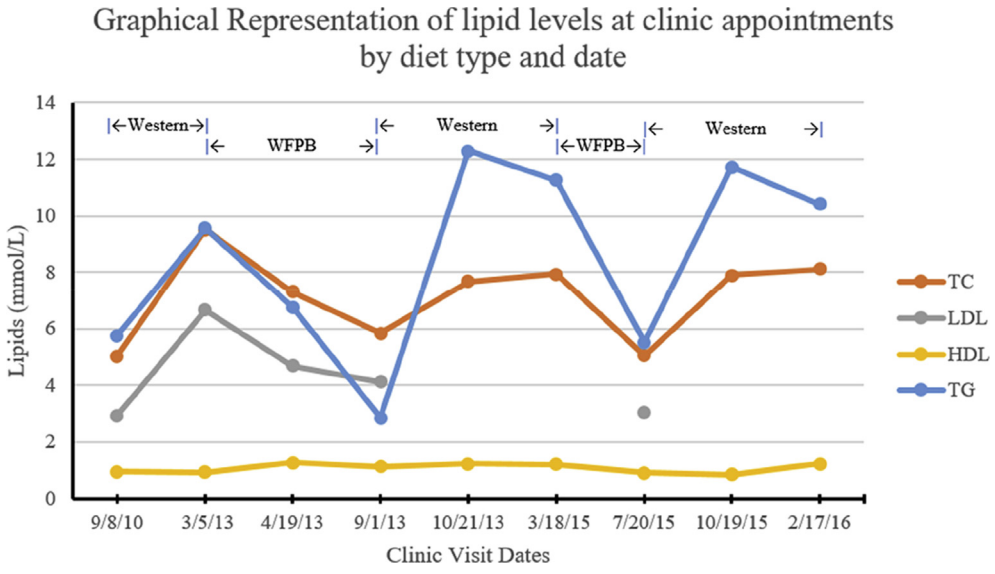

Fig. 3. Lipid levels by diet type and date.