Exogenous Ochronosis with Use of Low Potency Hydroquinone in A Caucasian Patient

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Abstract

Exogenous ochronosis is a rare condition of paradoxical skin darkening seen with use of the skin lightening agent hydroquinone. Incidence has been highest in patients with darker skin types, prolonged use, and higher concentration treatment, but has been reported with low dose (2%) as well. Here we present a rare case of exogenous ochronosis, with resultant skin and nail hyperpigmentation, occurring in a Caucasian female using 3% hydroquinone cream over an eighteen-month period.

Keywords

Exogenous, Ochronosis, Nail hyperpigmentation, Hydroquinone, Caucasian

Introduction

Exogenous ochronosis is a rare condition that presents as maculopapular paradoxical hyperpigmentation seen after use of skin lightening agents containing hydroquinone. Most cases have been seen in patients with darker skin types with prolonged use of high potency topicals. We however, present a Caucasian patient who developed exogenous ochronosis after 18 months use of a non-prescription 3% strength hydroquinone cream. Treatment for this condition is difficult and thus physician awareness with early recognition and discontinuation is paramount to limiting what may progress to permanent discolorations.

Case Report

A 53 year old Caucasian lady presented complaining of an asymptomatic eruption of tiny grey-black maculopules around her eyes (Figure 1). This condition had been present and gradually worsening for about a year. She denied any skin lesions like this elsewhere, but had noted an orange-brown discoloration of her fingernails the past six months (Figure 2). She enjoyed excellent general health and past medical history was non-contributory. Questioning about topical hygiene and cosmetic product use revealed that she had been using a non-prescription 3% hydroquinone cream to lighten “dark circles” under her eyes for about eighteen months. A punch biopsy was taken of the periorbital speckles. Pathology

Figure 1: The speckles are noted to be tiny, black papules

Figure 2: This nail hyperpigmentation is noted to be on the top surface of the nails
showed the dermis to have scattered yellow-orange-brown (so called “ochre colored”) particles, some with a banana shape and many with a more spherical structure. A brown glass appearance characteristic of ochronosis was made. Attempts to find an effective laser to non-ablative resolve this condition were made by treating small test areas with the following lasers using various fluences and spot sizes: 585 nm and 595 nm pulsed dye laser, Q-switched Nd: YAG laser at 1064 nm and 532 nm, and Q-switched 755 nm Alexandrite laser. All of these tests failed to show improvement. We planned to next try fractionated CO2 and Er:YAG laser lasers, but the patient refused and was then lost to follow-up.

Discussion

Ochronosis is a rare condition resulting from deposition of homogentisic acid into the dermis of the skin [1,2]. There are two types of ochronosis, exogenous ochronosis being distinct from endogenous ochronosis or alkaptonuria. Endogenous ochronosis is a rare autosomal recessive metabolic disorder in which homogentisic acid oxidase is deficient. Homogentisic acid is broken down by the enzyme homogentisic acid oxidase and is a hydroquinone metabolite of tyrosine. With decreased enzyme activity, the excess homogentisic acid irreversibly binds to dermal fibrillar collagen, which results in skin pigmentation [3], cartilage deposition, and darkening of the urine after prolonged exposure to air. After the fourth decade of life the major manifestation involves a series of superficial, ablative modalities in hopes of ablatively resolve this condition were made by treating small test areas with the following lasers using various fluences and spot sizes: 585 nm and 595 nm pulsed dye laser, Q-switched Nd: YAG laser at 1064 nm and 532 nm, and Q-switched 755 nm Alexandrite laser. All of these tests failed to show improvement. We planned to next try fractionated CO2 and Er:YAG laser lasers, but the patient refused and was then lost to follow-up.

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The incidence of exogenous ochronosis is rare in the United States, with less than 25 reports from 1985 to 2010. This reported incidence suggested one case per 300-450 million units of hydroquinone sold in the U.S. [5]. Worldwide, the largest population affected has been South African blacks, being described in up to 35% of the population. This report was thought directly related to high concentrations of hydroquinone in bleaching creams prior to 1984. It is important to note that this reaction can occur in any patient regardless of skin type. Exogenous ochronosis is most commonly seen after use of skin lightening agents containing hydroquinone, but a similar-appearing condition has also been reported after contact with resorcinol, phenol, mercury, picric acid, and use of antimalarials [6]. Use of hydroquinone has been part of treatment for both post inflammatory hyperpigmentation and melasma for years [7,8]. Use of hydroquinone for melasma is maintained for prolonged periods and shows improved efficacy with higher dose (4% or greater). Incidence of exogenous ochronosis is directly related to both dose and duration of use, although occurrence with 2% topical hydroquinone treatment has provided emphasis of duration more than dosage [3]. Involvement of exogenous ochronosis is limited to skin after direct topical exposure and grossly appears as symmetric, hyperchromic, blue-gray macules and papules in sun-exposed areas [9].

In summary, despite hydroquinone being an effective treatment for multiple dyschromias, its use is associated with the rare complication of exogenous ochronosis. Patients using hydroquinone agents should be warned of this potential side effect and monitored regularly as treatment is limited and early discontinuation of the offending agent is central to the long-term outcome of exogenous ochronosis [1].

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