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Camouflage Therapy for Post-Inflammatory Hyperpigmentation on the Face Caused by Fixed Drug Eruption

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ABSTRACT

Camouflage therapy has been used for permanent contour and pigmentary defects including telangiectasias, vitiligo, lentigines, nevi, atrophic scars and burn scars. The goal of the therapy is to provide new and innovative ways to normalize the appearance of patients with abnormalities. A variety of cosmetic techniques are used to assist these patients in making their irregularities as inconspicuous as possible. Post-inflammatory hyperpigmentation is a frustrating problem afflicting many dermatology patients, particularly on the face. Here we report a case of successful cosmetic camouflage using the theory of complementary colors of light in a patient with post-inflammatory hyperpigmentation of the face caused by fixed drug eruption. Our case report supports the idea that camouflage for patients with post-inflammatory hyperpigmentation on the face caused by fixed drug eruption improves their quality of life and also supports the idea that camouflage should be part of the after care for patients who have received patch testing.

Keywords: Cosmetic Camouflage; Post-Inflammatory Hyperpigmentation; Complementary Colors

1. Introduction

Makeup was introduced as a medical aid only after the Second World War in order to assist the rehabilitation of severely burned pilots [1]. Nowadays camouflage therapy is used for permanent contour and pigmentary defects including telangiectasias, vitiligo, lentigines, nevi, atrophic scars and burn scars [1]. The application and adherence processes for these conditions are different from the typical application of makeup for beauty, and require new techniques. Many techniques of camouflage therapy have been investigated. For example, the technique of camouflaging a large area of vitiligo is to blur a border between the vitiligo and the adjacent normal skin aiming to decrease the contrast [2]. Qualified camouflage therapists are medically trained skin care professionals, with both clinical knowledge and therapeutic skill.

Scars and irregular pigmentation can change a patient's entire physical appearance and thereby lower self-esteem. By using the cosmetic techniques, skin blemishes can be reduced or even completely disguised. Clinical studies have shown that camouflage techniques can improve patients' quality of life (QOL) [3-5]. Here we report a case of successful cosmetic camouflage using the theory of complementary colors of light in a patient with post-inflammatory hyperpigmentation of the face caused by fixed drug eruption.

2. Case Report

A 27-year-old woman had a 3-year history of repeated episodes of eruption with vesicles on her left lower eyelid and right upper lip every menstrual period. She reported that she usually took an OTC analgesic to relieve menstrual pain. Thus, a fixed drug eruption caused by the analgesic was suspected. The analgesic contained ibuprofen, allylisopropylacetylurea and anhydrous caffeine. Topical challenge by an occluded patch test with the analgesic (50% pet, Nehazetor®, Sanyu, Japan) on the eruptive area resulted in positive reactions, while patch testing on the non-eruptive area revealed negative results. We diagnosed her condition as a fixed drug eruption due to the analgesic. She did not want further investigation,

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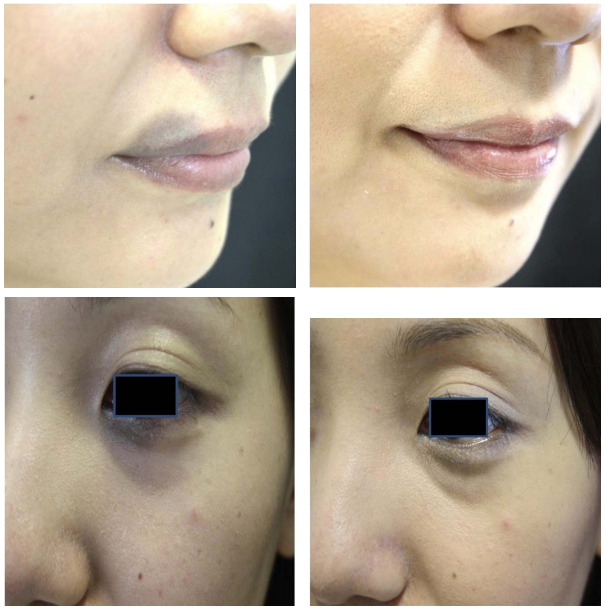
so we did not perform patch tests with components of the analgesic and instructed her not to take it in the future. She tried to camouflage the bluish pigmentation on her face by herself, however, she found it was difficult to cover and her camouflage easily came off. Therefore, she decided to participate in a medical camouflage lesson at our camouflage clinic.

In the camouflage lesson, she first covered the hyperpigmentation with "Perfect Cover" (Shiseido, Tokyo, Japan), an easy-to-use liquid foundation currently available only in Japan. It contains a special thin film material (titanium oxide coated by ultrafine iron oxide particles) called Light-Filter-Powder. Next, she stabilized the cover with "d program smooth up foundation" (Shiseido, Tokyo, Japan), and covered her lips with lipstick. The patient was satisfied with the results. The figures show her face both before (**Figure 1(a)**) and after the application of camouflage (**Figure 1(b)**).



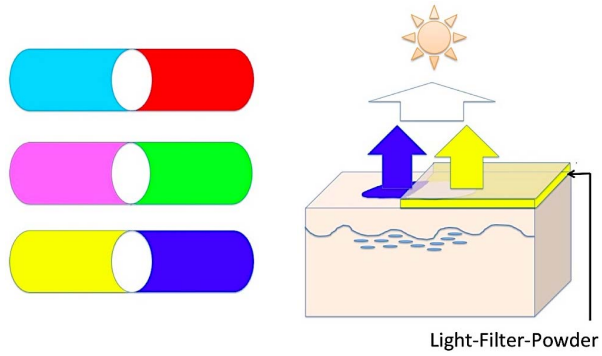
(a) (b)

Figure 1. Clinical pictures before (a) and after (b) the application of camouflage to hyperpigmentation of the face. (a) Hyperpigmentation on her left lower eyelid, right upper lip; (b) "Perfect Cover" and "d program smooth up foundation" camouflaged the hyperpigmentation. We could no longer discern where she had hyperpigmentation of the face.

3. Discussion

The hyperpigmentation caused by fixed drug eruption is due to melanophages in the dermis, and is known as dermal hypermelanosis. It also occurs in lichen planus, cutaneous lupus erythematosus, and other post-inflammatory hyperpigmented dermatoses. In dermal hypermelanosis, there is a destruction of basal keratinocytes [6]. These degenerating keratinocytes contain large amounts of melanin which are eventually phagocytosed by macrophages (melanophages) in the upper dermis [6]. These melanophages accumulate at the site of injury producing a blue-gray discoloration [6].

Post-inflammatory hyperpigmentation can have a negative impact on a patient's quality of life. Camouflage therapy is used to conceal lesions that are not amenable to medical or surgical treatments. A good cosmetic cover must appear natural, greaseless, opaque, waterproof, long-lasting, 100% fragrance free and easy to apply [1]. It should also be applicable to all skin types, non-irritating, non-sensitizing, non-photosensitizing, and non-comedogenic [1]. The camouflage technique used with this patient employs the theory of complementary colors of light. Complementary colors are pairs of colors that are of "opposite" hue. For example, red and cyan, green and magenta, or blue and yellow are complementary colors and when mixed in the proper proportion, they produce a neutral color such as white (especially when in light) (**Figure 2(a)**). The Light-Filter-Powder contained in the liquid foundation selectively allowed yellow light to penetrate and thereby faded the bluish melanin deposition [7] (**Figure 2(b)**).



(a) (b)

Figure 2. The schematic diagram of the theory of complementary colors of light. (a) When complementary colors are mixed, they produce a neutral color such as white; (b) Through the Light-Filter-Powder, we see the bluish pigmentation in the upper dermis looked white because blue mix with yellow in the skin.

Our camouflage clinic typically treats patients with vitiligo (and also atrophic scars, burn scars, telangiectasias, nevus of Ota, etc.) and provides them with camouflage lessons on how to cover their skin lesions [2,5] using various camouflage techniques. This is the first trial in our hospital to provide camouflage lessons for a patient with post-inflammatory hyperpigmentation on the face caused by fixed drug eruption and it was a good indication of possible effectiveness of the technique. Even a patch test used for diagnosis can accelerate post-inflammatory hyperpigmentation. Our case report sup-

ports the idea that camouflage for patients with post-inflammatory hyperpigmentation on the face caused by fixed drug eruption improves their quality of life, and that camouflage should be part of the after care for patients who have received patch testing.

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