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NOTE

Intense Pulsed Light Was Effective for Solar Lentigines and Ephelides

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A noncoherent, broadband, intense pulsed light source has been used for the symptoms of photoaging skin as a nonablative method. The purpose of this study is to investigate the efficacy and tolerability of intense pulsed light in solar lentigines and ephelides on the face. An open study was performed in patients with solar lentigines and ephelides who received three to five treatments of intense pulsed light. Forty-eight percent of patients had more than 50% improvement and 20% had more than 75% improvement. In the group of solar lentigines, 40% of patients showed more than 50% improvement and 16% did more than 75% improvement. Patients with solar lentigines+ephelides and ephelides responded remarkably with 75% and 71% of patients having more than 50% improvement, respectively. Intense pulsed light was well tolerated and may be a new modality for the therapy of solar lentigines and ephelides.

key words: intense pulsed light, solar lentigines, ephelides

INTRODUCTION

Intense pulsed light, a broadband visible light emitted from a noncoherent, nonlaser, filtered flashlamp, has been developed as a new noninvasive method. Intense pulsed light is effective for superficial rhytides, wrinkling, skin coarseness, irregular pigmentation, pore size, and telangiectasias [1-3]. In this study, we performed an open study of intense pulsed light for the treatment of solar lentigines and ephelides. Intense pulsed light therapy was proved to be effective and tolerable for the patients, suggesting that intense pulsed light may be a possible new modality for solar lentigines and ephelides.

MATERIALS AND METHODS

Sixty patients (56 female and 4 male), ages 20-82 years (mean 50 years), with facial pigmentary lesions who completed between three and five treatments participated in this study. Facial pigmentary lesions were clinically diagnosed to solar lentigines, solar lentigines+ephelides, and ephelides by three investigators. Solar lentigines were additionally divided to small (1 cm and less than 1 cm) and large plaques (more than 1 cm). Skin phototype was determined by the Japanese skin type classification: J-I burn easily and tan minimally; J-II burn moderately and tan moderately; and J-III burn slightly and tan markedly and long-lastingly [4-6]. No other treatments were permitted except daily-use cosmetics. All patients gave informed consent for treatments.

A noncoherent, filtered broadband pulsed flashlamp (Quantum, ESC/Sharplan, Tokyo) emitting in the range of 500-1200 nm was used for all treatments. Each patient received three to five treatments. The average number of treatments for the 60 patients was 4.0. Each treatment, given at 2 to 3-week intervals, was administered only on the skin lesions. Treatment fluences ranged from 20 to 24 J/cm^2. Energy was delivered in double or triple pulse trains of 2.6-5.0 msec with pulse delays of 20 msec. Cut-off filters of 560 nm were used. A chilled colorless ultrasonic gel was applied directly to the light guide of the treatment head device prior to application to the skin.

Evaluation of skin lesions and taking photographs were performed before the treatment, at each time of the treatment, and at 2-4 weeks after the final treatment. Final evaluation of the efficacy was made by the investigators with the combination of observations and photographs. The physicians' overall assessments of the extent of improvement/worsening graded to worsened, no change, poor improvement (1-25%), slight (26-50%), moderate (51-75%), and marked (76-100%). Subjects were asked to evaluate the degree of satisfaction for treatments, adverse events, and "downtime" as defined as any time missed from usual activities due to treatments.

RESULTS

Forty-five, 8, and 7 patients had solar lentigines, solar lentigines+ephelides, and ephelides, respectively. In the group of solar lentigines, small, small+large, and large plaques were seen in 27, 8, and 10 patients, respectively. Forty-five patients with solar lentigines were classified into three skin phototypes: J-I, 16 patients; J-II, 12; and J-III, 17. Eight

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patients of solar lentigines + ephelides were classified as J-I, 3 patients; J-II, 4; and J-III, 1. Seven patients of ephelides composed of 5 for J-I, 2 for J-II, and 0 for J-III.

Intense pulsed light achieved clinical improvement in the total population, with 48% of patients having more than 50% improvement and 20% having more than 75% clearing. Patients' overall satisfaction also showed similar tendency. In the group of solar lentigines, 40% of patients showed more than 50% improvement and 16% did more than 75% improvement. Patients with small plaques of solar lentigines responded well with 13 of 27 patients (48%) having more than 50% improvement, whereas patients with small+large and large plaques showed poor response with 5 of 18 (28%) having more than 50% improvement. In contrast, patients with solar lentigines+ephelides and ephelides responded remarkably with 75% and 71% of patients having more than 50% improvement, respectively. All the patients endured pain at the exposure without any anesthesia. Only one patient with solar lentigines+ephelides showed erosion localized on a large plaque of solar lentigines that cleared within 4 days without hyperpigmentation. Any other patients except this case had no downtime. No patients discontinued due to adverse effects. No patients showed hyperpigmentation or scarring after the treatments.

DISCUSSION

This study revealed efficacy and safety of intense pulsed light in the treatment of solar lentigines and ephelides in Japanese patients. Therefore, intense pulsed light may be added to the panel of modalities used for the treatment of ephelides and small type of solar lentigines.

Asian skin including Japanese is known to easily associate with_hyperpigmentation after various therapies for photoaging skin, *e.g.* laser surgery, chemical peeling, and CO_2 laser resurfacing. QSRL therapy, effective for solar lentigines in Japanese, causes postinflammatory hyperpigmentation especially in patients with J-III. QSRL therapy should be performed carefully because of hyperpigmentation in J-III subjects with more melanogenesity. However, intense pulsed light therapy demonstrated no postinflammatory pigmentation in any subjects including J-III in our study, indicating that intense pulsed light may have an advantage to QSRL for the treatment of pigmentary disorders. Only one patient in our study showed burn due to intense pulsed light. This patient's severe response may have been induced by ample amounts of melanin pigment in the lesions that is a target chromophore of intense pulsed light. Then, we should consider the sensitivity of patients to intense pulsed light treatment and the irradiance of intense pulsed light to prevent adverse events. Darker lesions and complexion should be treated cautiously because unexpected response may occur during intense pulsed light therapy.

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