Triple Combination Treatment Using Intense Pulsed Light, Picosecond Laser, and Chemical Peels for Photoaging

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We report the case of a man who presented with lentigines and dyschromia on the face. Treatment was carried out using combined therapy with intense pulse light, picosecond neodymium:yttrium-aluminum-garnet (Nd:YAG) laser, and superficial chemical peels. No side effects or complications from treatment were noted. The patient had very good cosmetic results with this combined technique. Combined treatment with intense pulsed light, picosecond Nd:YAG laser, and superficial chemical peels can safely and effectively improve facial lentigines and dyschromia.

Key words

Photoaging; Intense pulsed light; Picosecond laser; Chemical peels

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INTRODUCTION

Chronic exposure to sun induces skin aging, characterized by fine and coarse wrinkles, dyschromia, telangiectasia, laxity, rough skin texture, and increased pore size. The characteristics of aging, pigmentary changes are the most prominent features of cutaneous photodamage, especially in Asians.¹ There are a variety of ways to treat skin aging, including laser, intense pulsed light (IPL), chemical peels, filler injection, and botulinum toxin injection.²

In this report, we describe a case of photoaging which are successfully treated with triple combination treatment using IPL, picosecond laser and superficial chemical peels.

CASE REPORT

A 39-year-old man presented to our clinic with lentigenes and dyschromia on the face. Physical examination revealed brownish macules, rough skin texture and fine wrinkles on face, especially on cheek area (Fig. 1A). After initial evaluation, we recommended combined treatment with IPL, picosecond laser and superficial chemical peels. Before treatment, an explanation of the risks, benefits, and potential complications of the procedure were given, and written informed consent was obtained. Anesthesia was achieved with a topical EMLA cream (AstraZeneca AB, Södertälje, Sweden) for 30 minutes before treat-

ment. At first, picosecond 1,064-nm neodymium:yttrium-aluminum-garnet (Nd:YAG) laser (PicoWay®; Syneron Candela Corporation, Wayland, MA, USA) with a spot size of 6 mm and a fluence of 0.5 J/cm² was applied to treat the patient until producing a slight redness. After that, the patient was treated with 500-670 nm & 870-1200 nm IPL (Icon®; Hologic, Westford, MA, USA) with 34 J/cm². Then we treated him with a superficial chemical peel (Facial Infusion; Osmosis LLC, Evergreen, CO, USA). The patient tolerated each procedure well without complication. He was instructed to wear a broad-spectrum sunscreen.

After one session, he showed more than 75% improvement from baseline in skin pigmentation and he was satisfied with the results (Fig. 1B).

DISCUSSION

The most obvious aging sign in the Asian population is skin color changes especially pigmentation rather than wrinkles or vascular problems.³ The color changes of the skin are also related to the stratum corneum of the skin, melanin, blood vessels, and degeneration of collagen and elastin. Therefore, to treat these changes, a combination therapy is more effective than a single treatment in clinical practice.

A noncoherent, broadband, intense pulsed light source known as IPL was presented in 1998 equipped with different cutoff filters.⁴ It is efficient in the treatment of skin

Fig. 1. (A) Before treatment: remarkable lentigenes and dyschromia on the cheek. (B) Significant improvement of the skin pigmentation after one treatment.

pigmentation and vascular lesions. The concept of IPL is selective photothermolysis. IPL selectively targets melanin and hemoglobin. Also, thermal injury caused by the light source is limited to the papillary and upper reticular dermis. Then, the injury leads to fibroblast activation and synthesis of new collagen and extracellular matrix material. These mechanisms result in reducing wrinkles, increased skin elasticity, contracted enlarged pores, removed spots and ablated telangiectasia.⁵ Comparing to common IPL with different wavelength bands and rather lower fluence, Icon demonstrates significantly better results in superior vessel clearance.⁶

Use of a low fluence 1,064-nm Q-switched Nd:YAG laser, also termed laser toning, has been introduced to improve a variety of benign pigmentary disorders, including melasma and dyschromia. Picosecond lasers were used initially to remove tattoo inks, then for various kinds of benign pigmentary problems.⁷ The picosecond laser toning (use of a low fluence 1,064-nm picosecond Nd:YAG laser) shows faster treatment effect, better successful outcomes, and less side effects than Q-switched laser toning. Superficial chemical peels work on the epidermis. However, basal layer is preserved. Also, skin looks brighter and glowing especially when stratum corneum is removed with very superficial peels. Superficial chemical peels act on the epidermis preserving the basal layer. In particular, very superficial chemical peels remove the stratum corneum and the skin looks shiny and glowing.⁸

CONFLICT OF INTEREST

The authors have declared no conflicts of interest and no funding sources.

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