The Treatment of Hori's Nevus by New Combination Treatment without Side Effects: Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy

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Abstract

Hori's nevus is an acquired benign dermal melanocytosis as a small macular hyperpigmentation on the face, especially the malar areas and the both sides of the forehead. The color of lesion is mostly blotchy gray to blue. Treatment is not necessary for Hori's nevus except cosmetic concerns. However treating the Hori's nevus without side effects such as purpura, crust, postinflammatory hyperpigmentation and scarring is extremely difficult. Therefore, the authors introduce a new combination treatment using Dr. Hoon Hur's Golden Parameter and Dr. Hoon Hur's Optimal Suicide-2 Parameter with a high fluence 1064nm Q-switched Nd:YAG laser that can effectively treat Hori's nevus without side effects and recurrences.

Keywords: Hori's nevus; Dr. Hoon Hur's golden parameter therapy; Dr. Hoon Hur's optimal melanocytic suicide-2 parameter therapy; High Fluence; Q-switched 1064-nm Nd:YAG laser; No side effects; No recurrences;

Introduction

Hori's nevus is characterized by symmetrical, bilateral macules on the malar areas, nasal areas and both sides of the forehead in middle-aged women and occurs after puberty. It is brown to gray or gray to blue in color and is not accompanied by macules on the ocular and mucosal membranes [1-3]. The treatment of Hori's nevus is necessary because of cosmetic concerns. But the treatment of Hori's nevus without side effects such as purpura, crust, Postinflammatory Hyperpigmentation (PIH), scarring and recurrences is very difficult [4-7]. In this paper, we present the new combination treatment of Hori's nevus using Dr. Hoon Hur's Golden Parameter with a high fluence 1064nm Q-switched Nd:YAG laser and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter with a high fluence 1064nm Q-switched Nd:YAG laser without side effects and recurrences.

Report of Cases

Twenty six Korean patients (age range: 27-45 years old, mean age: 31.8 years old) who were clinically diagnosed with Hori's nevus (Figure 1,3,6,9). The patients had no significant medical or familial history. After obtaining written informed consent, all of the 26 patients were received 20 sessions of combination treatment of Dr. Hoon Hur's Golden Parameter Therapy (GPT) with a high fluence 1064nm Q-switched Nd:YAG laser (Spectra Laser, Lutronic, South Korea) at a one-week interval with a spot size of 7 mm, a fluence of 2.4 J/cm² and a pulse rate of 10 Hz with slowly one pass by a sliding-stacking technique to the Hori's nevus and subsequently Dr. Hoon Hur's Optimal Melanocytic Suicide-2 (OMS-2) Parameter Therapy with a high fluence 1064nm Q-switched Nd:YAG laser (Spectra Laser, Lutronic, South Korea) at a one-week interval with a spot size of 3 mm, a fluence of 5 J/cm² and a pulse rate of 10 Hz with a pulse stacking technique for 5 seconds to the Hori's nevus. After the treatment, the entire face was cooled with ice packs, and the patients applied a broad-spectrum sunscreen to the entire face daily throughout the treatment period. The patient was photographed on the day of treatment and 4 weeks after the final treatment. The patients were evaluated with standardized digital photographs using a Canon Camera G11 (Japan). The patients were asked to report immediately if any pain, discomfort, or side effects occurred during treatment.

All of the 26 patients with Hori's nevus were achieved complete clearance of the pigmented lesions and there were no significant side effects including purpura, crust, PIH, and scarring except slight pain during laser treatment (Figure 2,4,7,10). During the 12-18 months' follow-up period after the end of the treatment, the patients were observed without any side effects or recurrences (Figure 5,8,11).

Figure 1: Symmetrical, bilateral brown to gray hyperpigmented macules and patches on the malar areas, root of the nose, temple and forehead (before treatment: 7/14/2016)

Figure 2: A complete clearance of Hori's nevus (after treatment with Dr. Hoon Hur's Golden Parameter and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter: 2/2/2017)

Figure 3: Brown to gray hyperpigmented macules and patches on the left upper eyelid, malar area and cheek (before treatment: 10/31/2014)

Figure 4: A complete clearance of Hori's nevus (after treatment with Dr. Hoon Hur's Golden Parameter and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter: 9/23/2015)

Figure 5: There is no recurrence at 18 months' follow-up (4/26/2017)

Figure 6: Symmetrical bilateral brown to gray hyperpigmented macules and patches on the malar areas, eyelids and root of the nose (before treatment: 3/26/2013)

Figure 7: A complete clearance of Hori's nevus (after treatment with Dr. Hoon Hur's Golden Parameter and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter: 12/27/2013)

Figure 8: There is no recurrence at 18 months' follow-up (7/10/2015)

Figure 9: Symmetrical bilateral brown to gray hyperpigmented macules and patches on the malar areas, eyelids and temple (before treatment: 3/26/2013)

Figure 10: A complete clearance of Hori's nevus (after treatment with Dr. Hoon Hur's Golden Parameter and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter: 3/21/2014)

Figure 11: There is no recurrence at 12 months' follow-up (4/3/2015)

Discussion

Hori's nevus is an acquired benign dermal melanocytosis. Clinically, Hori's nevus occurs as multiple brown to gray macules or gray to bluish patches on the face after puberty and is distributed at the malar areas, forehead, temple, eyelids, alae of the nose and root of the nose [1-3]. Hori's nevus may be almost symmetrical and bilateral, but may not involve ocular or oral mucosa in addition to skin. Hori's nevus is most commonly found in middle-aged women [1-3]. Hori's nevus can also occur simultaneously with other pigmentary skin diseases such as melasma, freckles, multiple lentigines and Ota's nevus [1-3]. Histopathologically, Hori's nevus shows elongated, slender, irregularly shaped, highly dendritic, deeply pigmented melanocytes and melanophages in the superficial layer of the dermis [2]. But in differential diagnosis, Ota's nevus reveals highly dendritic, deeply pigmented melanocytes and melanophages dissecting bundles of dermal collagen in the superficial layer of the dermis or deep layer of the dermis or throughout the dermis [8,9]. The etiology and pathogenesis of Hori's nevus is unknown, but several theories have been proposed. These include the drop-off of epidermal melanocytes into the papillary dermis, the migration from follicular

melanocytes in the outer root sheath of hair and the reactivation of pre-existing misplaced latent dermal melanocytes from faulty migration during embryological development, triggered unknown events such as cutaneous dermal inflammation, ultraviolet radiation, or excessive sex hormones [1-3]. Traditional laser treatments had been used widely for many years. However, treating Hori's nevus with the traditional laser therapies such as ruby laser, alexandrite laser and Q-switched Nd:YAG laser provokes purpura, crust, PIH and scarring [4-7]. It is extremely difficult to treat Hori's nevus without inducing PIH [4-7]. Although the exact causes of PIH are still unknown, some reasons are thought to be the possible causes of PIH occurrence when using traditional laser therapy in Hori's nevus [10-13]. The 532 nm wavelength of Q-Switched Nd:YAG laser, 694 nm wavelength of ruby laser, 755 nm wavelength of alexandrite laser and 515-755 nm wavelength of intense pulsed light are generally absorbed by much more melanin than 1064 nm wavelength of Q-Switched Nd:YAG laser [13-17]. This higher absorbance to the melanin creates a laser energy that destroys epidermal melanocytes which also injures the surrounding keratinocytes of the lesion [13-17]. These damaged keratinocytes secrete interleukin-1 (IL-1), which stimulates keratinocytes to secrete some keratinocytic injury-induced cytokines, which are endothelin-1, α -Melanocyte Stimulating Hormone (MSH), Adrenocorticotrophic Hormone (ACTH) and prostaglandin (PGE₂, PGF₂ α). These cytokines activate melanocytes and increase melanin synthesis in the melanosomes therefore provoking PIH [10-13]. The damaged keratinocytes of the lesion also secrete the single-chain urokinase type plasminogen activator (sc-uPA). Plasminogen is converted to plasmin by the sc-uPA. The plasmin then stimulates the keratinocytes to secrete Basic Fibroblast Growth Factor (bFGF). The melanocytes then get activated by this bFGF, increasing melanin synthesis in the melanosomes, which cause PIH [10-13]. Treatment with traditional laser therapy can provoke purpura and crusts, which can be accompanied by damage of fibroblasts, mast cells, lymphocytes, macrophages and vascular endotheliums due to laser energy. Especially fibroblast-derived Stem Cell growth Factor (SCF) and Hepatocyte Growth Factor (HGF) from the damaged fibroblasts activate melanocytes and increase melanin synthesis in the melanosomes, eventually leading to PIH [10-13]. Finally, the damaged keratinocytes also produce reactive oxygen species such as nitric oxide, free radical oxygen and peroxide, which activate melanocytes and increase melanin synthesis in the melanosomes, and eventually induce PIH [10-13]. To order to solve the side effects such as crust, purpura, PIH and scarring caused by the traditional laser therapy, the authors devised the combination treatment of Dr. Hoon Hur's Golden Parameter Therapy (GPT) with a high fluence 1064nm Q-switched Nd:YAG laser (Spectra Laser, Lutronic, South Korea) at a one-week interval with a spot size of 7 mm, a fluence of 2.4 J/cm² and a pulse rate of 10 Hz with slowly one pass by a sliding-stacking technique to the Hori's nevus and subsequently Dr. Hoon Hur's Optimal Melanocytic Suicide-2 (OMS-2) Parameter Therapy with a high fluence 1064nm Q-switched Nd:YAG laser (Spectra Laser, Lutronic, South Korea) at a one-week interval with a spot size of 3 mm, a fluence of 5 J/cm² and a pulse rate of 10 Hz with a pulse

stacking technique for 5 seconds to the Hori's nevus. We believe the combination treatment of Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy using a high fluence 1064nm Q-switched Nd:YAG laser is a safer and more effective treatment for Hori's nevus than the methods tried so far [13-17]. This combination treatment may destroy dermal melanocytes completely without keratinocyte damage, and the end products of damaged melanocytes will be removed via transepidermal elimination [13-17]. Also the end products, including the dispersed melanosomes and melanins of damaged dermal melanocytes are phagocytized by the macrophages and are removed through the lymphatic system [13-17]. In the previous papers, the authors already reported the therapeutic effects of Dr. Hoon Hur's Golden Parameter Therapy with a high 1064 nm Q-switched Nd:YAG laser and we believe that destroying epidermal melanocytes or dermal melanocytes can be performed with minimal epidermal damage and accelerating apoptotic melanocytic cell death program, and improving various skin diseases such as café au lait spot, partial unilateral lentiginosis, Becker's nevus, Ota's nevus and congenital melanocytic nevus without side effects such as PIH and scarring are also achievable [13-17]. The authors think that the wavelength of 1064 nm used in Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy is less absorbed by the epidermal melanin. This mechanism is able to destroy the epidermal melanocytes or dermal melanocytes while minimizing the epidermal damage, therefore not causing purpura and crusts. Performed weekly, this combination treatment of Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy is able to destroy melanocytes completely and accelerates apoptotic melanocyte cell death. The dispersed melanosomes and melanins, which are the end products of damaged melanocytes, are either removed by the transepidermal elimination or are removed by dermal melanophages via the lymphatic system [13-17]. In the end, it is possible to achieve complete clearance of Hori's nevus without any side effects or recurrences. In our study, all of the 26 patients were received 20 sessions of the combination treatment of Dr. Hoon Hur's Golden Parameter Therapy with a high fluence 1064nm Q-switched Nd:YAG laser (Spectra Laser, Lutronic, South Korea) at a one-week interval with a spot size of 7mm, a fluence of 2.4J/cm² and a pulse rate of 10Hz with slowly one pass by a sliding-stacking technique to the Hori's nevus and subsequently Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy with a high fluence 1064nm Q-switched Nd:YAG laser (Spectra Laser, Lutronic, South Korea) at a one-week interval with a spot size of 3mm, a fluence of 5J/cm² and a pulse rate of 10Hz with a pulse stacking technique for 5 seconds to the Hori's nevus. Completely the dermal melanocytes were destroyed with minimal epidermal damage using this combination treatment to Hori's nevus. Due to the less absorption by epidermal melanin in Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy, it is possible to deliver sufficient energy to destroy dermal melanocytes and in the same time salvaging normal background tissue, preventing

PIH and scarring from being triggered, and minimizing epidermal damage without inducing purpura and crusts. However, this combination treatment requires the continuous 20 treatment sessions for 5 months. In this paper, 26 patients with Hori's nevus (Figure 1,3,6,9) were treated with the combination treatment of Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy using a high fluence 1064 nm Q-switched Nd:YAG laser. All of the 26 patients with Hori's nevus were achieved complete clearance of the pigmented lesions and PIH and scarring were not found (Figure 2,4,7,10). There are no recurrences after a follow-up of 12-18 months (Figure 5,8,11). All patients were satisfied with the results of the combination treatment of Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy without any side effects, including PIH and scarring.

Conclusion

In this paper, the combination treatment of Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy using a high fluence 1064 nm Q-switched Nd:YAG laser achieved complete clearance of Hori's nevus without side effects and recurrences. We propose the combination treatment of Dr. Hoon Hur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy using a high fluence 1064 nm Q-switched Nd:YAG laser will be a new, safe and good option for treating Hori's nevus.

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