Symbiosis

ISSN Online: 2378-1726
www.symbiosisonlinepublishing.com

Research Article | Clinical Research in Dermatology: Open Access | Open Access

Treatment of Benign Melanocytic Hyperplasia of Nail Apparatus with Dr. Hoon Hur's Golden Parameter Therapy

Hoon Hur[1*], Jae Seong Joo[1], Duck Taik Shim[1], Yu Ri Kim[1], Jong Il Park[1] and Suk Jin Choi[1]

[1]Choice Dermatology Clinic, Pyeongchon, Korea

Received: May 30, 2023; Accepted: June 06, 2023; Published: July 03, 2023

***Corresponding author:** Hoon Hur, Choice Dermatology Clinic, Pyeongchon, Korea, Tel: 82-31-383-7533, E-mail: dermahur@naver.com*

Abstract

Background: Benign melanocytic hyperplasia (BMH) of nail apparatus may be caused by a lentigine in the nail matrix. Traditional treatment modalities including surgical excision and CO_2 laser ablation may cause a severe scar of nail apparatus.There is no clear treatment for BMH of nail apparatus.

Objectives: This study was performed to investigate the efficacy and safety of Dr. Hoon Hur's Golden Paramter Therapy (GPT) with a high fluence 1064nm Q-switched Nd:YAG laser (QSNL) for treating BMH of nail apparatus .

Study design: The medical records of 52 Korean patients (age range: 21 to 60 year-old, mean age: 38.6 year-old) diagnosed with BMH of nail apparatus were reviewed retrospectively.

Methods: All patients were treated with a 1064nm QSNL, on a weekly basis for 10-15 treatment sessions of Dr. HoonHur's GPT. The parameters were a spot size of 7mm, a fluence of 2.2J/cm^2 and a pulse rate of 10Hz with three passes by a sliding technique (sliding GPT) and one pass by a pulse stacking technique (pulse-stacking GPT) over the BMH of nail apparatus.

Results: At the time of the final treatment, all patients with BMH showed the complete removal of pigmented lesions without any side effects, such as purpura, crust, post-inflammatory hyperpigmentation (PIH), nail dystrophy and scarring. No recurrences were observed in any of the patients after a follow-up of 3-12 months.

Conclusion: We suggest that Dr. Hoon Hur's GPT with a high fluence 1064nm QSNL is a safe and effective new treatment for BMH of nail apparatus without side effects and recurrences.

Keywords: Benign Melanocytic Hyperplasia; Nail;1064-nm ND:YAG laser;Dr. Hoon Hur's GPT

Introduction

Benign melanocytic hyperplasia (BMH) of nail apparatus is characterized by activation and proliferation of melanocytes. It can be caused by a lentigine in the nail matrix. Brown pigmented longitudinal band is seen in both the nail matrix and the nail plate without cytological atypia [1,2]. Treatment of BLM is necessary because of cosmetic concerns. But successful treatment of BLM without side effects, such as nail dystrophy, scarring and recurrences, is still challenging and difficult [2,3]. The surgical treatment of BMH of nail apparatus may provoke a severe scar, therefore we do not recommend it. In the previous study, authors already reported the effect of GPT in treatment of cafe au lait spot, partial unilateral lentiginosis, Becker's nevus, Ota's nevus, Hori's nevus, congenital melanocytic nevus, Riehl's melanosis, erythema ab igne and PIH of prurigopigmentosa[4 -16]. In this paper, we suggest a new powerful treatment of BMH of nail apparatus using Dr. Hoon Hur's Golden parameter Therapy (GPT) with a high fluence 1064nm Q-switched Nd:YAG laser (QSNL) without side effects including nail dystrophy and scarring, and recurrences.

Materials and Methods

The medical records of 52 Korean patients with BMH of nail apparatus (32 men and 20 women, age range: 21 to 60 year-old, mean age: 38.6 year-old) were reviewed retrospectively at the Choice Dermatology Clinic from January 2012 to December 2021. All patients with BMH of nail apparatus were diagnosed by clinical features and dermoscopic findings [Figure 1(A),2(A),3(A),4(A)]. They had no significant medical or familial history. Written informed consents were obtained from all of the 52 patients before proceeding into treatment. Topical anestheic was not used before the laser treatment. And all patients were received 10-15 sessions of Dr. HoonHur's GPT using a high fluence 1064nm QSNL (QX-MAX or StarWalker, Fotona, Slovenia) at a one-week interval with a spot size of 7mm, a fluence of 2.2J/cm^2 and a pulse rate of 10Hz using three passes by a sliding technique over the pigmented lesion of nail plate and one pass by a pulse stacking technique over the nail matrix. The moving speed of handpiece using a sliding technique (sliding GPT) was 2-3 shots overlapping irradiation on the same lesion and a pulse-stacking technique

 ***Corresponding author email:** : dermahur@naver.com*

Table 1: The demographic data of 52 patients with BMH of nail apparatus

Variable	
Age	
Age range	21-60 year-old
Mean age	38.6 year-old
Gender	
Male	32
Female	20
Family history	Non-remarkable
Location of finger nail	
Thumb	11/52, (21%)
Index finger	15/52, (29%)
Middle finger	14/52, (27%)
Ring finger	8/52, (15%)
Little finger	4/52, (8%)

Table 2: The result of treatment with Dr. Hoon Hur's GPT

Treatment response	Number of patients
Poor (0-25% clearance)	0
Fair (26-50% clearance)	0
Good (51-75% clearance)	0
Excellent (76-95% clearance)	0
Complete (96-100% clearance)	52 (100%)

Figure 1A: BMH of nail apparatus (before treatment), B:A complete clearance of BMHof nail apparatus (after treatment with Dr. Hoon Hur's GPT).

(pulse-stacking GPT) was 30 shots/3 seconds overlapping irradiation on the same lesion. After the laser treatment, cooling with icepacks was performed but the patients did not use a broad spectrum sunscreen. The number of treatment sessions was adjusted to the clinical response. The treatment was terminated when the investigators and the patients agreed with complete resolution of BMH of nail apparatus. Photographs were taken on the day of treatment, and an evaluation was carried out by standardized digital photography using a digital camera (Canon Camera 100D, Great Britain). The physician's clinical assessment of the degree of improvement of the patients (mean score of two investigators who did not attend the treatment) was also carried out 4 weeks after the laser treatment session and reported as percentage resolution as follows: poor (0-25% clearance), fair (26-50% clearance), good (51-75% clearance), excellent (76-95% clearance) and complete (96-100% clearance) by analyzing the clinical photographs of patients. The patients were asked to report any side effects, pain or discomfort during the treatment.

Figure 2A: BMH of nail apparatus (before treatment), B: A complete clearance of BMH of nail apparatus (after treatment with Dr. Hoon Hur's GPT).

Figure 3A: BMH of nail apparatus (before treatment), B: A complete clearance of BMH of nail apparatus (after treatment with Dr. Hoon Hur's GPT).

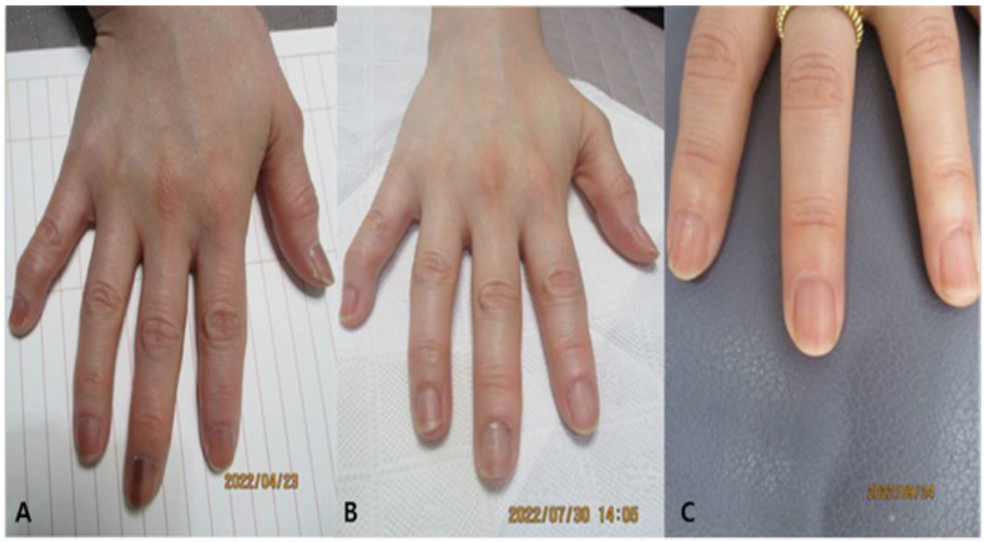

Figure 4A: BMH of nail apparatus (before treatment), B: A complete clearance of BMH of nail apparatus (after treatment with Dr. Hoon Hur's GPT), c : There is no recurrence at 3 months' follow-up.

Results

Fifty-two Korean patients with BMH of nail apparatus were included in this study [Table 1 and Table 2]. All of the 52 patients were achieved complete clearance of the pigmented lesions [Figure 1B,2B,3B,4B]. None of the patients reported severe pain or discomfort during the laser treatment, and there were no side effects reported, such as purpura, crust, PIH, mottled hypopigmentation, nail dystrophy and scarring except mild pain. No recurrences have been detected after a follow-up of 3-12 months [Figure 4C].

Discussion

Benign melanocytic hyperplasia (BMH) of nail apparatus is characterized by activation and proliferation of melanocytes and may be caused by a lentigine in the nail matrix. The lentigine in the nail matrix is more common and is present in about 9% of all longitudinal melanonychia cases in adults [1,2]. Macroscopically, the lesion shows a brown pigmented longitudinal band on the proximal nail fold and nail plate. And the nail dystrophic change is not seen in both the nail plate and the periungual area [2,3]. Cytologically, melanocytes have a normal appearance, and atypical melanocytes and nests of nevus cells are not observed[3]. BMH of nail apparatus has no malignant potential because there are no nevus cells. An increase in the number of melanocytes can be demonstrated by Fontana-Masson stain and immunohistochemical stain with S-100, Melan-A, and HMB-45 stains [1,3]. BMH of nail apparatus is a common cosmetic problem in the dermatologic fields [1,2]. The surgical procedures of BMH of nail apparatus may provoke a severe scar, therefore we do not recommend it. There is still no effective treatment for BMH of nail apparatus. Treating BMH of nail apparatus with traditional laser therapy may end up in failure because of possible several reasons. First, the 532 nm wavelength of Q-Switched Nd:YAG laser, the 694nm wavelength of Ruby laser, the 755nm wavelength of alexandrite, and the 515-755nm wavelength of IPL absorb much more melanin compared to 1064nm wavelength of Q-Switched Nd:YAG laser. Thus, fluence that destroys melanocytes injuries the surrounding keratinocytes, and the damaged keratinocytes secrete endothelin-1, alpha-melanocyte stimulating hormone, vascular endothelial growth factor, prostaglandin (PGE2, PGF2a) and nitric oxide which can activate melanocytes and increase melanin synthesis in the melanosomes [1,4,5]. Second, the keratinocytes secrete urokinase type plasminogen activator (U-type PA) that converts plasminogen to plasmin. This plasmin stimulates the keratinocytes to secrete basic fibroblast growth factor (bFGF) that activates the melanocytes and increases melanin synthesis, therefore causing PIH and worsening pigmented lesions of BMH of nail apparatus [1,4,7]. Third, the traditional laser energy which is so strong enough to damage nail matrix and causes nail dystrophy and scarring and damage to fibroblasts, mast cells, lymphocytes, macrophages and vascular endotheliums simultaneously. The damaged fibroblasts secrete bFGF, stem cell factor (SCF), and hepatocyte growth factor (HGF) to cause PIH [1,4,8]. Finally, reactive oxygen species, such as superoxide and nitric oxide, generated from damaged nail matrix activates melanocytes and increases melanin synthesis in the melanosomes [1,6,7]. To avoid the side effects including purpura, crust, PIH, nail dystrophy and scarring, the authors introduced a new treatment using the Dr. Hoon Hur's GPT with a high fluence 1064nm QSNL (QX-MAX or StarWalker, Fotona, Slovenia), a spot size of 7mm, a fluence of 2.2J/cm^2, a pulse of 10Hz using three passes by a sliding technique over the pigmented lesion of nail plate and one pass by a pulse stacking technique over the nail matrix. The mechanism of Dr. Hoon Hur's GPT is to minimize the epidermal damage and destroys melanosomes in the epidermal melanocytes, which are changed into ghost cells due to the loss of the function [4,6,7]. Then, weekly Dr. Hoon Hur's GPT destroys

melanocytes completely, accelerates apoptotic melanocyte cell death, thus removing the increased epidermal melanocytes [4, 7]. The advantage of Dr. HoonHur's GPT is that it minimizes the epidermal damage without purpura, crust, PIH, nail dystrophy and scarring. Because Dr. Hoon Hur's GPT is less absorbed by epidermal melanin, it transmits energy without destroying normal background tissue, and destroys epidermal melanocytes [4-8]. Two cases of longitudinal melanonychia treatment (LMT) with 1064nm picosecond laser, and one case of LMT with 532nm picosecond laser have been reported with successful results[17, 18]. But previous studies of LMTwith laser are very limited. In our study,all of the 52 patients with BMH with nail apparatus were achieved complete clearance of the pigmented lesions. All patients with Dr. Hoon Hur's GPT using a high fluence 1064nm QSNL were satisfied with the results. There is no recurrence at 3-12 months' follow-up. And we think that further randomized controlled prospective studies will be required.

Conclusion

Dr. Hoon Hur's GPT using a high fluence 1064nm QSNL can completely remove the pigmented lesions of BMH of nail apparatus without side effects including purpura, crust, PIH, nail dystrophy and scarring and recurrences. Therefore, we suggest Dr. Hoon Hur's GPT is a new, safe and good option for treating BMH of nail apparatus.

References

1. Singal A, Bisherwal K. Melanonychia: Etiology, Diagnosis, and Treatment. Indian DermatolOnline J. 2020;11(1):1-11. doi: 10.4103/idoj.IDOJ_167_19.
2. Haneke E, Baran R. Longitudinal melanonychia. Dermatol Surg. 2001;27:580–584.
3. Gunes P, Goktag F. Melanocytic Lesions of the Nail Unit. J Dermatopatho(Basel). 2018;5(3):98-107. doi: 10.1159/000490557.
4. Hur H. The Treatment of Café Au Lait Spot Using Dr. Hoon Hur's Golden ParameterTherapy. J DermatolTher. 2016;1:1-4.
5. Hur H, Baek JO, Park IJ, Lee KR,Ryu HR, Kim JS, et al. High-fluence 1064-nm Q-Switched Nd:YAG laser: Safe and effective treatment of café-au-lait macules in Asian patients. J CosmetDermatol. 2018;17(3):380-384.doi: 10.1111/jocd.12432.
6. Hur H, Kim JH, Park IJ, Park CH, Shim DT, et al. The New Treatment of Café Au Lait Spot Using Dr. Hoon Hur's Golden Parameter Therapy With a High Fluence 1064nm Q-Switched Nd:YAG Laser. Int J Cur Res. 2018;10(4):68082-68086.
7. Hur H, Shim DT, Song SE, Kim PS, Hyun DN, Kim YR. The Treatment of InfantileCafé Au Lait Spot Using Dr. Hoon Hur's Golden Parameter Therapy with a HighFluence 1064 nm Q-Switched Nd:YAG Laser. J Clin Res Dermatol. 2020;7(1):1-5.
8. Hur H, Kim YR, Shim DT. The Treatment of Café Au Lait Spot, Partial UnilateralLentiginosis and Becker's Nevus Using a High Fluence 1064nm Q-swithedNd:YAGLaser. J Clin and CosmetDermatol. 2017;1:1-4.
9. Hur H, Choi YJ, Cheon MS, Kim YR. The New Treatment of Partial Unilateral Lentiginosis Using Dr. Hoon Hur's Golden Parameter Therapy With a High Fluence 1064nm Q-Switched Nd:YAG Laser Without Side Effects. Int J Cur Res. 2017;9(12):63456-63460.
10. Hur H, Kim JH, Shim DT, Choi SJ, Kim PS, Kim RU. The Treatment of Becker'snevus by Combination Therapy: Dr.Hoon Hur's Golden Parameter Therapy andDr.HoonHur's Optimal Melanocytic Suicide-1 Parameter Therapy. J Surg. 2021;9(1):16-21.
11. Hur H, Park CH, Kim YR, Hyun DN. Treatment of Ota's Nevus Using Dr. Hoon Hur's Golden Parameter with a High Fluence 1064nm Nd:YAG Laser without Side Effects. J Dermatol Res and Ther. 2017;3:1-4. Doi: 10.23937/2469-5750/1510047.
12. Hur H, Kim YR. The Treatment of Hori's Nevus by New Combination Treatment without Side Effects: Dr. HoonHur's Golden Parameter Therapy and Dr. Hoon Hur's Optimal Melanocytic Suicide-2 Parameter Therapy. J Clin Res Dermatol. 2017;4:1-5.
13. Hur H, Park CH, Kim YR, Kim PS. Treatment of a Congenital Melanocytic Nevus by New Combination Therapy: Intense Pulse Light Therapy and Dr. Hoon Hur's Golden Parameter Therapy. J Dermatol Ther. 2017;1:12-16.
14. Hur H, Lee GH, Kim PS, Hyun DN, Kim YR. The Treatment of Riehl's Melanosis Using Dr. HoonHur's Golden Parameter Therapy With a High Fluence 1064nm Q-Switched Nd:YAG Laser Without Side Effects. Int J Cur Res. 2018;10(2):65103-65108.
15. Hur H, In SI, Cheon MS, Choi YJ, Lee DH, Kim YR. The Treatment of Erythema Ab Igne Using Dr. HoonHur's Golden Parameter Therapy With a High Fluence 1064nm Q-Switched Nd:YAG Laser. Int J Cur Res. 2018;10(10):74218-74221.
16. Hur H, Shim DT, Cheon MS, Kim PS, Hyun DN, Kim YR. The Treatment of Postinflammatoty Hyperpigmentation Due to PrurigoPigmentosa Using Dr. Hoon Hur's Golden Parameter Therapy With a High Fluence 1064nm Q-Switched Nd:YAG Laser. Int J Cur Res. 2019;11(3):2491-2494.
17. Kwei LL, Wen CT. Picosecond Laser as a Promising Treatment Option for Longitudinal Melanonychia Caused By Melanocytic Activation: Report of Two Case. J PhotodermatolPhotoimmunolPhotomed. 2020;36(2):163-165.
18. Fritz K. Alghamdi M. Salavastru C. Treatment of a LongitudinalMelanonychia in a One Session with a 532nm Picosecond Laser. J Clinical Cases in Melanoma. 2020: 9-11.