

**TREATMENT OF HORI'S NEVUS  
WITH THE PICOSECOND ND:YAG LASER  
AT CAN THO HOSPITAL OF DERMATO - VENEREOLOGY 2019-2020**

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**ABSTRACT**

**Background:** Hori's nevus is an acquired pigmented lesion commonly appears in the middle-aged women. Topical therapies are ineffective while other treatment modalities such as surgery, dermabrasion and chemical peeling can cause some significant scarring. Laser surgery has become the treatment of choice by having the most successful rate even though there is a risk of pigmentation disorders after the surgery. **Objectives:** This study was to evaluate the efficacy of the Picosecond Nd:YAG laser for the treatment of Hori's nevus at Can Tho Hospital of Dermato-Venerology. **Materials and methods:** 62 patients with Hori's nevus were treated with the picosecond Nd:YAG laser for at least 4 treatment sessions at 4-6 week intervals. The treatment parameters included wavelength 1064nm, fluence 4 to 6 J/cm<sup>2</sup> or 283 to 424 mJ/mm<sup>2</sup>, frequency 5 to 10Hz and spot size of 3 to 4mm. Follow-up time was 1 month. **Results:** 87.1% patients got good result after treatment. The adverse effects were minimal with only under 20% patients had redness and bleeding 24 hours after treatment. **Conclusions:** Picosecond Nd:YAG laser shows to be an effective method of treatment for Hori's nevus.

**Keywords:** Hori's nevus, picosecond Nd:YAG laser.

**I. INTRODUCTION**

Hori's nevus is an acquired pigmented lesion commonly occurs in Asian females, particularly the middle-aged. The prevalence fluctuates from 0.8 to 4.2% depending on races and geographic regions. Onset age can be from 12 to 72 but usually after 30 [1], [4]. It is characterized by blue-black or slate-gray macules located bilaterally on the malar regions, forehead, temples, eyelids and/or nose. Hori's nevus usually accompanies with other pigmentation disorders such as melasma, lentiginos... made it more complicated to treat the condition [6].

Topical therapies are ineffective in the treatment of this dermal pigmentation while other modalities such as surgery, dermabrasion, chemical peeling may cause significant scarring. Laser surgery has become the treatment of choice with the quality-switched (QS) ruby laser, the QS Nd:YAG laser, the QS alexandrite laser having the most successful rate even though there is a risk of pigmentation disorders after treatment [3]. Recently, the picosecond laser is also reported to be a promising treatment method for the pigmented condition. Therefore, we conducted the study "Treatment of Hori's Nevus with the Picosecond Nd:YAG Laser at Can Tho Hospital of Dermato-Venerology 2019 – 2020" with the objective was to evaluate the efficacy and complication rate of the picosecond Nd:YAG laser treatment of Hori's nevus in patients at Can Tho Hospital of Dermato-Venerology.

**II. MATERIALS AND METHODS**

**2.1. Study population and setting**

Study patients: All Hori's nevus patients were treated with the picosecond Nd:YAG laser at Can Tho Hospital of Dermato-Venerology from April 2019 to April 2020.

Inclusion criteria: All patients have Hori's nevus lesions on the face.

- + Do not have malignant or severe internal diseases.
- + Do not have an allergic history of any local anesthetics.
- + Agree to participate in the study.

Exclusion criteria: patients who are allergic with laser or photosensitive; pregnant and breastfeeding women; patients having photosensitive drugs; or non-compliance patients.

Sampling method: convenience sampling

Sample size and sampling method:

Sample size: the sample size is calculated with the following equation

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} p(1-p)}{d^2}$$

In which:

n: is the smallest sample size

Z = 95%;  $Z_{1-\alpha/2} = 1,96$

p: the successful rate of Hori's nevus treatment, which is 0.857 according to Ungaksornpairote C. [4].

D: is the tolerance allowed in the study 9%,  $d = 0.09$ .

Thus  $n \geq 58,12$ .

**2.2. Study design:** A cross-sectional study.

### 2.3. Study contents

In the beginning, the subjects were asked the questions about general characteristics such as age, gender, occupation, etc. They also were carefully examined to evaluate the clinical features of the Hori's nevus lesions including the locations of lesions, age of onset, size, color and baseline MASI score.

Participants received at least 4 treatment sessions at 4-6 week intervals of 1064nm picosecond Nd:YAG laser. Parameters were 2-3 passes with a fluence of 4 to 6 J/cm<sup>2</sup> (283 to 424 mJ/mm<sup>2</sup>), frequency 5 to 10Hz and spot size of 3 to 4mm. The lesions were evaluated at the beginning of the study and each treatment session about the pigmentary lightening and size reduction. The adverse events were noted if occurred. Follow-up time after treatment was 1 month. Any adverse events that occurred in this period were recorded.

**2.4. Statistical analysis:** Analyzing data with SPSS 18.0.

### 2.5. Ethics Approval

- The study protocol was approved by the Ethical Committee of the Can Tho University of Medicine and Pharmacy and Can Tho Hospital of Dermato – Venerology.

- Research subjects are informed, explained and agreed to voluntarily participate in the study. All personal information and photos are kept confidential through computerized encryption to ensure the privacy of study participants.

- Ensure fairness and objectivity during data collection and processing.

## III. RESULTS

Sixty-two patients diagnosed with Hori's nevus at Can Tho Hospital of Dermato-Venerology from 4/2019 to 4/2020 were involved. The subjects didn't have

any malignant, severe internal diseases, history of topical anesthetic, photosensitivity or used photosensitizing medications. The pregnant and breast-feeding women were also excluded.

A total 62 of patients were female. The mean patient age was  $38.9 \pm 8.4$  years with 72.4% was in 31-50 age group. The mean age of onset was  $31 \pm 9$  years. The majority of patients had detected lesions in between 21 and 40 years (71%).

**Table 1.** Age of onset of Hori's nevus

Age of onset		Frequency (n)	Percentage (%)
Mean $31,0 \pm 9,0$ years	11 – 20 years	11	17.7
	21 – 30 years	15	24.2
	31 – 40 years	29	46.8
	41 – 50 years	7	11.3
Total		62	100

Pigmented macules were mostly bilaterally presented on the malar regions (96.8% for both half faces). They were also located on nasal bridge (77.4% for right face, 74.8% for left face), tempers (67.7% for right face, 66.1% for left face), forehead (51.6% for right face and 48.4% for left face) and other facial areas.

**Table 2.** Locations of Hori's nevus

Location	Right face		Left face	
	n	%	n	%
Forehead	32	51.6	30	48.4
Temper	42	67.7	41	66.1
Upper eyelid	4	6.5	4	6.5
Lower eyelid	10	16.1	9	14.5
Malar region	60	96.8	60	96.8
Ear	1	1.6	1	1.6
Nasal bridge	48	77.4	47	75.8
Nasal wing	33	53.2	32	51.6
Upper lip	16	25.8	17	27.4
Lower lip	13	21	12	19.4
Chin	26	41.9	27	43.5

**Table 3.** Picosecond Nd:YAG laser treatment result of Hori's nevus

Treatment session	Lightening n (%)			Size reducing n (%)		
	Good	Moderate	Poor	Good	Moderate	Poor
1 (n=62)	1 (1.6)	0 (0)	61 (98.4)	0 (0)	1 (1.6)	61 (98.4)
2 (n=62)	1 (1.6)	4 (6.5)	57 (91.9)	0 (0)	6 (9.7)	56 (90.3)
3 (n=62)	1 (1.6)	52 (83.9)	9 (14.5)	1 (1.6)	36 (58.1)	25 (40.3)
4 (n=62)	22 (35.5)	38 (61.3)	2 (3.2)	12 (19.3)	46 (74.2)	4 (6.5)
5 (n=42)	22 (52.3)	20 (47.7)	0 (0)	14 (33.3)	28 (56.7)	0 (0)
6 (n=23)	12 (52.2)	11 (17.8)	0 (0)	7 (30.4)	16 (69.6)	0 (0)
7 (n=17)	12 (70.5)	5 (29.5)	0 (0)	13 (76.4)	4 (23.6)	0 (0)
8 (n=11)	11 (100)	0 (0)	0 (0)	9 (80.8)	2 (19.2)	0 (0)
9 (n=6)	6 (100)	0 (0)	0 (0)	6 (100)	0 (0)	0 (0)
10 (n=3)	3 (100)	0 (0)	0 (0)	3 (100)	0 (0)	0 (0)

All patients went through 4 treatment sessions at a minimum. 85.5% patients showed

moderate to good lightening results after the third session. Meanwhile, the lesions size reduced significantly after the fourth session to 93.5%. From the fifth session afterwards, both the lightening and size reducing aspects showed moderate to good results in all patients.

**Table 4.** Adverse events of treatment

Treatment session	Redness n (%)	Bleeding n (%)
1 (n=62)	11 (17.7)	5 (8.1)
2 (n=62)	11 (17.7)	7 (11.3)
3 (n=62)	12 (19.4)	7 (11.3)
4 (n=62)	11 (17.8)	10 (16.1)
5 (n=42)	8 (12.9)	6 (9.7)
6 (n=23)	3 (4.8)	7 (11.3)
7 (n=17)	3 (4.8)	4 (6.5)
8 (n=11)	1 (1.6)	1 (1.6)
9 (n=6)	0 (0)	1 (1.6)
10 (n=3)	0 (0)	1 (1.6)

The adverse events were minimal with only under 20% patients had redness and bleeding 24 hours after treatment. The proportion of patients suffering from side effects was decreased significantly after the fourth treatment.

#### IV. DISCUSSION

The pigmentation and size of Hori’s nevus lesions were improving over the treatment sessions. Overall, 87.1% of patients had good treatment results. After the third session, the figure for patients having moderate to good pigmentation improvement was 85.5%. This figure was 93.5% for the size-reducing result after the fourth session. There were some adverse effects 24 hours after the treatment which mostly was redness and bleeding; however, the proportion was just under 20% and significantly dropped after the fourth treatment.

The efficacy was similar to QS Nd:YAG laser, one of the most popular choices of treatment nowadays [2], [4], [5]. In 2000, the study conducted by Polnikorn showed that 14 out of 54 subjects (26%) had good results (the pigmentation and size of lesions were reduced more than 50% compared to the beginning of treatment) after the second session. The percentage was increased to more than 50% after the third [4].

#### V. CONCLUSIONS

Picosecond Nd:YAG laser shows to be an effective method of treatment for Hori’s nevus.

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