

Rhinophyma in Three Filipino Gentlemen which Showed Remarkable Improvement Using a Combination of Low Dose Oral Isotretinoin, Long Pulsed 1064-nm neodymium-yttrium-aluminum-garnet (Nd:YAG) Laser and Carbon Dioxide Laser

Johannes Flores Dayrit, MD¹ & Julius Garcia Gatmaitan, MD²



¹De La Salle Medical and Health Sciences Institute & Research Institute for Tropical Medicine

²Gatmaitan Medical and Skin Center, Skines Aesthetic and Laser Center

Abstract

We present three cases of rhinophyma in three Filipino gentlemen in terms of clinical, dermoscopy and histopathologic characteristics. All 3 patients were prescribed low dose oral isotretinoin with a combination of long pulsed 1064-nm neodymium-yttrium-aluminum-garnet (Nd:YAG) laser treatments. Two of the patients further underwent bulk ablation by carbon dioxide laser. A combination of low dose oral isotretinoin 0.3 mg/kg/day and long pulsed Nd-YAG 1064nm laser utilizing vascular and hair removal parameters resulted to a rapid remission and dramatic improvement after 6 months of treatment and after 6 months follow-up. This treatment combination is promising and has not yet been described in the literature.

Keywords: rosacea, rhinophyma, isotretinoin, laser

Address of corresponding author:

*De La Salle Medical and Health Sciences Institute & Research Institute for Tropical Medicine,
Email:
yohanmdderm@gmail.com*

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Rhinophyma is a subtype of rosacea with enlargement of the nose, prominent pores and nodular deformity. The condition is considered uncommon or underreported in Asians. Cosmetic deformity and social stigma are significant concerns of patients. Antibiotics and oral isotretinoin has been reported to induce remission in early stages. Ablative lasers and plastic surgery are treatment options for chronic and recalcitrant cases. (Powell, 2005)

Case Presentation

Case 1 is a 61-year-old male who presented with asymptomatic nasal erythema and progressive nose enlargement for 2 years. Physical examination revealed an erythematous plaque with enlarged pores on the left ala nasi which extends to the tip of the nose (Fig 1a). Dermoscopy revealed dilated pores, yellowish areas and curvilinear and serpentine vessels (Fig 2a). Histopathology revealed dilated blood vessels, sebaceous gland hypertrophy and a moderately dense periadnexal inflammatory infiltrate of lymphocytes. (Fig 2b) The diagnosis is moderate-grade rhinophyma because of the patulous follicles with contour change without nodule formation. Patient had baseline laboratory results (complete blood count, kidney function tests, liver function tests, and lipid profile tests) within normal range. The patient was started on oral isotretinoin at 0.25 mg/kg/day which lasted for 6 months. After 2 months of oral isotretinoin, the patient underwent first session of long pulsed 1064-nm Nd:YAG laser (Cutera®, Brisbane CA) using the following parameters: laser hair removal setting (fluence: 50 J/cm², pulse duration: 20ms, repetition rate 0.9 Hz). On the 3rd month of oral isotretinoin, the settings were changed to long pulsed 1064-nm Nd:YAG laser (Cutera®, Brisbane CA) laser genesis setting (fluence: 8 J/cm², spot size: 5mm, pulse duration: 0.3ms, repetition rate 10 Hz) for 5 more monthly sessions. The patient completed a total of 6 sessions of long pulsed 1064-nm Nd:YAG laser (Cutera®, Brisbane CA) session with 4 weeks

interval. The patient showed remarkable improvement after 6 months follow-up.

Case 2 is a 47-year-old male who was referred because of a red nodule on the right ala nasi for 4 years. On physical examination he presented with a 1.4 x 1.0 cm nodule with patulous follicles and surface telangiectasia. (Fig 3a) Dermoscopy revealed prominent pores, yellow areas and prominent linear blood vessel. (Fig 2a) Histopathology revealed prominent telangiectasia, sebaceous gland hypertrophy and a moderate periadnexal inflammatory infiltrate of lymphocytes. (Fig 2b) The patient was classified as having severe rhinophyma because of the presence of patulous follicles, contour change and the nodule formation. Patient had baseline laboratory results (complete blood count, kidney function tests, liver function tests, and lipid profile tests) within normal range. He was started on low dose oral isotretinoin at 0.20 mgs/kg/day. After 2 months of oral isotretinoin, the patient underwent first session of long pulsed 1064-nm Nd:YAG laser (Cutera®, Brisbane CA) using the following parameters: laser vascular setting (fluence: 130 J/cm², spot size: 4mm, pulse duration: 20ms, repetition rate 0.0 Hz) to treat the prominent surface telangiectasia. Carbon dioxide laser (Smaxel, iDS, Korea) ablative resurfacing with the following parameters (fluence: 215mJ, 5ms pulse duration) was used to debulk the nodule. On the 3rd month of oral isotretinoin, the settings were changed to long pulsed 1064-nm Nd:YAG laser (Cutera®, Brisbane CA) laser hair removal setting (fluence: 50J/cm², spot size: 10mm, pulse duration: 20ms, repetition rate 0.9Hz) for 5 more monthly sessions. The patient completed a total of 6 sessions of long-pulsed Nd:YAG 1064 laser session and 1 session of carbon dioxide laser bulk ablation with 4 weeks interval. Remarkable improvement was observed even after 6 months after discontinuation of oral isotretinoin. (Fig 3b).

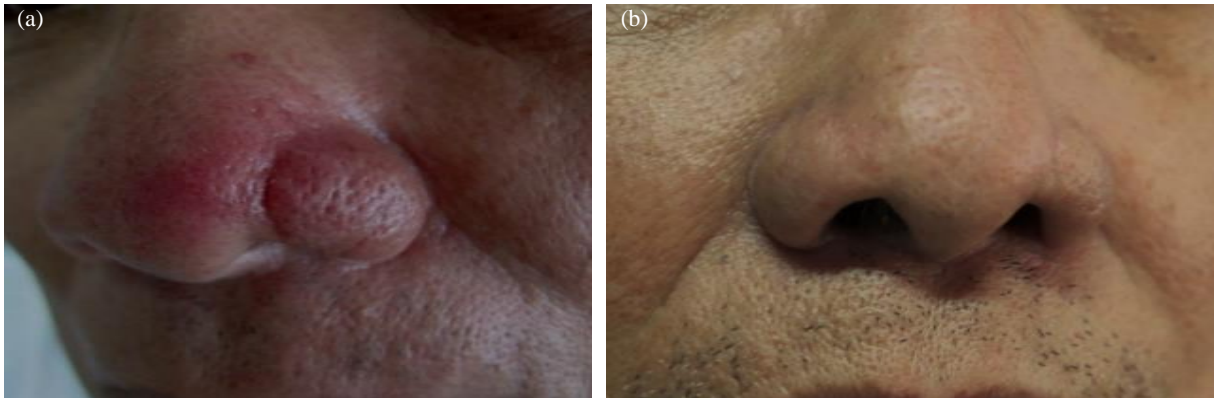


Figure 7: Case 1- Erythematous plaque with enlarged pores on the left ala nasi which extends to the tip of the nose (a) remarkable improvement after 6 months (b)

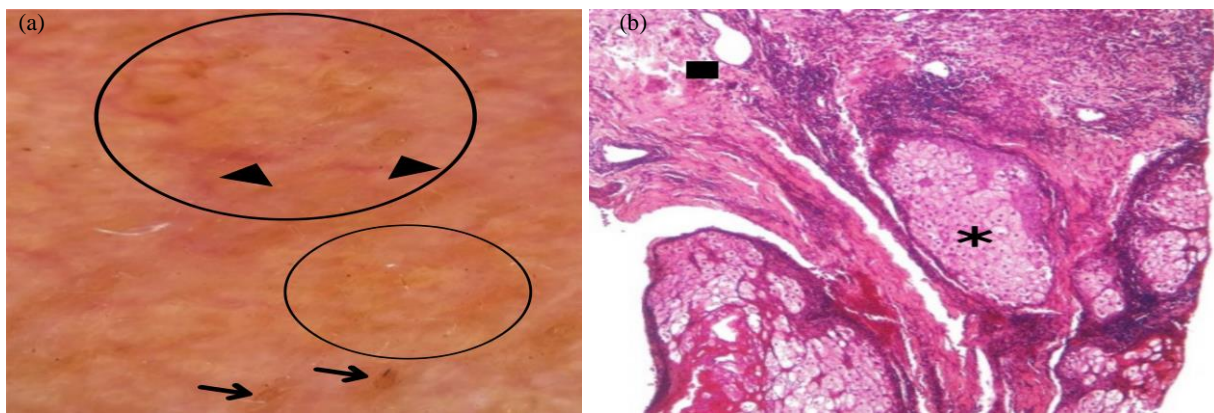


Figure 7: Case 1- Dilated pores (black arrow), yellowish areas (encircled area) and curvilinear and serpentine vessels (triangle). H&E shows dilated blood vessels (square), sebaceous gland hypertrophy (asterisk) and a moderately dense periadnexal inflammatory infiltrate of lymphocytes (a. DermLite DL4x10 ; b. H&E, 400x).

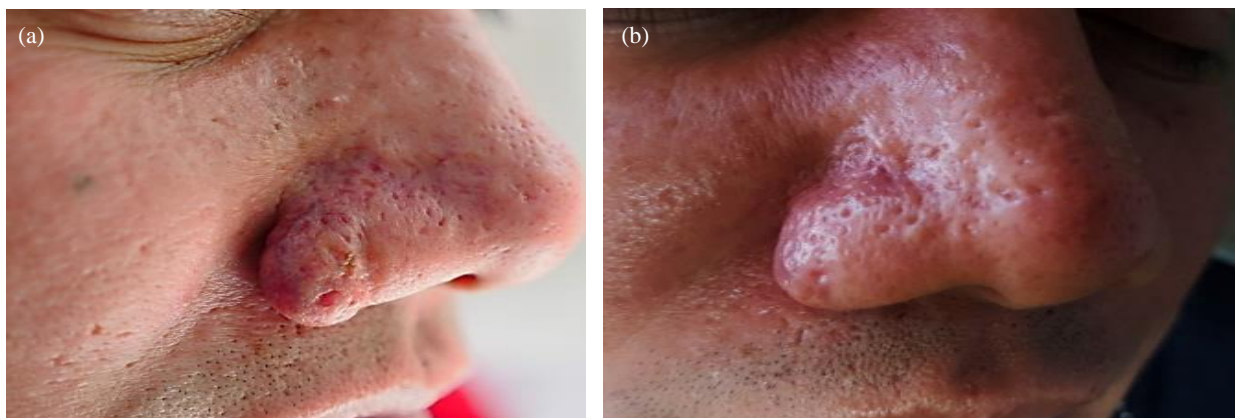


Figure 7: Case 2 - 1.4 x 1.0 cm nodule with pustular follicles and surface telangiectasia of four years duration (a) remarkable improvement after 6 months (b)

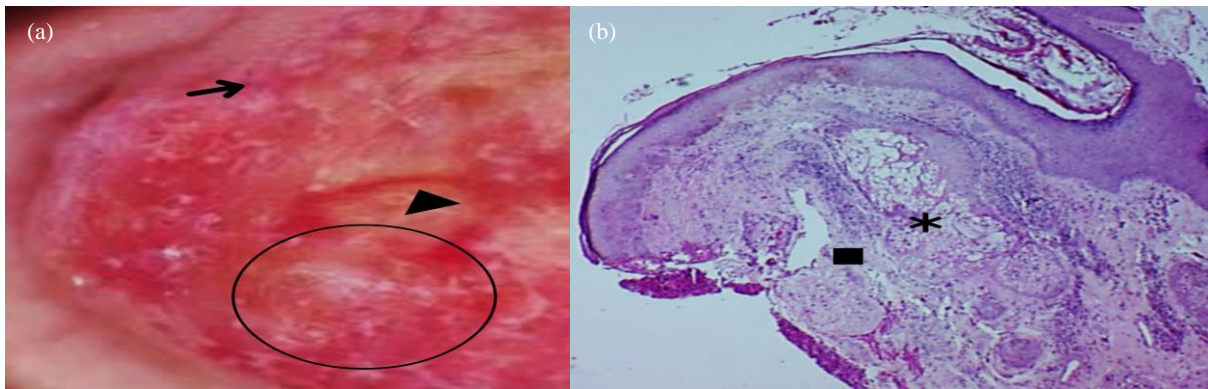


Figure 10: Case 2- Dilated pores (black arrow), yellowish areas (encircled area) and curvilinear and serpentine vessels (triangle). H&E shows dilated blood vessels (square), sebaceous gland hypertrophy (asterisk) and a moderately dense periadnexal inflammatory infiltrate of lymphocytes (a. DermLite DL4x10 ; b. H&E, 400x).

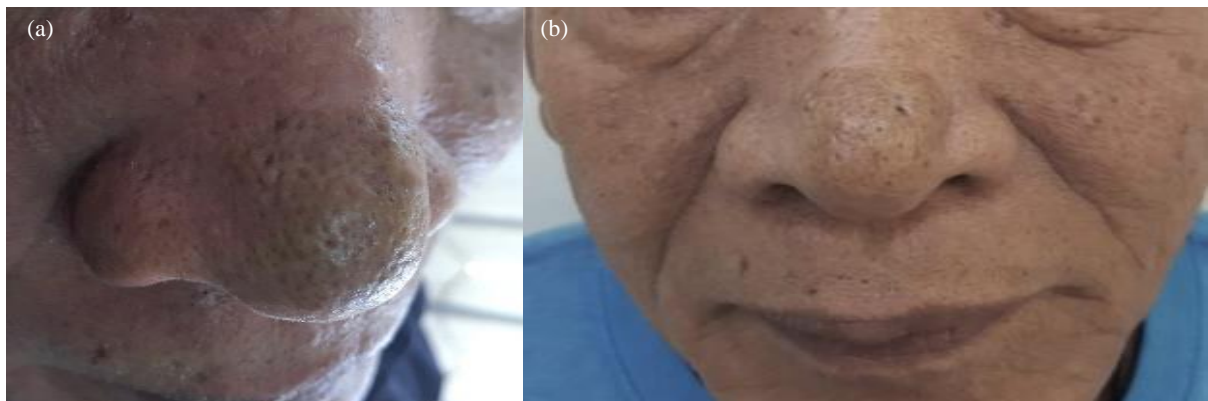


Figure 10: Case 3- Erythematous plaque on the tip of the nose with prominent pores of three years duration (a) remarkable improvement after 6 months (b)

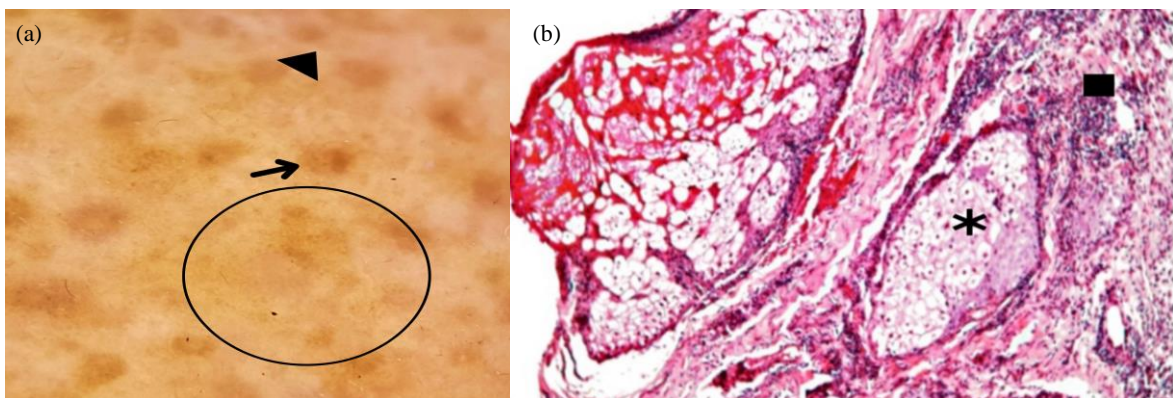


Figure 10: Case 3- prominent pores (black arrow), yellowish areas (encircled area) and white fibrotic areas with few blood vessels (triangle). H&E shows dilated blood vessels (square), sebaceous gland hypertrophy (asterisk) and a moderately dense periadnexal inflammatory infiltrate of lymphocytes (a. DermLite DL4x10 ; b. H&E, 400x)

Table 1: Clinical characteristics of patients and laser settings

Case	Age	Sex	Number of Cutera long-pulsed Nd:YAG 1064 laser; Settings and Parameter	Number of Carbon Dioxide laser sessions; Settings and Parameter	Dose and duration of oral isotretinoin
1	61	M	6; Laser hair removal setting (fluence: 50 J/cm ² , pulse duration: 20ms, repetition rate 0.9 Hz) for the first session and laser genesis setting (fluence: 8 J/cm ² , spot size: 5mm, pulse duration: 0.3ms, repetition rate 10 Hz) for 5 more monthly sessions	None	0.25mg/kg/day for 6 months
2	47	M	6; Laser vascular setting (fluence: 130 J/cm ² , spot size: 4mm, pulse duration: 20ms, repetition rate 0.0 Hz) for the first session and laser hair removal setting (fluence: 50J/cm ² , spot size: 10mm, Pulse duration: 20ms, repetition rate 0.9Hz) for 5 more monthly sessions	1; Carbon dioxide laser ablative resurfacing settings (fluence: 215mj, 5ms pulse duration)	0.20mg/kg/day for 6 months
3	67	M	6; Laser hair removal setting (fluence: 50 J/cm ² , pulse duration: 20ms, repetition rate 0.9) for first session and laser genesis setting (fluence: 8 J/cm ² , spot size: 5mm, pulse duration: 0.3ms, repetition rate 10 Hz) for 5 more monthly sessions	1; Carbon dioxide laser ablative resurfacing settings (fluence: 215mj, 5ms pulse duration)	0.20mg/kg/day for 6 months

The last case is a 67-year-old man who presented with a bulbous nose for 3 years accompanied by occasional erythema and pruritus. On physical examination he presented with an erythematous plaque on the tip of the nose with prominent pores (Fig 5a). Dermoscopy showed prominent pores characterized by annular brown clods, yellowish areas, and white fibrotic areas with few blood vessels (Fig 6a). Histopathology showed enlarged sebaceous lobules with a

moderately dense periadnexal inflammatory infiltrate of lymphocytes (Fig 6b). This case was classified as severe grade rhinophyma because of the presence of patulous follicles with contour change, nodule formation and fibrosis. Patient had baseline laboratory results (complete blood count, kidney function tests, liver function tests, and lipid profile tests) within normal range. He was started on low dose oral isotretinoin (0.20 mg/kg/day). On his 2nd month of oral isotretinoin, the patient underwent first session of long pulsed 1064-nm Nd:YAG laser (Cutera®, Brisbane CA) using

the following parameters: laser hair removal setting (fluence: 50 J/cm², pulse duration: 20ms, repetition rate 0.9). On his 3rd month of oral isotretinoin, Carbon dioxide laser (Smixel, iDS, Korea) ablative resurfacing with the following parameters (fluence: 215mJ, 5ms pulse duration) was used to debulk the rhinophyma. The patient underwent 5 more sessions of long pulsed 1064-nm Nd:YAG laser (Cutera®, Brisbane CA) laser genesis setting (fluence: 8 J/cm², spot size: 5mm, pulse duration: 0.3ms, repetition rate 10 Hz) with 4 weeks interval. The patient completed a total of 6 sessions of long-pulsed Nd:YAG 1064 laser session and 1 session of carbon dioxide laser bulk ablation with 4 weeks interval. The patient showed remarkable improvement even after 6 months of treatment. (Fig 5b).

Management And Outcome

Rhinophyma is a subtype of rosacea with enlargement of nose, prominent pores and nodular deformity. This condition is uncommon and underreported in Asians. Dermatologists should immediately recognize rhinophyma and institute immediate and proper intervention to prevent cosmetic disfigurement and social stigma.

In this case series, all patients were prescribed with mild cleanser, lightweight moisturizer sunscreen and low dose oral isotretinoin (0.2 to 0.3 mg/kg/day) for 6 months. To prolong the remission of this condition, all patients were treated with long pulsed Nd-YAG 1064nm and/or carbon dioxide laser ablative resurfacing. (Table 1).

Discussion

Rhinophyma is one of the subtypes of glandular rosacea characterized by enlargement of the nose due to hyperplasia of sebaceous glands and connective tissue. It is associated with circumscribed nodular changes or diffuse thickening of the skin. The condition is seen predominantly in men. The thickening of the skin may occur with the other symptoms of

rosacea such as persistent centrofacial redness, edema, and presence of papules and pustules. This thickening of the skin and glandular hyperplasia may also involve the chin/jaw (gnatophyma), forehead (metophyma), ear (otophyma) or eyelid (blepharophyma). (Aloi, 2000)

Histopathological results of our study revealed prominent telangiectasia, sebaceous gland hypertrophy and a moderate periadnexal inflammatory infiltrate of lymphocytes. This is similar to the findings of Cribier, wherein phymatous rosacea is characterized by increased number of sebaceous glands and fibrosis of the dermis. There is enlargement of the follicular infundibula, surrounded by infiltrates mainly composed of lymphocytes and neutrophils. (Cribier, 2013).

In a study by Pelle et al., Doxycycline at 40 mg/day and low dose isotretinoin (0.3 mg/kg/day) are systemic treatment modalities for phyma which demonstrate a high level of evidence in systematic reviews. (Pelle, 2004). Isotretinoin significantly decreased nasal volume and diminished size and number of sebaceous glands in rhinophyma based on their study. (Pelle, 2004). The mechanism of action of isotretinoin is to decrease the size of the sebaceous glands and reduce sebum production. It also exerts an anti-inflammatory effect and immunomodulatory properties by down-regulating IL-2 or IFN- α . (Wilkin, 1994 & Erdogan, 1998).

Carbon dioxide laser and Erbium:YAG lasers are the primary ablative lasers used to treat rhinophyma. Both lasers show optimal cosmetic results and minimal scarring when used for resurfacing. (Goon, 2004). The use of long-pulsed Nd:YAG using hair removal and vascular parameters in combination with isotretinoin has not been reported yet in literature. The long-pulsed Nd:YAG using a fluence of 23-56 J/cm² is hypothesized to prolong remission in rhinophyma when laser treatments are done at monthly intervals.

Studies have demonstrated extensive necrosis of sebaceous glands 6 hrs after hair removal procedures and absence of hair and sebaceous glands after 3 months of treatment. (Bengini, 2001). Clinical endpoints for the hair removal and laser genesis setting which the researchers observed in this case series are mild erythema. For the vascular setting, vein color change and eventually disappearance.

Nowadays, the use of some lasers in patients currently taking isotretinoin is already considered safe. The retrospective study on 408 patients done by Andrade have demonstrated that laser therapy for hair reduction using the alexandrite, long pulsed Nd:YAG, Q-switched Nd:YAG and fractionated lasers is a safe option in patients on isotretinoin therapy. (Andrade, 2016). Furthermore, the systematic review conducted by Wootton and Williams on the association of oral isotretinoin and atypical wound healing in 380 patients revealed that the overall risk for scarring is small. (Wootton, 2014).

This case report highlights the efficacy and safety of low dose isotretinoin and the long pulsed Nd:YAG laser on rhinophyma in 3 Filipino patients. A larger case series or clinical trial is further recommended to validate these preliminary findings.

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