

Effectiveness of the Pulse Dye Laser Treatment in a Caucasian Women With Dermatoses Papulosa Nigra

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Abstract

Dermatoses papulosa nigra (DPN) is a group of superficial, benign papules commonly in African-American and Asian persons. DPN is considered to be a form of seborrheic keratosis with a specific localization and it is less frequently described in the white population. Treatment modalities include cryosurgery, curettage, electrosurgery, shave removal, and different laser treatment. Pulsed dye laser (PDL) has traditionally been used to treat vascular lesions, but it has been shown to be effective in treatment of lentigines, ephelides, seborrheic keratosis, and rarely DPN. A 43-year-old white female presents with a 5 year-old history of hyperpigmented papules on malar region, neck and upper trunk. The patient is diagnosed with DPN based on her clinical and histopathological findings. The PDL treatment was used successfully. In our opinion PDL is an effective alternative cure option for DPN.

Key Words: *Dermatoses papulosa nigra, pulsed dye laser, seborrheic keratosis*

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What was known?

- Pulsed dye laser is an effective treatment of vascular lesions, and seborrheic keratosis.
- Dermatoses papulosa nigra is considered to be a form of seborrheic keratosis as clinically and histopathologically.

Introduction

Dermatoses papulosa nigra (DPN) are characterized by superficial, benign papules are more frequently seen in African-American and Asian persons. The number and size of DPN-related papules usually increase over the time and do not resolve spontaneously.^[1] DPN is classified as a form of seborrheic keratosis with specific features such as localizations and affected ethnic groups.^[2]

Few treatments options with different success results have been tried in DPN. To date, only one study has been published on the effectiveness of pulsed dye laser (PDL) in DPN treatment. Herein we report a 43-year-old Caucasian female with DPN and her response to PDL treatment.

Case Report

A 43-year-old Caucasian female (Fitzpatrick skin type II) presented with several hyperpigmented papules on the malar region, neck and upper part of the trunk for 5 years. The past medical history and family history was unremarkable. She did not receive any previous treatments.

The dermatological examination showed several yellowish-brown papular lesions on the malar area, neck and anterior part of the trunk. The lesions were more intense in the malar areas. The size of the lesions usually ranged between 1 and 5 mm, but its size reached up to 1.5 cm in size in malar area [Figure 1a, 2a, 3a].

The skin biopsy taken from the trunk showed hyperkeratosis, papillomatosis, basaloid cell hyperplasia and rete ridge elongation in the epidermis, increased melanin pigmentation, and keratinous cyst formation and invagination [Figure 4]. Her clinical and histopathological findings were consistent DPN.

Due to the presence of several lesions, pulsed dye laser (PDL (585nm)) was applied with 7 mm cap and with 8-9.5j/cm² power for 10 ms pulse rate. It was applied 2-6 times with 4 weeks intervals. The response of treatment was assessed based on established quartile grading scale: grade 1 (25%; minimal to no improvement), grade 2 (26-50%; moderate improvement), grade 3 (51-75%; marked improvement), and grade 4 (>75%; Near total improvement).

During the treatment, the patient developed mild pain, mild post procedural erythema and edema that resolved within 24 to 48 hours. At the 1-month follow-up visit following the last treatment, it was noted grade 3 improvements in neck and trunk lesions, and grade 4 improvement in cheek lesions (especially 2 big lesions) with no post-procedural complications or recurrence [Figure 1b, 2b, 3b). Some lesions on trunk had grade 1 improvement. The patient's degree

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Figure 1: (a) Pretreatment appearance of right side of the patient's face. (b) The lesion's posttreatment appearance

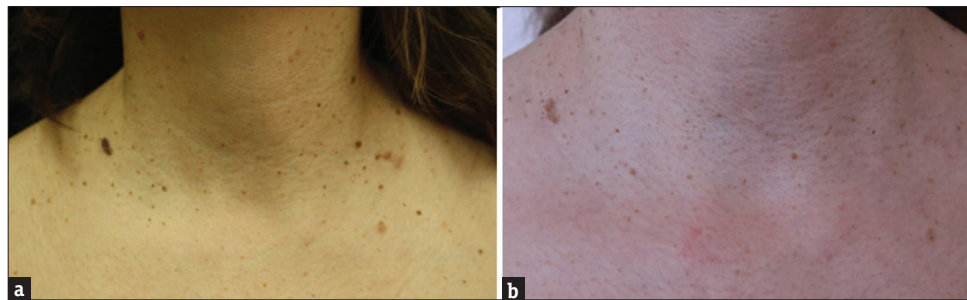


Figure 2: (a) The patient's DPN lesions on the neck region. (b) This lesion's posttreatment appearance



Figure 3: (a) The lesions on the left side of the face. (b) The lesion's posttreatment appearance

of satisfaction was consistent with the physician's assessment of improvement.

Discussion

DPN is a benign skin condition that may be caused by a defect in the nevoid development of the pilosebaceous follicles. DPN histologically appears to be a variant of seborrheic keratosis.^[3] DPN occurs in individuals with darker skin types. DPN is seen more frequently in African Americans and Africans.^[3] DPN is rarely seen in Caucasians. Our patient had Fitzpatrick skin type-2.

The lesions usually do not regress spontaneously. Patients want to be treated for cosmetic reasons. There are few studies on treatment options of DPN. In those studies,

excision, curettage, cauterization, and cryotherapy were tried in limited cases. In DPN patients, KTP laser, fractional erbium laser, and PDL were used.^[1-4]

The pulsed dye laser (PDL) is typically used in treatment of vascular lesions owing to its absorption by hemoglobin, but melanin can absorb PDL energy as well. However, PLD have been tried in treatment of several non-vascular lesions.^[5] Its effectiveness has been shown in treatment of lentigines, ephelides, and seborrheic keratosis, actinic keratosis.^[6] The outcome and side effects of PDL with longer pulse duration can compare favorably with traditional treatment methods of electrodesiccation and curettage.^[4]

Several modalities, particularly cryosurgery can cause undesirable cosmetic outcomes including pigmentation

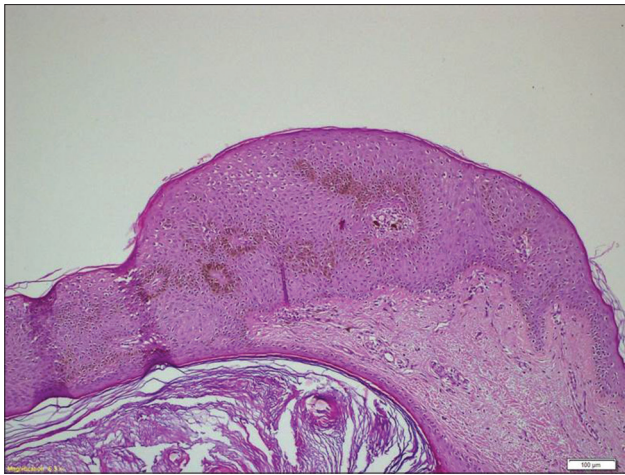


Figure 4: Histologically, there were hyperkeratosis, papillomatosis, proliferation of basal cells, increase in melanin pigmentation (H and E, ×10)

alteration. Curettage and cauterization can cause hypo- and hyperpigmentation.^[1]

A few studies on laser treatment in DPN have been conducted.^[6] A Q-switched KTP laser was compared with electrodesiccation in DPN treatment. No significant difference in efficacy was detected between the modalities although pain was less frequently seen in the patients treated with laser treatment than with electrodesiccation.^[1] An Erbium-doped 1550-nm fractionated laser was shown effective in treatment of DPN as well.^[7] Schweiger T and colleagues performed long-pulse neodymium yttrium aluminum garnet laser in treatment of two patients with DPN treated with a.^[8] In both laser therapies, satisfactory response was obtained after two therapy sessions.^[4] Fractional photothermolysis may be a better treatment option in treatment of DPN. Although several sessions is required in fractional photothermolysis to obtain the best results, the risk of dyspigmentation is less frequently seen than other treatment modalities.^[1]

To our best knowledge, the use of PDL in treatment of DPN has been assessed in one study.^[4] It was shown that PDL was as safe as electrodesiccation and curettage. PDL related the most common side effect was hyperpigmentation that was seen in all treatment groups with no statistically significant difference.^[4] In that study, improvements were obtained after the first session, but in our case we had to perform 2-6 sessions to achieve remarkable improvements. Similarly, repeated sessions are required in order to obtain remarkable improvements with KTP laser, fractionated erbium-doped laser and fractional photothermolysis therapies.^[1,4,7,8]

There are two different advantages of laser therapy; first of all it is easy and quick to use and secondly there is no necessity of anesthesia during the procedure. Otherwise, curettage and electrodesiccation can be less painful than laser, but local anesthesia is used for both modalities.^[4]

Due to the presence of several lesions in patients with DPN, laser therapy can be applied more quickly and more comfortable for the patients than destructive methods such as electrodesiccation. Curettage and electrodesiccation are effective methods, but require local anesthesia. Thus, those methods can be challenging to apply in several lesions.

We applied PDL in our case due to the presence of several lesions and we obtain satisfactory responses. Furthermore, we did not observe any side effects such as scarring, hypo and hyperpigmentation even if we administered several sessions. In our case, we obtained better response in bigger lesions and some lesions were refractory to the therapy. The other disadvantage was requirement of multiple sessions. Further studies including large subjects and comparison with different methods are warranted to determine patient selection criteria and to assess the effectiveness of treatments.

What is new?

- Dermatosi papulosa nigra is a rare entity in Caucasian people.
- The use of PDL in treatment of DPN has been assessed in only one study.

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