

Intralesional injection of botox versus long pulsed Nd YAG laser in treatment of Acne keloidalis nuchae

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Abstract

Background: Acne keloidalis nuchae (AKN) is a very challenging dermatological problem for treatment depending on its chronicity and cosmetic disfiguring thus, we aim to assess the efficacy of both injection of botulinum neurotoxin A (BoNT/A) intralesionally and long pulsed Nd:YAG laser for treatment alongside with combination of both treatment. **Methods:** Male patients suffering from Acne Keloidalis Nuchae divided into three groups. All patients diagnosed clinically and assessed before and after treatment with Vancouver scare scale (VSS) and global aesthetic improvement scale. **Results:** There were significant response for treatment of AKN with Nd:YAG laser rather than intralesional injection of BoNT/A. There was significant differences regarding global aesthetic improvement scale. **Conclusion:** Both long pulsed Nd YAG laser and intralesional injection of botox for treatment of Acne keloidalis nuchae may be effective.

Keywords: Acne Keloidalis Nuchae, Botulinum Neurotoxin A, Long Pulsed Nd:YAG laser.

1. Introduction

Acne keloidalis nuchae (AKN) which is also named folliculitis keloidalis nuchae is a kind of long-standing scarring folliculitis more in black men than others. Even though it is well acknowledged that it is not a keloidal lesion and is not connected to acne vulgaris and that the disease may come outside the nape area, these idioms are yet frequently used [1].

It is suggested that mechanically generated folliculitis, which may result from rubbing and scratching or discomfort from foreign items, is the initial triggering step. Scar and keloid formation follow because of the severe folliculitis that appears [2].

The goal of conventional disease management is to stop the disease from progressing. This includes avoid wearing clothes that causes mechanical irritation and using antimicrobial cleansers to prevent secondary infection. The disease may progress from an early to a late stage, necessitating extensive healing times after surgical excision and skin grafting. Modern techniques of laser and light therapeutic devices could provide an additional course for treating AKN [3].

The disease process is slowed down by the long pulsed Nd:YAG laser's selective photo thermolysis, which results in selective damage to the hair follicle. The truth that long pulsed Nd:YAG laser generates coagulative necrosis on the hair follicles, which is the primary element of inflammation in AKN and the key factor involved in the aetiology of the disease, may be responsible for the ongoing improvement of clinical scores [4].

In a prospective, uncontrolled research [5], intralesional injections of BoNT/A were also suggested as a therapy for keloids that had already developed. It was presumable that BoNT/A could encourage apoptosis while preventing the viability and development of keloid fibroblasts. By controlling TGF- β 1 expression, which may then increase the appearance of

matrix metalloproteinases (MMP-1 and MMP-2) to hasten the breakdown of the extracellular matrix in keloid formation process, BoNT/A may aid in the healing of scar tissue [6].

2. Materials and methods

The study included patients complaining of AKN attending to outpatient dermatology clinic in armed forces medical complex in kobri elqobba. Inclusion criteria was: all male patients over 18 years old complaining of AKN. Exclusion criteria were: females, patients with previous treatment of AKN within the past 3 months or having active infection or patient with hypersensitivity to BoNT or patients with a history of photosensitivity.

A full history was taken from every patient in the form containing personal history, the complaint, duration, cause, previous therapies used and history of recurrence, previous drug intake, trauma, operations and systemic diseases. Then followed with complete general examination and subjected to careful inspection and palpation of the existing AKN. Their anatomic distributions and sizes were recorded and interpreted on vancouver scar scale (Table 1) [7].

The patients were splitted into three groups. Group I, patients were subjected to monthly treatment sessions with long pulsed Nd:YAG laser [8].

Group II, patients were subjected to monthly treatment sessions with intralesional injection of BTA [9].

Group III, patients were subjected to monthly alternating treatment sessions of intralesional injection of BTA and long pulsed Nd:YAG laser at two weeks interval.

The total number of sessions in each group ranged from 4 to 6 sessions.

All patients signed an informed consent document. All lesions were photographed before treatment and after each session to evaluate the disease at the base line and

| | | | | | | | | |
|--------------------------------|-----------|-----------|-----------|-----------|-------|-------|-------|-------|
| Co Officer | 1 (10.0%) | 0 (0.0%) | 1 (10.0%) | $\chi^2=$ | 0.408 | 0.464 | 0.299 | 0.220 |
| Employer | 2 (20.0%) | 4 (40.0%) | 0 (0.0%) | 14.571 | | | | |
| Engineer | 1 (10.0%) | 0 (0.0%) | 0 (0.0%) | | | | | |
| Manager | 0 (0.0%) | 1 (10.0%) | 1 (10.0%) | | | | | |
| Officer | 0 (0.0%) | 1 (10.0%) | 2 (20.0%) | | | | | |
| Solider | 4 (40.0%) | 4 (40.0%) | 6 (60.0%) | | | | | |
| Student | 1 (10.0%) | 0 (0.0%) | 0 (0.0%) | | | | | |
| Worker | 1 (10.0%) | 0 (0.0%) | 0 (0.0%) | | | | | |
| Smoking | | | | | | | | |
| Negative | 4 (40.0%) | 3 (30.0%) | 6 (60.0%) | $\chi^2=$ | 0.387 | 0.639 | 0.371 | 0.178 |
| Positive | 6 (60.0%) | 7 (70.0%) | 4 (40.0%) | 1.900 | | | | |
| Family history | | | | | | | | |
| Negative | 7 (70.0%) | 9 (90.0%) | 10 (100%) | $\chi^2=$ | 0.133 | 0.264 | 0.060 | 0.305 |
| Positive | 3 (30.0%) | 1 (10.0%) | 0 (0.0%) | 4.038 | | | | |
| Acne | | | | | | | | |
| Negative | 6 (60.0%) | 3 (30.0%) | 5 (50.0%) | $\chi^2=$ | 0.478 | 0.211 | 0.327 | 0.607 |
| Positive | 4 (40.0%) | 7 (70.0%) | 5 (50.0%) | 3.500 | | | | |
| Mild | 4 (40.0%) | 5 (50.0%) | 3 (30.0%) | | | | | |
| Moderate | 0 (0.0%) | 2 (20.0%) | 2 (20.0%) | | | | | |
| severe | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | | | | | |
| Acne scars | | | | | | | | |
| Negative | 10 (100%) | 8 (80.0%) | 10 (100%) | $\chi^2=$ | 0.117 | 0.136 | 1.000 | 0.136 |
| Positive | 0 (0.0%) | 2 (20.0%) | 0 (0.0%) | 4.286 | | | | |
| History of keloids | | | | | | | | |
| Negative | 8 (80.0%) | 8 (80.0%) | 8 (80.0%) | $\chi^2=$ | 1.000 | 1.000 | 1.000 | 1.000 |
| Positive | 2 (20.0%) | 2 (20.0%) | 2 (20.0%) | 0.000 | | | | |
| History of isotretinoin | | | | | | | | |
| Negative | 10 (100%) | 10 (100%) | 8 (80.0%) | $\chi^2=$ | 0.117 | 1.000 | 0.136 | 0.136 |
| Positive | 0 (0.0%) | 0 (0.0%) | 2 (20.0%) | 4.286 | | | | |

Significant differences were reported between all groups regarding each parameter of vancouver scar scale after treatment as vascularity (P = 0.009), height (P = 0.012), pliability (P = 0.018), pigmentation (P = 0.026), total score (P = 0.002).

Discussion

Numerous modalities were being used to treat AKN with varying degrees of success. Although topical or intralesional steroids and topical retinoids may help in treatment of papulopustular lesions and so antibiotics and immunomodulators but larger plaques may need surgical excision [11]

The present study's result showed in group I that total VSS score was significantly decreased after treatment. There were also significant differences in all of VSS parameters as decrease in vascularity, height, pliability and pigmentation after treatment than before treatment as it goes with the study of Woo et al [12] which concluded the role of Nd:YAG in papular form of AKN treatment. Therapy was well accepted while pain is the chief side effect. No Pigmentary changes appeared. They used twice pulsing for large nodular lesions but resulted in more pain which suggests that Nd:YAG laser more efficient on the papular form of AKN.

In group II there was significant difference in total VSS score and pliability that was decreased after treatment. Other VSS parameters as vascularity, height, and pigmentation were not of significant difference. Regarding treatment with Botox depending on its effect on hypertrophic scars and keloid as it was reported [13] [14]. The result of this study was reduction in VSS and its parameters but not sufficient as was reported by them.

In group III there was significant difference in total VSS score, height and pliability as there were decreased after treatment. but no significant difference in vascularity and pigmentation which goes with the study of AbdelRahman et al [15] who treated hypertrophic scars with Nd:YAG laser and then intralesional injection of BoNT/A revealed that there is a remarkable reduction of VSS total score and also relief of pain, pruritis after treatment..

The clinical response was also assessed by global aesthetic improvement scale which revealed that there was marked reduction in total VSS score after treatment in group I over group II and group III and more patients reached ideal improvement in group I over group II and group III.

The study had some limitations. First, the small sample size for each group. Second, the follow-up period was only 6 months. Therefore, this study is devoid of data on long-term effects of the therapies. Reappearance may occur after long period. These limitations can't be ignored. The limitation also included the incompliance by the patients due to study duration, cost of the treatment and steadiness in response after 4 laser treatment sessions. So, treatment period can be confined to 4 sessions to get the most benefit for patient response in addition to improve compliance and lower the cost.

It was concluded that Nd:YAG laser in treating AKN is an excellent way with minimal side effects while intralesional injection with BoNT/A may be a promising method for further studies.

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