

## Evaluation of Narrow Band Ultraviolet B (NBUVB) Treatment in Patients with Lichen Planus

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### Abstract

**Background:** In lichen planus, cutaneous lesions usually resolve within 2 years; however, treatment may be justified to reduce time till resolution and relieve the symptom of itching. Treatment may include a variety of agents that have been described as 1<sup>st</sup> line, second line and third line therapies. Oral lesions may resolve spontaneously within 5 years; but most cases are chronic, therefore treatment must be justified when ulcerative lesions interfere with normal feeding, otherwise treatment should be avoided because the burden of side effects is much more than the obtained benefit. **Aim of the study:** to evaluate the response of patients with lichen planus to narrow band ultraviolet B phototherapy. **Patients and methods:** The present cohort study included 40 patients with lichen planus with and age range of 11 to 55. The study was carried out at the dermatology unit, Al-Diwaniyah Teaching Hospital located at Al-Diwaniyah province, Mid-Euphrates region of Iraq. The duration of study extended from January 2018 till March 2019. All patients were treated twice weekly (two sessions per a week). The starting dose was 150-200 mJ/cm<sup>2</sup>, then the dose was increased 10-20% per session. All patients were followed for a period of 6 up to 12 months in order to record the quality of response and relapse and number of relapses if ever happened. **Results:** Patients received treatment sessions that ranged from 25 up to 50. Patients with excellent response accounted for 20 (50 %), patients with good response accounted for 10 (25 %), patients with fair response accounted for 7 (17.5 %) and patients with poor response accounted for 3 (7.5 %). Response to treatment showed no correlation to any of demographic characteristics. After 6 months of follow up only 5 patients developed relapse and after one year the number rises to 7 patients. **Conclusion:** In view of the available data obtained from the current study and previous reports it is obvious that NBUVB treatment in patients with lichen planus is associated with an acceptable complete and partial response rate with good patient satisfaction.

**Keywords:** *Lichen planus, Narrow band ultraviolet B therapy.*

### Introduction

Among inflammatory disorders that affect skin, lichen planus appears as purple, itchy, papules and plaques. These lesions are often seen at the wrist, ankle and lower back; however, other sites may also be involved. Mucus membranes are also affected [1]. Wickham striae, a network of white lines, and erosion may complicate the clinical picture of the disease [2]. The classic clinical presentation of disease is preferably called 6 Ps, “purple, polygonal, planar, pruritic papules, and plaques” [3].

However, a number of particular patterns have been described such as hypertrophic type, ulcerative type, bullous type, lichen planus pemphigoids, lichen planus pigmentosus, and inverse type [1]. In general

the disorder is considered idiopathic since no definite etiologic agent has been definitely blamed [4]. The pathogenesis is supposed to be an autoimmune based mucocutaneous inflammatory lesion due to an altered self antigen that cross reacts with normal self antigens [5, 6]. The altered self antigen itself is the product of an interaction between normal self antigen and an environmental trigger, such as virus or a drug [7]. These altered antigens will later on trigger T-cell mediated autoimmune lesions [7].

Despite, idiopathic nature of disease, some controversial etiologic agents has been described in literatures, such as Hepatitis C virus and some drugs. Patients with Hepatitis C virus are approximately 5 times

more liable for having lichen planus and vice versa [8, 9]. Drugs such as non steroidal anti-inflammatory drugs, beta blockers and ant-malarial agents have been linked to lichen planus [10]. Cutaneous lesions tend to resolve spontaneously with 2 years or less; however, mucosal lesions tend to be chronic [3]. Drug induced lesions often subside following discontinuation of the offending agents [3]. Form epidemiological perspective, the disorder is estimated to affect around 0.2 to 1 % of adults globally [11]. In general the disease is more commonly encountered between 30 to 60 years of age and is observed in women more frequently than men [3]. The disease is rarely seen in children [12]. Although, no ethnic predilection has gained consensus, some reports has pointed to higher incidence rate of disease among Arabs [3].

Unfortunately, the exact prevalence of the disease based on population based national study in Iraq is lacking; however, some single center hospital based reports has estimated the prevalence rate of lichen planus among all available oral lesions to be around 3.6 % and that oral lichen planus is more common in women [13].Cutaneous lesions usually resolve within 2 years; however, treatment may be justified to reduce time till resolution and relieve the symptom of itching [14].

Treatment may include a variety of agents that have been described as 1<sup>st</sup> line, second lined and third line therapies [14]. Oral lesions may resolve spontaneously within 5 years; but most cases are chronic, therefore treatment must be justified when ulcerative lesions interfere with normal feeding, otherwise treatment should be avoided because the burden of side effects is much more than the obtained benefit [14]. The current study was carried out in Al-Diwaniyah province, Mid-Euphrates region of Iraq, to evaluate the response of patients with lichen planus to narrow band ultraviolet B phototherapy.

## Patients and Methods

The present cohort study included 40 patients with lichen planus with and age range of 11 to 55. The study was carried out at the dermatology unit, Al-Diwaniyah

Teaching Hospital located at Al-Diwaniyah province, Mid-Euphrates region of Iraq.

The first patient was selected randomly according to a computer generated random number; other patients were selected as one every other three patients. The duration of study extended from January 2018 till March 2019. All patients were treated twice weekly(two sessions per a week).The starting dose was 150-200 mj/cm<sup>2</sup>,then the dose was increased 10%-20% per session. All patients were followed for a period of 6 up to 12 months in order to record the quality of response and relapse and number of relapses if ever happened.

The quality of response was graded as excellent when 76-100 % of lesions disappeared, well when 51- 75 % of lesions disappeared, fair when 26 – 50 % of lesions disappeared and poor when 0-25 % of lesions disappeared. The study was approved by the institutional approval committee, and a verbal consent was obtained from all participants or from their care givers in cases of children under 15 years of age. Data were then transferred into an SPSS (version 23) spread sheet for purpose of statistical description and analysis.

## Results

The current study included 40 patients with lichen planus with a mean age of 33.21± 8.91 years and an age range of 11 to 55 years. The study included 17 (42.5 %) males and 23 (57.5 %) females. According to residency, patients were distributed as 29 (72.5 %) from urban areas and 11 (27.5 %) from rural areas. These demographic data are shown in Table 1. Patients received treatment sessions that ranged from 25 up to 50 and the response to treatment is demonstrated in Table 2. Patients with excellent response accounted for 20 (50 %), patients with good response accounted for 10 (25 %), patients with fair response accounted for 7 (17.5 %) and patients with poor response accounted for 3 (7.5 %). Response to treatment showed no correlation to any of demographic characteristics, Table 3. After 6 months of follow up only 5 patients developed relapse and after one year the number rises to 7 patients, Table 4.

**Table1: Demographic characteristics of patients with lichen planus participating in this study**

| Characteristics | Value |
|-----------------|-------|
| Number of cases | 40    |
| Age (years)     |       |

|               |             |
|---------------|-------------|
| Mean ± SD     | 33.21± 8.91 |
| Range         | 11 to 55    |
| Gender        |             |
| Male, n (%)   | 17 (42.5 %) |
| Female, n (%) | 23 (57.5 %) |
| Residency     |             |
| Urban         | 29 (72.5 %) |
| Rural         | 11 (27.5 %) |

**Table 2: Response to treatment with narrow band ultraviolet B**

| Response  | n (%)      | Number of sessions |
|-----------|------------|--------------------|
| Excellent | 20 (50 %)  | 25                 |
| Good      | 10 (25 %)  | 25                 |
| Fair      | 7 (17.5 %) | 50                 |
| Poor      | 3 (7.5 %)  | 50                 |

**Table 3: Correlation of response to demographic characteristics**

| Characteristic | r      | P     |
|----------------|--------|-------|
| Age            | -0.219 | 0.174 |
| Gender         | -0.213 | 0.187 |
| Residency      | 0.210  | 0.194 |

**Table 4: Rate of relapse following follow up**

| Follow up period | n (%)      |
|------------------|------------|
| 6 months         | 5 (12.5 %) |
| 12 months        | 7 (17.5 %) |

## Discussion

Despite being self limited disease, patients with lichen planus often seek medical advice because of the long duration of the disease and the associated itching and disfigurement. In addition, the disease is often chronic in patients with mucosal manifestation. The side effects associating most of available treatment justify the search for another approach to treat patients complaining of lichen planus. The current study showed that the use of narrow band UVB was associated with high rate of excellent and good response and the rate of relapse following one year was only 7 out of 40 (17.5 %). Moreover, this mode of therapy was free of unwanted or disabling adverse effects. In one study, it has been shown that complete response was achieved in more than 50 % of patients with lichen planus and that patient

satisfaction was significantly in favor of NBUVB in comparison with systemic steroids [15]. In another study, the efficacy of NBUVB was also clinically observed in a number of patients with lichen planus in terms of good rate of complete and partial response, low rate of relapse and negligible side effects [16]. In addition, other authors reviewed retrospectively the effect of using NBUVB for treatment of generalized lichen planus and found that such treatment has offered good response rate and minimal or negligible side effects [17]. Good response rate was also highlighted by 2 other studies on patients with lichen planus treated with NBUVB [18]. In view of the available data obtained from the current study and previous reports it is obvious that NBUVB treatment in patients with lichen planus is associated with an acceptable complete and partial response rate with good patient satisfaction.

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