

A comparison between the efficacy of narrow band ultra violet B phototherapy with and without needling of the lesion in the treatment of vitiligo

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BACKGROUND: Vitiligo as a common pigmentary disorder affects up to 2% of the general population. There are several treatment modalities in the literature but photo therapy is one of the best known with an improving effect. The goal of this study was to compare the efficacy of NB-UVB alone with adjunction of NB-UVB with needling procedure in inducing of repigmentation. **METHODS:** This was a randomized clinical trial which was done on 41 vitiliginous patches of patients with non responding vitiligo. The selected patches of the body were treated 3times a week with NB-UVB therapy either with or without the needling approach for three month. The pigmentation score and the photographs of before and after the therapy were compared to evaluate the response rate. **RESULTS:** The pigmentation score and improvement of the lesions differed statistically in the combined needling side in comparison with the NB-UVB alone side in favor of the combined treatment ($p < 0.05$). The response rate was higher in trunkal lesions than lesions on the extremities ($p < 0.05$). **CONCLUSIONS:** The needling procedure can increase the response rate of photo therapy and it accelerates the improvement process and therefore, reduces the side effects.

KEYWORDS: Vitiligo, Narrow Band UVB, Phototherapy, Needling

BACKGROUND

Vitiligo is one of the commonest pigmentary disorders which is revealed as depigmented patches specially on face and exposed parts of extremities.^[1]

This condition may affect up to 2% of the general population in every ethnic group, but the effect is more noticeable in dark skinned patients.^[2]

As vitiligo has a dramatic effect on the patients' general appearance, their quality of life may be influenced dramatically by the disease. The patients may suffer from anxiety, depression and social isolation because of the depigmented visible patches on the exposed parts of their body.^[3]

Vitiligo is a multifactorial disorder and there are several suggested underlying etiologies. The positive family HX is reported in 20-30%.^[4] Auto immune, neurogenic theories, and auto destruction of melanocytes are also suggested.^[5]

The psychological impacts of vitiligo are completely evident, especially in female patients and those who are dark skinned.

Due to the great influence of vitiligo on the patients' general appearance, seeking medical advice is very common. There are several treatment modalities, such as topical and surgical techniques. Corticosteroids, calcineurin inhibitors, vitamin D analogues and photo therapy are some of the well-known reported therapies, which have different response rates.^[6,7]

Narrow band ultraviolet B (NB-UVB) (311nm) is the selected type of phototherapy with 40-70% repigmentation rate depending on the affected site.^[8,9]

The narrow bond UVB is used routinely two to three times a week for about 30-60 sessions, and the patches which are radiated by UVB will be resolved by perifollicular repigmentation, which merge together to form a uniform pigmented patch.^[8,9]

We have several reports of induction of repigmentation in the stable patches of vitiligo by needling from pigmented margins towards white central areas.^[10,11]

The goal of this study was to compare the efficacy of NB-UVB alone with adjunction of NB UVB

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with needling procedure in inducing of repigmentation.

METHODS

This was a randomized clinical trial on 41 non-responding vitiliginous lesions (for the previous six months) of vitiligo patients, who were selected randomly with simple random sampling from the Dermatology Clinic of Al Zahra Hospital in Isfahan University of Medical Sciences between October 2008 and October 2009.

This study was confirmed by the research chancellor of Isfahan University of Medical Sciences with the research project number of 389021.

The goal of the study was explained for all the participants, and informed consents were obtained from all of them. Two different vitiligo patches in 21 patients, which did not respond to any type of treatment during the last 6 months, were selected, randomly divided and named patch A or B.

Finally 41 vitiliginous patches of patients with non-responding vitiligo were include in the study. The history of previous therapies, the presence of concurrent disorders, and other medications were obtained and those who had diseases that could exacerbate by ultraviolet light (like systemic lupus erythematosus) were excluded. The photography of the lesions was obtained by a digital 8 megapixel Canon camera. The presence or absence of perifollicular pigmentation was also determined.

All the patches (A and B patches) were irradiated with NB UVB (311nm) three times a week for three months. The initial radiation dose was 0.5-1J/cm², which was modified due to the presence and severity of lesional erythema by 0.1j/cm² in order to decrease side effects and enhance the therapeutic response.

The B patches were subjected additionally to needling from the peripheral border just before each session of NB UVB by using a 30 G insulin needle. The needle was inserted by a 15 degree angle to reach the dermo-epidermal junction in several points 1cm apart.

The needles were entered from the peripheral pigmented border or pigmented dots in the lesion and slid toward the central depigmented area parallel to the surface. If there were any pigmented spots in the field of the lesion they were inserted as well.

The treatment lasted for 3 months, during which the patients were visited every 3 weeks in order to monitor their response rate. The final recovery was analyzed by a four graded scoring system for pigmentation, which is shown in table 1.^[11]

Table 1. Grade of repigmentation

G0	None
G1	up to 25% repigmentation
G2	25-50% repigmentation
G3	> 50% repigmentation

G: Grade

SPSS software 17.0 was used for statistical analysis. The Spearman, Wilcoxon and Kruskal-Wallis tests were used for data analysis.

RESULTS

In the current study, the age range of the participants was 14 to 40 years and the duration of their disease was 10 months to 21 years.

Moreover, there were no facial lesions and the commonest site of lesions was the upper extremities. The base line pigmentation score did not differ between two groups ($p > 0.05$).

Table 2 demonstrates the pigmentation grade after two methods of therapy.

The Wilcoxon test demonstrated a higher pigmentation grade in the B side (combination therapy) than A side in both truncal and limb lesions (NB UVB alone).

The Kruskal-Wallis test showed a statistically different score of pigmentation in truncal lesions in comparison with lesions on the extremities and the truncal lesions respond better ($p < 0.05$).

Table 2. the grade of pigmentation after treatment

Grade of pigmentation	A side(NB UVB)	B side (NB UVB + needling)	P-value
0	19 (46.3%)	7 (17.1%)	$p < 0.05$
1	5 (12.2%)	6 (14.6%)	$p > 0.05$
2	11 (26.8%)	11 (26.8%)	$p > 0.05$
3	6 (14.6%)	17 (41.5%)	$P < 0.05$

NB UVB; Narrow band ultraviolet type B

The higher grades of repigmentation (G3) were more visible in the B side (combination therapy) than A side (41.5% Vs 14.6%; $p < 0.05$).

There were no reported complication except purpura in the injection side, which cleared rapidly, and generalized darkening of irradiated peripheral border in five patients; there were no report of Koebnerization.

DISCUSSION

Vitiligo is one of the cosmetically important pigmentary disorders, which can have a disturbing impact on patients' general health. Phototherapy, especially the NB UVB subtype has been proven to be completely efficacious in several studies.

The surgical procedures, like punch graft and melanocyte suspension, have shown up to 90% response rate in several studies.^[12-14]

We used combined needling technique and phototherapy to accelerate the improvement response. It seems that the underlying theory for the efficacy of the needling procedure is to introduce and push the active melanocytes, which are in the pigmented border of lesions, toward the central hypopigmented part.

The melanocytes, which lie in the basal layer of the periphery of the vitiligo patches and those which are in the pigmented spots, serve as a reservoir for melanogenesis.

The studies, which were done by other authors in Pakistan and India, have the same results as ours and they also had better results in truncal lesions than extremities.^[11-16]

As our patients showed tolerance to the needling procedure, it was a quite simple and easy method for the physician, and there was also no reported long lasting side effect, it could simply be added to the routine NB_UVB therapy.

We advise further researches with a longer follow up period.

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