

Efficacy of Narrow - Band UVB Phototherapy versus PUVA Chemophototherapy for Psoriasis in Vietnamese Patients

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Abstract

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BACKGROUND: Psoralen UVA (PUVA) and narrow-band UVB (NBUVB) chemophototherapy are treatment options for psoriasis.

AIM: To compare the effectiveness of NBUVB with PUVA in Vietnamese psoriasis patients.

METHODS: We conducted a non-randomized trial on 60 patients with plaque-type psoriasis (30 NBUVB, 30 PUVA). Both regimens were thrice-weekly. The extent of lesion was assessed by the Psoriasis Area Severity Index (PASI). Clearance was defined as a $\geq 75\%$ reduction in a follow-up PASI score from baseline. Patients with clearance were followed-up until 6 months after stopping treatment. Relapse was defined as 50% or more of the original extent.

RESULTS: The proportion of patients achieving PASI75 was comparable (76.7% in NBUVB versus 80% in PUVA; $p > 0.05$). Patients in both groups had a similar number of sessions to achieve clearance but patients in the PUVA group exposed to a significantly higher cumulative UV dose. After six months, the relapse rate was higher in the NBUVB group compared with in the PUVA group ($p > 0.05$).

CONCLUSION: Thrice weekly NBUVB is as effective as thrice weekly PUVA in treating psoriasis for Vietnamese patients.

Introduction

Psoralen UVA (PUVA) chemophototherapy is a well-established and effective treatment for psoriasis. The main concern with PUVA is the risk of non-melanoma skin cancers as well as melanoma [1].

Compared with PUVA, narrowband UVB (NBUVB) has some advantages: it does not require psoralen, is more accessible and less phototoxic or carcinogenic [2], [3]. Moreover, NBUVB did not have

harmful effects on pregnant women [4] and Asian children [5].

Despite these advantages, systemic PUVA is superior to NBUVB regarding the proportion of patients achieving clearance [6] and exhibited a longer duration of remission [7].

Given the controversy in the indication of NBUVB and PUVA, we conducted a prospective trial to examine the effectiveness of NBUVB in treating psoriasis in comparison with PUVA in Vietnamese patients.

Methods

Study design

We conducted a non-randomized controlled trial on adults with chronic plaque-type psoriasis of moderate to a severe extent. Patients with Fitzpatrick's skin types III and IV were selected because they represented the local population. The decision to administer NBUVB or PUVA was based on the day of the week when patients were admitted (NBUVB on Monday, Wednesday, and Friday, and PUVA on Tuesday, Thursday, and Saturday); this allocation was done due to local logistic requirements. We excluded patients aged < 18 years and who had a history of skin cancer or solar keratoses, phototherapy, PUVA, or systemic therapy for psoriasis within the preceding three months.

Study procedures

Patients in the NBUVB group were treated three times weekly with a starting dose of 500 mJ/cm². Next dose was increased by 20% of the previous, to a maximum of 2000 mJ/cm². Patients underwent up to 25 sessions. The dosage was adjusted if patients developed erythema.

Patients in the PUVA group were treated three times weekly with a starting dose of 2 J/cm², increasing by 20% each session, to a maximum of 15 J/cm² per dose. Patients underwent up to 25 sessions. The dosage was adjusted if patients developed erythema. Oral methoxsalen tablets (10 mg of Meladine 10 mg tablet produced by CLS Pharma from French) at a dose of 0.6 mg/kg rounded up to the nearest 10 mg were taken 2 hours before treatment. Patients wore UV-A protective spectacles for 24 hours after treatment.

We assessed the extent of lesions by the Psoriasis Area Severity Index (PASI). Clearance is defined as a 75% reduction in a follow-up PASI score from baseline (PASI75). PASI was measured by a clinician at recruitment (baseline) and repeated after every eight treatments (or earlier if study staff deemed patients had achieved PASI75). Patients who did not reach PASI75 would be managed according to local guidelines.

We also monitored adverse effects of the therapy: erythema in both groups and symptoms after taking psoralen in patients treated with PUVA. The severity of erythema was divided into three grades: grade 1 (minimally perceptible erythema); grade 2 (well-defined asymptomatic erythema) and grade 3 (painful erythema persisting for more than 24 hours).

We continued to follow up patients every month over six months after completing therapy. Relapse was defined as 50% or more of the original PASI index.

Materials

UV machine: Medisun 2800, whole body exposure units fitted with 22 fluorescent lamps (Philips TL100W/01), intensity (3.1 mW/cm²) was measured monthly.

UVA machine: Houva II, whole body exposure units fitted with 24 UVA lamps, intensity (11.1 mW/cm²) was measured monthly.

Psoralene: Meladine 10 mg tablet produced by CLS Pharma from French.

Data collection and analysis

Demographic and clinical data were recorded in a case report form. All data were entered into an electronic database and analysed with SPSS 20.0 (IBM Corporation, USA). Descriptive data were described in proportion or mean (standard deviation). We used the Student's *t*-test and the chi-square test to test for difference between continuous and categorical variables, respectively. The Kaplan-Meier curve and the Cox proportional hazard regression were used to compare the relapse rate between the two groups.

Ethics

The study was approved by the institutional review board of the National Hospital of Dermatology and Venereology, Vietnam. Informed consent was obtained from all patients.

Results

Between March 2014 and September 2015, we recruited 30 patients to the NBUVB group and 30 to the PUVA group. The baseline characteristics of the two groups, with no significant difference, were presented in Table 1.

Table 1: Baseline characteristics

	NBUVB (n = 30)	PUVA (n = 30)
Male, n (%)	18 (60)	20 (66.7)
Age, mean ± SD	35.8 ± 13.9	37.53 ± 15.19
Duration, mean ± SD	7.8 ± 5.8	10.7 ± 8.4
Itching, n (%)	24 (80)	23 (76.7)
Skin type, n (%)		
III	2 (6.7)	4 (13.3)
IV	28 (93.3)	26 (86.7)
PASI score, mean ± SD	19.2 ± 7.7	19.5 ± 7.7

SD: standard deviation.

Forty-seven patients achieved clearance after the intervention, and the proportion was comparable between the two groups (73.3% in the NBUVB group versus 80% in the PUVA group, *p* > 0.05) as shown in Table 2.

Table 2: Treatment outcomes

	NBUVB	PUVA	p
Clearance, n (%)	22 (73.3)	24 (80%)	>0.05
Number of sessions to clearance	19.7 ± 4.7	19.8 ± 4.8	>0.05
Cumulative dose to clearance(j/cm ²)	26.2 ± 9.4	191.8 ± 79.7	< 0.01

The number of sessions needed to achieve clearance was not different between the two groups; however, patients in the NBUVB exposed to a significantly lower cumulative UV dose.

We followed up patients with clearance for six months. A slightly higher relapse rate in the NBUVB group, but Cox regression did not show any significant difference (p = 0.03) as presented in Figure 1.

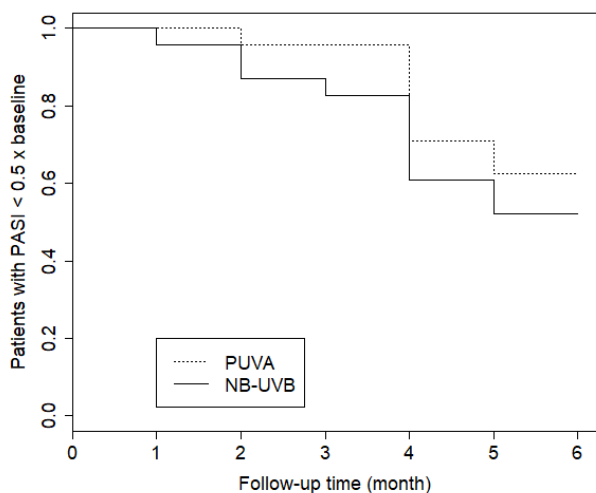


Figure 1: Kaplan-Meier's curve of relapse after therapy

Seven patients in the NBUVB group had grade 1 erythema after intervention while in the PUVA group, 3, 3, and 1 patient had grade 1, 2, and 3 erythema, respectively. Nine patients had gastrointestinal complaints including nausea, emesis, and abdominal pain following meladinine administration (in the PUVA group). No patients had to discontinue treatment because of these side effects.

Discussion

This is a trial comparing the effectiveness and safety of narrowband UVB with psoralen UVA. Our main findings suggest NBUVB is comparable to PUVA regarding effectiveness but exposes patients to a lower UV. Dayal et al., (2010) also found similar results: both NBUVB and PUVA were effective, and PUVA had a lower number of sessions but a higher mean cumulative dose to achieve clearance [8]. Similar effectiveness between NBUVB and PUVA has also been shown in other studies [3], [9].

In our study, PASI75 was achieved after a mean number of sessions of 19.7, less than normally required (25 sessions). Dayal et al. used a lower starting dose (280 mJ/cm²) compared with our study (500 mJ/cm²) [8]. Also, we used the thrice-weekly regimen instead of a twice-weekly regimen. Kleinpenning et al., (2009) found that the high-dose regimen resulted in a shorter treatment course and a better outcome after 3-month follow-up but a similar cumulative dose [9].

In our study, the relapse rate was higher in the NBUVB group, but this difference was not statistically significant. The duration of remission in patients treated with PUVA has been reported to be longer than that in patients treated with NBUVB [10].

Despite superiority in effectiveness, NBUVB is considered the first-line option for some types of psoriasis [11] because it is more convenient and has fewer side effects. Although the two groups in our study had the same number of patients with erythema, patients treated with PUVA had higher severity (grade 2 and 3 erythema were seen in four patients in the PUVA group but none in the NBUVB). One-third of the patients treated with PUVA also reported gastrointestinal symptoms after taking psoralen. While NBUVB is associated with a better safety profile, PUVA is, however, still recommended for patients who failed to respond or is refractory to NBUVB [11], [12], [13].

In conclusion, thrice weekly NB UVB is as effective as thrice-weekly PUVA in treating psoriasis in Vietnamese patients.

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