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Depression Reduces the Effect of Phototherapy on the Psoriasis Patients

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Abstract

Research Article

The psychosomatic aspect of the psoriasis was always wondered and scrutinized. In many studies carried out before, it was showed that there was a meaningful relationship with psoriasis among depression, anxiety, and worriment. But, there was very few studies researching the possitive or negative effect of the pschologic stresses of the patients. In this study, we researched whether depression, hopelessness, worriment and anxiety have the negative effect to the examination, or not. 50 psoriasis patients receiving the narrow-band UVB (NB-UVB) phototherapy were included to the study. The severity of disease, pre-treatment, and following 20 seans were reckoned by being used the Psoriasis Area Severity Index (PASI). Morever, the patiens were evaluated in terms of depression, hopelessness, worriment and anxiety by being used the Beck Depression Inventory (BDI), Beck Hopelessness Scale (BHS), Penn State Worry Questionnaire (PSWQ) and Hospital Anxiety and Depression Scale -Anxiety subscale (HAS). The patients were examinated in two groups: those are reaching to PASI 50 after 20 seans NB-UVB treatment and those cannot reach. These two groups were compared in terms of sociodemographic attributes, scale scores, disease duration, and the first PASI values by being used the statical methods. Beck Depression Inventory score was found to be statistically significantly higher in patients who did not reach PASI 50 than the other group in our study. Also, no significant difference was observed in other questionnaire scores. However, in multivariate analyses; lower depression score according to the BDI is independently associated with reaching PASI 50 after treatment (OR=0.840, 95% CI= 0.742-0.950, p=0.006). We can increase the effectiveness of the treatment by providing psychiatric support before treatment in psoriasis patients with psychiatric distress such as depression.

INTRODUCTION

Psoriasis is a chronic, inflammatory disease characterized by shiny, white scales located on a s erythematous plaque which affecting approximately 2-3% of the world population[1]. The etiology is not exactly known but Inflammatory skin diseases such as psoriasis, are often believed to be initiated or aggravated by stressful life events by patients[2]. In previous studies, it has been shown that psoriasis patients have different autonomic response to stress compared to the control group[3]. It has been shown that in psoriasis patients with a high level of stress, there is an increase in sensory nerves with a high neuropeptide content compared to those with low stress[4,5].

Psoriasis, which is a lifelong disease with relapse and recovery periods, affects the quality of life as much as severe systemic diseases like diabetes and hypertension[6,7]. The depression rate is also high in patients with psoriasis[8]. An important percentage of patients have moderate to severe anxiety and depression not only during episodes, but also in remission[9].

Psoriatic patients are generally known to have introverted personality structures that do not reflect their emotional needs, are insecure and fail in social relationships[1,10]. One of the psychological problems in psoriasis is pathological worry[11]. In a previous study, excessive worry has been shown to have negative effects on treatment in patients with psoriasis[12].

Many studies done worldwide have shown that psychiatric comorbidities are frequently found among patients with psoriasis. However, there are very few studies investigating the positive or negative effects of patients' psychological distresses on treatment. In this study, we investigated whether depression, hopelessness, worry and anxiety have negative effects on treatment.

MATERIALS and METHODS

Ethical approval

An approval was obtained from the Human Ethics Committee of Cumhuriyet University Medical Faculty in order to conduct the study. (27.11.2011, 2011/038)

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Patients and study design

73 patients, who applied to our clinic, were clinically and/or histopathologically diagnosed with psoriasis and had narrow-band UVB (NB-UVB) phototherapy indication, were included in the study. 23 of 73 patient excluded the study because of they couldn't complete 20 sessions of NB-UVB. Patients were eligible to participate if they were aged 18 to 70 years and were not receiving any systemic treatment for their psoriasis and any psychotropic medication currently or within the previous 6 months. Socio-demographic data (age, gender, educational status, smoking) and disease duration of the patients were recorded.

Treatment of narrow-band UVB

Narrow-band UVB (311nm) phototherapy thrice weekly on the whole body area for 20 sessions. Starting with 300 mJ/cm^2, a stepwise increment of 20% was done at each sitting based on patient's erythema response. In case of moderate to severe erythema or blistering, phototherapy was stopped until fading of erythema and restarted with 50% of the previous dose without further dose increase.

Measures

Clinical severity of psoriasis was assessed by means of the Psoriasis Area and Severity Index (PASI)[13] before the NB-UVB treatment and after the treatment of 20 sessions. The PASI provides an overall measure of clinical severity of psoriasis (ranging from 0-72) by combining estimates of the percentage of the area of skin involved with a score for the 3 main clinical manifestations of the condition (ie, erythema, induration, and desquamation). If the PASI decreased by 50 percent after 20 sessions of treatment, was considered to have reached PASI 50.

Before starting NB-UVB therapy, participants completed the following standardized psychological assessments. Beck Depression Inventory, used to detect depressive symptoms and grade their severity[14]. The test includes 21 items pertaining to various symptoms of depression. The respondents were asked to indicate one out of four answers being the most consistent with their status in the past 30 days. The answers were scored between 0 and 3 points. Consequently, the minimal overall score of the test was 0, and maximal score was 63. In practice, however, results above 50 points are not obtained since patients with such an advanced depression are unable to complete the questionnaire by themselves. The results of the test are interpreted as follows: 0-11 points: lack of depression; 12-19 points: mild depression; 20-25 points: moderate depression; above 26 points: severe depression. Hopelessness was assessed with 20-item Beck Hopelessness Scale (BHS) developed by Beck et al.[15]. BHS was designed to measure three major aspects of hopelessness: feelings about the future, loss of motivation, and expectations. The scale assesses hopelessness by measuring participants' negative expectancies regarding future events. Each item response is assigned a score of 0 (hopeful) or 1 (hopeless). Thus, the total BHS score can range from 0 to 20, a higher score indicating greater hopelessness. Beck and Steer[16] score the measure as follows: 0–3, minimal range; 4–8, mild hopelessness; 9–14, moderate hopelessness; and 15 and above, severe hopelessness. The internal consistency ranged from 0.82 to 0.93. Pathological worrying was assessed by means of the Penn State Worry Questionnaire (PSWQ)[17.] This 16-item scale has been shown to be a valid and reliable measure of pathological worry in this population[18]. Items such as "I find it easy to dismiss worrisome thoughts" or "my worries overwhelm me" are rated on a scale of 1 to 5 (1 indicates "not at all typical of me"; 5, "very typical of me"). The PSWQ has high internal consistency (α>.90)[19] and a good test-retest reliability and discriminant validity[16]. Although worry is a relatively normal phenomenon and may relate to attempts at problem solving, evidence suggests that pathological worrying may be qualitatively different from normal worry[20]. Thus, the published cutoff scores of 60 and greater than 60 for the PSWQ, where greater than 60 indicates pathological worry, are accepted as an appropriate means to differentiate and examine these psychologically different groups[17]. Anxiety were assessed by means score of the Hospital Anxiety scale (HAS) that is the subscale of Hospital Anxiety and Depression Scale[21]. This 7-item scale was developed for use in patients with medical conditions and has previously been found to be useful in dermatology patients[22]. Items are rated on a scale of 0 to 3, indicating the strength of agreement with that item. Thus, scores for each subscale range from 0 to 21. The patients were examined in two groups: those are reaching to PASI 50 after 20 seans NB-UVB treatment and those cannot reach. These two groups were compared in terms of sociodemographic attributes, scores, disease period, and the first PASI values by being used the statical methods.

Statistical analysis

The Kolmogorov-Smirnov test was used to verify the normality of the distribution of continuous variables which were expressed as mean ± SD or median (min-max) in the presence of abnormal distribution, and categorical variables as percentages. Comparisons between groups of patients were made by use of chi-square or Fisher's exact test for categorical variables, independent samples t test for normally distributed continuous variables, and Mann-Whitney U test when the distribution was skewed. Correlation was evaluated by Spearman correlation test. A p value of 0.05 was considered statistically significant. We used a univariate analysis to quantify the association of variables with reaching PASI 50. Variables found to be statistically significant in the univariate analysis ($p<0.250$) were used in a multivariate logistic regression model with the backward stepwise method in order to determine the independent predictor for reaching PASI 50. All statistical procedures were performed using SPSS software version 14.0 (SPSS Inc., Chicago, IL).

RESULTS

Of the patients, 28 were females and 22 were males. The mean age of the patients was 44±17 years. After the narrow band UVB treatment of 20 sessions, PASI of the 24 (48%) patients reached 50. There were no statistically significant difference between the patients, whose PASI reached and did not reach 50, in terms of age, gender, educational status, smoking, disease duration (month), initial PASI scores before phototherapy, and mean scores of questionnaire except BDI. Mean score of the BDI of the patients whose PASI reached 50, were lower than the patients whose PASI did not reached 50 (Table 1).

Initial PASI scores were positively correlated with only age and the correlation coefficients of the all of the parameters for PASI were presented on Table 2.

The results of the univariate and multivariate logistic regression analyses for reaching PASI 50 are shown in Table 3. Age, female gender, BDI score, BHS score, HAS score were found to be associated with reaching PASI 50 in the univariate analysis with p value <0.250. In the multivariate logistic regression model, BDI score (OR=0.840, 95% CI= 0.742-0.950 p=0.006) remained associated with reaching PASI 50 after the adjustment for variables found to be statistically significant ($p<0.250$) in the univariate analysis .

Table 1: Baseline characteristics and survey scores

Baseline Characteristics	All Patients (n= 50)	Patients who can reach PASI 50 (n=24)	Patients who can not reach PASI 50 (n= 26)	p
Age (years)	44±17	41±18	47±16	0.203
Female (%)	28 (56%)	16 (67%)	12 (46%)	0.240
Graduation from high school or university (%)	39 (78%)	18 (75%)	21 (81%)	0.881
Smoking (%)	26 (52%)	13 (54%)	13 (50%)	0.991
Duration of psoriasis (months)	60 (12-480)	60 (12-480)	90 (12-360)	0.143
PASI	6.5±2.4	6.6±2.3	6.5±2.5	0.884
Survey Scores				
BDI	20.5±8.8	16.3±5.7	24.4±9.5	0.001
BHS	9.4±2.6	8.8±2.6	9.9±2.4	0.105
PSWQ	49.2± 4.1	49.6±4.8	48.9±3.3	0.595
HAS	10.0± 2.1	9.5± 2.1	10.4± 2.1	0.142

BDI: Beck Depression Inventory; **BHS:** Beck Hopelessness Scale; **HAS:** Hospital Anxiety Scale; **PASI**: Psoriasis Area and Severity Index; **PSWQ:** Penn State Worry Questionnaire.

Table 2: Spearman correlation coefficients for PASI

Initial PASI	r	P value
Age (years)	0.291	0.040
Female	-0.008	0.954
Graduation from high school or university	-0.194	0.178
Smoking	0.114	0.429
Duration of psoriasis	0.226	0.114
BDI	0.240	0.094
BHS	0.141	0.330
PSWQ	0.112	0.437
HAS	0.124	0.392

BDI: Beck Depression Inventory; **BHS:** Beck Hopelessness Scale; **HAS:** Hospital Anxiety Scale; **PASI**: Psoriasis Area and Severity Index; **PSWQ:** Penn State Worry Questionnaire.

Table 3: Univariate and multivariate logistic regression analyses of predicting for reaching PASI 50

		Univariate			Multivariate	
Variable	P	OR	(95%CI)	P	OR	(95%CI)
Statistically significant variables						
BDI	0.006	0.848	0.754-0.953	0.006	0.840	0.742-0.950
BHS	0.113	0.819	0.640-1.049			
HAS	0.143	0.812	0.615-1.073			
Female gender	0.148	2.333	0.741- 7.344			
Variables correlated with PASI						
Age	0.200	0.978	0.946-1.012			

All the variables from Table 1 were examined and only those significant at **P < 0.250** level and correlated with PASI are shown in univarite analysis. Multivariate logistic regression including all the variables in univariate analysis with backward stepwise method. **CI:** Confidence interval; **OR:** Odds ratio, Abbreviations in table 1.

DISCUSSION

It has been known for many years that the stress is an important factor in the onset or exacerbation of psoriasis[2]. In this study, we showed that pre-treatment depressive mood in psoriasis patients decreased the success of NB-UVB treatment. Patients with psoriasis have an increased propensity for depression due to stress.. The relationship between depression and disease severity and plaque visibility has been reported in many studies[8,23,24].

The symptoms of psoriasis also have a negative effect on the patient's well-being, giving rise to anxiety concerning personal appearance, emotional distress, feelings of shame, low self-esteem, stigmatization, social exclusion, and employment-related problems; in short, it often has significant psychological implications and is associated with depression[25-27]. The patient's response to treatment may be affected by the duration, satisfaction or dissatisfaction of the treatment, and personality traits and cognitive style.

Depressive mood in a psoriatic patient tend to have some harmful habits such as smoking, excessive alcohol consumption, sedentary lifestyle, and unhealthy diet [28-30]. Although these harmful habits increase the severity of psoriasis, and they may also cause the development of resistance to treatments such as phototherapy[31,32].

Additionally, inflammatory cytokines may play a role in the relationship between psoriasis and depression. Th1 and Th17 cells are known to be important in the pathophysiology of psoriasis and depression. The blood and skin plaques of patients with psoriasis have been shown to contain higher levels of Th1 and Th17 cytokines[33-36]. Th1 and Th17 cytokines levels in the serum are also high in patients with depression[37-40]. And It has been known that NB-UVB treatment exerts an immunomodulatory effect by suppressing Th1 and Th 17 cells[41]. For this reason, depression may have decreased the immunomodulatory effect of NB-UVB in our study.

In addition, treatment of patients with psoriasis with TNF-α or IL12 / 23 antagonists has been shown to reduce depressive symptoms[42-44]. It has been shown that the treatment of depressed patients with antidepressants also restores the abnormal cytokine profile and reduces the need for systemic anti-psoriatic drugs in patients with psoriasis[45-47]. Therefore, it is possible that the cytokine pathways such as Th1 and Th17 may play an important role in the association between psoriasis and depression.

Pathological worry is also one of the psychological problems in patients with psoriasis[11]. Fortune et al. divided 112 patients with psoriasis undergoing photochemotherapy into two groups as high and low anxiety level, and they observed that lesions recovered averagely 19 days later in the group with higher anxiety in a statistically significant way in their study[12].

In another study, it has been reported that psychological stress leads to transepidermal water loss by disrupting the epidermal barrier function and prepares the ground for diseases such as eczema and psoriasis[48].

In other dermatological diseases such as alopecia areata, acne vulgaris, and atopic dermatitis psychlological distress can affect the response to treatment[49-51]. However, it is not known exactly how it caused treatment resistance. It is thought to cause a decrease in the cortisol response and the T cell stimulation, which is shown in studies conducted on rats with allergic contact dermatitis under stress[52,53].

In a study, cognitive behavioral therapy in addition to regular treatment has been shown to significantly improve the

clinical severity of psoriasis during the 6-week treatment period and for at least 6 months thereafter[54]. Another study found that patients listening to a stress reduction cassette while receiving psoralen - UVA (PUVA) photochemotherapy or UVB phototherapy for psoriasis had a significantly faster time to cure psoriasis than patients receiving standard PUVA or UVB therapy[55].

In our study, we wanted to investigate the positive or negative effects of psoriasis patients' depression, hopelessness, worry and anxiety levels on the response to treatment. BDI score was found to be statistically significantly higher in patients who did not reach PASI 50 than the other group in our study, while no significant difference was observed in other questionnaire scores. However, it was showed that pre-treatment lower depression score according to the BDI is independently associated with reaching PASI 50 after treatment in multivariate logistic regression analyses .

The limited number of patients in our study is limitation of our study. Many patients were excluded from the study because they stopped treatment before completing the sessions. Maybe because of this limitation, statistically significant results could not be obtained at other scales. In addition, the psychiatric scales used in the study were found to be correlated with each other.

CONCLUSION

It appears from this study that we must identify psoriasis patients with high-level depression before starting any therapy. These individuals could be treated more assiduously, perhaps with the use of cognitive behavior therapy or mindfulness stress reduction techniques that have shown some early promise[55]. In this way, we can shorten the duration of our treatments, and achieve more satisfactory results both financially and time.

Conflict of interest

The authors declare that there is no conflict of interest.

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