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Original Article

Distress tolerance in patients with psoriasis: a cross-sectional case-control study

銀屑病患者的痛苦承受力：橫斷面病例對照研究

AE Altınöz, HK Erdoğan, E Acer, M Bilgin, ZN Saraçoğlu

The purpose of this study was to compare distress tolerance in patients with psoriasis and patients with non-psychodermatological diseases and healthy controls. Parameters including sociodemographic data such as age, gender, cigarette and alcohol habits were studied, and the Distress Tolerance Scale (DTS) and Beck Anxiety Scale (BAS) were used for assessment. There was a statistically significant difference between the groups in terms of BAS scores, DTS total, DTS tolerance and DTS self-efficacy subscale scores ($p<0.001$, $p<0.001$, $p<0.001$, $p<0001$). The fact that psoriasis patients differed significantly from both the patient controls and the healthy controls in terms of the DTS total score suggests that distress intolerance in these patients is associated with a different mental process from those with chronic disease.

本研究的目的是比較銀屑病患者、非精神皮膚病患者及健康對照組的痛苦承受力。研究的參數包括年齡、性別、吸煙和飲酒習慣等社會人口統計學數據，並使用痛苦承受力量表和貝克焦慮量表進行評估。各組之間在貝克焦慮量表評分、痛苦承受力量表的總分及其耐受性和自我效能子量表評分方面，均存在著統計學上的顯著性差異（$p<0.001$，$p<0.001$，$p<0.001$，$p<0001$）。銀屑病患者在痛苦承受力量表總分方面與其他患者及健康對照組都顯著不同，這一事實表明了銀屑病患者的痛苦承受力心路歷程上或與其他的慢性疾病患者不同。

Keywords: Distress tolerance, Psoriasis, Psychodermatology

關鍵詞：痛苦承受力、銀屑病、心理皮膚病學

Eskişehir Osmangazi University Faculty of Medicine, Department of Psychiatry, Eskişehir, Turkey
AE Altınöz, MD

Eskişehir Osmangazi University Faculty of Medicine, Department of Dermatology, Eskişehir, Turkey
HK Erdoğan, MD
E Acer, MD
ZN Saraçoğlu, MD

Eskişehir Osmangazi University Faculty of Medicine, Department of Biostatistics, Eskişehir, Turkey
M Bilgin, PhD

Correspondence to: Assist. Prof. AE Altınöz
Eskişehir Osmangazi University, Department of Psychiatry, 26040, Eskişehir, Turkey

Introduction

Psoriasis is a chronic, inflammatory skin disease characterised by erythematous scaly plaques. Psoriasis is a major psychodermatological condition, which has been extensively researched for association with psychological conditions. The pathogenesis of the disease is not clear, but genetic, environmental and immunological factors are known to have an effect on the development of the disease. The prevalence in adults is known to vary between 0.91% (USA) and 8.5% (Norway).[1-3]

Psoriasis is associated with significant morbidity and mortality, and can have a psychological and social as well as physical impact. Even without severe illness patients may complain about the negative effects on the quality of life. In patients with mild psoriasis in whom the quality of life is substantially affected, rapid improvement in the quality of life has been demonstrated with systemic treatment as the first treatment option.[4] In addition, many psychiatric comorbidities such as anxiety, depression, sexual disorders, sleep disturbances and substance abuse related to psoriasis have been reported.[5,6] Like most other skin diseases, psoriasis has been associated with many psychiatric symptoms and disorders, and this relationship is mutual. Disruption of the epidermal barrier, increased neuropeptides and inflammatory cytokines in psoriasis leads to chronic itching and psychological stress.[5,7,8] Besides, current studies from our country highlighted decreased self esteem, increased levels of anger, and self-stigmatisation in patients with psoriasis.[9,10]

In the literature, there are studies on depression and anxiety in patients with psoriasis. A study on patients with psoriasis carried out in our country showed that levels of depression and anxiety are high in these patients and there is a correlation between the severity of psoriasis and anxiety.[7] A recent review has reported that 7-48% of patients with psoriasis reported anxiety.[6]

Distress tolerance (DT) is defined as the ability of a person to withstand negative emotional states.[11] Low DT individuals are more likely to overreact to stress and distress, and it is known that these individuals exhibit weak ability to cope with difficulties and as a result, they try to avoid negative feelings by using strategies to alleviate negative emotions quickly. Although studies on the relationship between DT and anxiety disorders are relatively new, low DT individuals are thought to be more susceptible to anxiety problems because of the perception that anxiety symptoms are overwhelming and uncontrollable.[11,12]

The purpose of this study is to determine distress tolerance of patients with psoriasis and to compare these patients both with individuals with non-psychodermatological diseases and with healthy controls in terms of DT. The hypothesis of this study is that psoriasis patients exhibit higher anxiety levels than healthy controls and those with and non-psychodermatological skin disease, and lower DT levels.

Material and methods

This study included 73 patients from our dermatology clinic with plaque type psoriasis in addition to a control group of 50 healthy volunteers and 42 patients with dermatological diseases without psychodermatological characteristics (tinea pedis, herpes labialis, etc.). Patients with psychiatric diseases and diseases that affected the central nervous system were excluded from the study. A form that included sociodemographic data, medical background and family history was filled out by patients. All patients were examined by a specialist in dermatology and Psoriasis Area Severity Index (PASI) values were calculated.

The **Beck Anxiety Scale (BAS)** is a self-reporting scale developed to evaluate the severity of anxiety.[13] Validity and reliability studies were carried out.[14] It is composed of 21 items scored between 0 and 3. Higher BAS scores indicate higher levels of anxiety.

The **Distress Tolerance Scale (DTS)** was developed by Simons and Gaher and consists of 16 items based on self-reporting.[11] The items are evaluated according to Likert-type scale ranging from 1 to 5. The options in this scale range from 5 (Strongly disagree) to 1 (Strongly agree). High scores indicate an ability to withstand difficulties. DTS was introduced into Turkish by Sargın et al. and includes three subscales by psychometric characteristics:

i. Tolerance to emotional distress (DTS Tolerance)
ii. Subjective evaluation of the distress and awareness (DTS Self-Efficacy)

iii. Regulation efforts to reduce distress (DTS Regulation).[15]

Statistical analysis

Continuous data were expressed as mean ± standard deviation. Categorical data were defined as frequency and percentage. The Shapiro-Wilk test was used to determine whether the distribution was Normal or not. The Kruskal Wallis H test was used to identify the differences between BAS and DTS scores of the three groups. The Spearman Correlation test was used to determine the direction and magnitude of the relationship between scale scores. A probability value of $p<0.05$ was considered significant. The analyses were carried out using IBM SPSS Statistics 21.0 software.

Results

This study included 73 patients with plaque-type psoriasis (44.2%) in addition to 50 healthy volunteers as controls (30.3%) and 42 patients with dermatological diseases without psychodermatological characteristics (25.5%). Ninety (54.5%) participants were female. There were 42 (57.5%) females in the psoriasis group, 26 (52.0%) in healthy controls, and 22 (52.4%) in the control group of patients. There was no significant difference between the groups in terms of gender (X^2: 0.473 $p=0.789$).

The mean age of the groups was determined as 42.4±11.4 years for the psoriasis group, 40.1±10.8 years for the healthy controls and 37.9±13.9 years for the patient control group and no significant difference was found between the groups ($p=0.124$). Data for the psoriasis group are summarised in Table 1.

Significant differences were found between the three groups in terms of Beck Anxiety Scale total score ($p<0.001$), DTS total score ($p<0.001$), DTS tolerance subscale ($p<0.001$) and DTS self-efficacy subscale scores ($p<0.001$). The scale scores of the groups are detailed in Table 2.

There was no statistically significant correlation between duration of illness and disease severity and DTS and BAS scores in psoriasis group ($p>0.05$) (Table 3).

Discussion

The relationship between mental states and skin diseases has been researched for many years. The embryological origin of both the brain and the skin is ectoderm as often emphasised when explaining this relationship.[16] It has been emphasised in the literature that the mental state as well as the clinical features should be considered assessing patients with skin disease.[17] Psoriasis is a psychodermatological disease and falls into the group of diseases that are affected by stress according to Koo and Lee's classification.[18] Although the relationship between psoriasis and psychiatric signs and symptoms has been investigated so far, to our knowledge, this is the

Table 1. Sociodemographic and disease-related information of the psoriasis group

		n	%
Joint Involvement	No	62	84.9
	Yes	11	15.1
History of local treatment	Yes	73	100
History of systemic treatment	No	25	34.2
	Yes	48	65.8
History of local treatment	No	14	19.2
	Yes	59	80.8
History of systemic treatment	No	13	17.8
	Yes	60	82.2
		Mean ± Standard Deviation	
Age		42.4±11.4	
Duration of disease (years)		13.8±10.2	

first study in the literature that demonstrate the lack of DT in patients with psoriasis. Anxiety and depression scores have been found to be higher in patients with psoriasis compared to healthy controls with more frequent negative affect, unexpressed anger and intense alexithymia.[19] A fairly recent research has shown that psoriasis patients with severe disease are more likely to suffer from emotional regulation particularly in terms of flexibility and accommodation.[20] Intolerance to distress has been associated with many mental symptoms, notably with anxiety. Several psychiatric symptoms, particularly, symptoms of anxiety, may be associated with insufficient distress tolerance in psoriasis. Further studies are needed in this area.

Distress tolerance, which is defined as the ability of an individual to experience and endure negative emotional states, has been associated with a number of behaviours including rushing in traffic.[21] Distress tolerance has been investigated in many psychiatric disorders. Impaired tolerance to distress has been reported to be considerably correlated with the signs of panic disorder, obsessive compulsive disorder, and generalised and social anxiety,[12] and plays a role in the aetiology of bulimia,[22] as well as being associated with early relapse in nicotine addiction,[23] and has been associated with alcohol and marijuana abuse in depressive young adults.[24] Unfortunately, the literature on how medical illnesses are affected by distress tolerance is very limited. The results of

Table 2. Comparison of psychometric values between groups

	Psoriasis (1)	Non-psychodermatological Disease Control Group (2)	Healthy Controls (3)	p*	Multiple Comparison; p
BAS-t	11.56±9.51 10.00 (4.00-15.00)	13.38±11.11 10.00 (4.75-21.25)	6.53±7.06 4.00 (2.00-9.00)	<0.001	1-3; 0.001 2-3; <0.001
DTS-Total	48.03±10.86 50.00 (40.00-55.00)	57.74±9.84 58.50 (52.00-66.00)	61.03±9.98 63.00 (54.00-70.00)	<0.001	1-2; 0.001 1-3; <0.001
DTS Tolerance	29.07±7.26 29.00 (23.50-34.00)	35.54±6.84 36.00 (31.00-41.00)	37.34±6.44 39.00 (33.00-42.00)	<0.001	1-2; 0.001 1-3; <0.001
DTS Regulation	0.99±1.46) 0.00 (0.00-2.00	1.24±1.82 0.00 (0.00-2.00)	0.54±0.82 0.00 (0.00-1.00)	0.201	–
DTS Self-Efficacy	10.59±2.57 11.00 (9.00-12.00)	12.20±1.96 12.00 (11.00-14.00)	12.63±1.57 13.00 (11.00-14.00)	<0.001	1-2; 0.001 1-3; <0.001

*Kruskal Wallis H Test, DTS: Distress Tolerance Scale, BAS-t: Total Score of Beck Anxiety Scale

Table 3. Correlation of disease severity and duration of illness with psychometric values

	Spearman Correlation (r; p)				
n= 73	BAS-t	DTS-T	DTS Tolerance	DTS Regulation	DTS Self-Efficacy
Duration of illness	0.007 0.953	-0.006 0.961	-0.005 0.967	-0.122 0.304	-0.150 0.205
PASI	0.036 0.761	-0.172 0.146	-0.107 0.367	-0.004 0.972	-0.151 0.203

*Spearman Correlation Test, DTS: Distress Tolerance Scale, BAS-t: Total Score of Beck Anxiety Scale, PASI: Psoriasis Area Severity Index

a study investigating the relationship between the viral load as well as treatment compliance among HIV patients and distress tolerance showed that distress tolerance is significantly associated with treatment compliance and low viral load.[25] To our knowledge, this is the first study on the level of distress tolerance in individuals with psychiatric disorders. It is not possible to explain the lack of distress tolerance in patients with psoriasis with the psychological burden of suffering from a disorder since the distress tolerance scores among psoriasis patients differed significantly from both healthy controls and patient control group. In this case, whether distress tolerance plays a role in the aetiology of psoriasis as a psychosomatic disease may be questioned. Due to the cross-sectional design of the study, whether the lack of distress tolerance in patients with psoriasis is a cause or the result is unclear. Further studies are needed in this area.

Of the subscales of distress tolerance, a significantly decreased tolerance subscale in psoriasis patients indicates that patients with psoriasis cannot tolerate distress as well as healthy individuals, while a low self-efficacy subscale indicates that these patients perceive themselves as unable to withstand stressful conditions. This may increase the perceived intensity and severity of negative emotions leading to a vicious cycle in these patients.[11]

It has been reported that the psychological effect in psoriasis patients cannot simply be related to the severity, stage or the duration of the disease.[19] In our study, the inability to withstand the distress did not appear to correlate with disease duration and disease severity. This is in line with reports that the severity of illness does not correlate with quality of life.[26]

Distress tolerance is not defined by a single neurobiological process. It is related to a number of variables including the previous experiences of the individual as well as cognition, adaptation to the environment, and genetic features. All these indicate that distress tolerance is not unchangeable and might change with therapeutic intervention.[27] The efficacy of cognitive behavioural interventions on insufficient distress tolerance has been demonstrated. A study investigating the effectiveness of awareness-based interventions on smoking cessation therapy has shown that awareness-based approaches to smoking cessation are effective by improving distress tolerance.[28] It has also been shown that individuals demonstrated a significant increase in coping abilities with stress after a short cognitive-behavioural program and that this increase was indeed more than two standard deviations in approximately one third of the participant.[29] Rational-affective behavioural therapy also has been recommended for failure to tolerate distress.[30] Overall, interventions by cognitive-behavioural techniques for the lack of distress tolerance can be expected to contribute to the treatment of psoriasis.

This study had a number of limitations. Important limitations include the collection of the data through questionnaires completed by the patients and enrollment at a single centre.

In conclusion, this was the first study of DT in patients with psoriasis. Although it is not possible to predict if impaired DT is the cause or the result of the disease in patients with psoriasis, it should be taken into account in the treatment of the disease.

Conflicts of interest

The authors have no conflict of interests to disclose.

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