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Relationship of Alexithymia, Rumination and Coping Style with Psoriasis and Their Effects on The Clinical Features

Sevim BAYSAK[1], Fatma Arzu KILIÇ[2], Ebru KARAGÜN[3], Erkan BAYSAK[4]

SUMMARY

Objective: A relationship has been demonstrated between stress and the increase in the skin plaques in psoriasis. In addition, psoriasis is observed in cases of severe alexithymia and stress. In depression and various psychiatric disorders, there is a relationship between rumination and both the onset and persistence of the disease. The role of rumination, being a stress related factor, was investigated in this study.

Method: The study included 91 patients with psoriasis and 93 healthy controls. All participants were evaluated with the Toronto Alexithymia Scale, Coping Style Scale, the Ruminative Thought Style Questionnaire and the Hospital Anxiety and Depression Scale. Any increase in the plaque formation after the duration of 1 month was recorded by the clinician.

Results: In both the patient and the control groups, rumination scores were significantly correlated with the alexithymia severity scores (psoriasis group r=0.46, p<0.01; control group r=0.38, p<0.01) and the helpless coping styles scores (psoriasis group r=0.56, p<0.01; healthy r=0.57, p<0.01). When depression and anxiety scores were controlled, significant positive correlations were observed in the patient group between rumination scores and the scores on the difficulty of identifying feelings (r=0.42, p<0.01), the difficulty of describing feelings (r=0.25, p<0.05) and the scores on helpless coping styles (r=0.41, p<0.01); and also significant positive correlations were observed in the control group between the rumination scores and the scores on the difficulty of identifying feelings (r=0.27, p<0.05) and on helpless coping styles (r=0.42, p<0.01). Comparing the patients with and without increase in the plaques showed significant differences in the scores on rumination (p<0.01), difficulty of describing feelings (p <0.05) and total alexithymia scores (p<0.05).

Conclusion: The relationship of alexithymia and of passive stress coping styles with rumination may have an effect on the course of psoriasis.

Keywords: Psoriasis, rumination, alexithymia, coping style, stress

INTRODUCTION

Psoriasis is one of the psycho-cutaneous diseases presenting at the intersection of dermatology and psychiatry. Although the patients mainly complain of the presence and the increases of the lesions, both the secondarily developing psychiatric problems (Ferreira et al. 2016) and the increases in the psoriatic plaques in response to environmental factors and psychological stress indicate the importance of psoriasis from a psychiatric point of view (Rigopoulos et al. 2010, Verhoeven et al. 2009). Previous studies have also focused on the psychological factors related to psoriasis next to explaining the pathophysiological processes of the disease at the molecular / biological level (Hunter et al. 2013). Apart from the relationship of the disease with childhood traumas (Crosta et al. 2018), alexithymia (Korkoliakou et al. 2017), coping style with stress (Scharloo et al. 2000), and alcohol (Kirby et al. 2008) and cigarette use (Mills et al. 1992); incidences of comorbid depression and anxiety have also been investigated (Amanat et al. 2018).

The contribution of the concept of psychological stress to the disease course with flare ups , next to that of many other variables, has also been demonstrated in different studies (Evers

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[1]MD., İstanbul Health Sciences University, İstanbul Sultan 2. Abdulhamid Han Training and Research Hospital, Department of Dermatology, İstanbul, [2]Prof. Balıkesir University Faculty of Medicine, Department of Dermatology, Balıkesir, [3]Assis. Prof., Düzce University Faculty of Medicine, Department of Dermatology, Düzce, [4]M.D., Haydarpaşa Numune Training and Research Hospital, Department of Psychiatry, Turkey.

e-mail: erkanbaysak@gmail.com

et al. 2010, Zachariae et al. 2004). As with the psychosomatic diseases, alexithymia may have a particular role in psoriasis. The term 'Alexithymia' was first used to describe the difficulties of individuals with psychosomatic diseases in describing their feelings (Sifneos 1996). However, the presence of individuals with alexithymia was later shown in other psychiatric disorders and in the healthy population (Mattila et al. 2006, Şaşıoglu et al. 2013, Yıldırım et al. 2012). The comorbidity of alexithymic symptoms was higher among psoriatic patients than in the healthy population (Talamonti et al. 2016). The basic features of alexithymia include: (1) difficulty in naming and distinguishing subjective feelings (2), limited capacity for daydreaming (3), difficulty in distinguishing feelings from bodily sensations caused by feelings, and (4) excessive mental engagement of the individual with environmental objects and situations instead of his/her inner world (Nemiah 1976, Sifneos 1996). Alexithymia was described as being not only mute but also deaf to feelings (Şahin 1991). Having alexithymia causes difficulty of expressing the relevant feelings when facing stressful events which appears to lead to psychological stress in dealing with daily problem solving (Di Schiena et al. 2011).

Recently, the concept of rumination, which was demonstrated to be associated with both the development (Spasojevic et al. 2004) and chronicity of depression (S Nolen-Hoeksema et al. 2008) as well as with body cortisol levels, has been evaluated as a sign of stress (Shull et al. 2016, Zoccola et al. 2012, Zoccola et al. 2014). Rumination is defined in a very broad sense as "chewing the mental cud" and as a concept that represents repetitive thoughts (Law 2005)**.** Martin and Tesser (Martin et al. 1996), on the other hand, define rumination as thoughts that revolve around the same theme for long periods of time. Various models have been proposed regarding the occurrence and causes of rumination. In particular, this concept was explained in studies on depression on the basis of the response styles theory (Nolen-Hoeksema 1991). Hence, rumination was defined as an individual's repetitive and passive thinking of depressive symptoms, their causes and consequences, which do not actively solve the problem (Nolen-Hoeksema 1991). Conway et al. considered rumination to be the thoughts associated with the sadness experienced by the individual (Conway et al. 2000); whereas, Alloy et al. described rumination as a cognitive process that predisposes to depression and demonstrated that individuals with increased tendency to chew the mental cuds are more prone to develop depression (Alloy et al. 2006). Rumination, apart from its relationship with depression (Nolen-Hoeksema et al. 1994) is associated with anxiety disorder (Nolen-Hoeksema 2000), suicide attempt (Morrison et al. 2008), increased mourning symptoms (Nolen-Hoeksema et al. 1994), eating disorder (Lyubomirsky et al. 2015) and substance abuse (Nolen-Hoeksema et al. 2002). Delayed recovery of cardiac pathology was found to be significantly correlated with rumination in a study on physical diseases (Glynn et al. 2002, Key et al. 2008).

Rumination was also proposed to be a mental activity for solving the problems faced by the individual (Martin et al. 1996). According to this argument, also known as the Zeigarnik effect, an unfinished job tends to remain in memory longer than a finished job (Zeigarnik 1938). A limited number of studies have suggested that alexithymic individuals have less information about life events because of their difficulties in identifying and detailing the feelings by others, and often resort to repetitive thoughts in order to compensate for this deficiency (Di Schiena et al. 2011). Alexithymic individuals have also been shown to have difficulties in coping with stress (Ebeling 2001, Sayar et al. 2003).

In this study, it is aimed to investigate the hypothesis that patients with psoriasis have higher alexithymia levels and lower problem-solving abilities, that these properties are associated with rumination, and that rumination has a role in the increase of psoriatic plaques. To the best of our knowledge, the relationship between alexithymia, problem solving and rumination have not been previously studied in psoriasis as a stress related disease.

METHOD

Participants

A total of 100 patients, aged 18-65 years, consulting the outpatient dermatology clinics of Balıkesir University Health Application and Research Hospital were enrolled after giving informed written consent to participate in the study. Patients with comorbid physical diseases, reporting to have a psychiatric disorder and/or receiving a psychiatric treatment were excluded from the study. The control group consisted of 100 healthy hospital staff matched with the patient group on the basis of age, gender and educational background and without a history of psychiatric disorder, dermatological or immune system related disease. They were included in the study after giving informed written consent for participation. The data of 96 patients and 93 control individuals, who had completed all of the psychometric test scales, were included in the analyses.

Psychometric Scales

The Sociodemographic Data Form: All participants were asked to complete a questionnaire on basic sociodemographic information including age, gender, marital status and educational level. An extra query was added in the questionnaire on the increase in the number or size of psoriatic plaques within the previous 1 month to be answered as yes/no by the clinician. The Psoriasis Area and Severity Index (PASI)

routinely administered by clinicians cannot differentiate individuals with a low PASI score and a limited increase in localized lesions in a particular region.

For example, the PASI score does not change when a plaque localized in an area of the arm shows only a 1-cm increase in the plaque diameter over the previous 1 month.

The Toronto Alexithymia Scale (TAS): The TAS is a 5-point Likert-type self-report scale consisting of 20 items, developed by Bagby et al. (Bagby et al. 1994a, Bagby et al. 1994b). The scale has three sub-dimensions on difficulty in identifying feelings, difficulty in describing feelings and externally oriented thinking. High scores indicate the severity of alexithymia. The validity and reliability of the TAS in the Turkish language was conducted by Güleç et al. (Güleç et al. 2009).

The Ruminative Thought Style Questionnaire (RTSQ): The RTSQ, developed by Brinker et al. (Brinker et al. 2009), considers ruminative thought as a repetitive, uncontrollable, intrusive and reversible way of thinking. It consists of 20 questions, each scored between 1 and 7. Higher scores indicate increased incidence of ruminative thinking. The validity and reliability of the TAS in the Turkish language was carried out by Karatepe et al. (Karatepe et al. 2013).

Coping Style Scale (CSC): The Turkish validity and reliability study of the coping style scale which is derived from the "Ways of Coping Inventory" of Folkman and Lazarus (Folkman et al. 1988) was conducted by Şahin and Durak (Şahin et al. 1995). CSC measures the two main coping styles; effective style (problem-oriented) and ineffective style (emotion-oriented). The effective style has 3 sub-dimensions on seeking social support, a self-confident approach and optimistic approach; and the ineffective style has the 2 sub-dimensions on helpless approach and submissive approach. It was found that individuals who can cope effectively with stress often use the "self-confident" and "optimistic" approaches, whereas those who cannot cope with stress often use the "helpless" and "submissive" approaches.

The Hospital Anxiety Depression Scale (HADS): The HADS includes a total of 14 questions, seven of which (odd numbers) measure anxiety and the other seven (even numbers) measure depression. It provides a four-point Likert-type measurement. The scale was originally developed by Zigmond and Snaith (Zigmond et al. 1983) and adapted to the Turkish language by Aydemir (Aydemir 1997).

Method

The study included patients with psoriasis consulting the outpatient clinic of Balıkesir University Health Application and Research Hospital between 01/05/2016 and 01/05/2017 and healthy controls. Written informed consent was obtained from all participants in accordance with the Declaration of Helsinki; and the study was approved by the Balıkesir University Faculty of Medicine Ethics Committee. Both patient and the controls groups tested on a Sociodemographic Questionnaire, the Toronto Alexithymia Scale (TAS), the Coping Style Scale (CSC) and the Ruminative Thought Style Questionnaire (RTSQ).

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 22.0 was used for statistical analysis of the data. The sociodemographic data were evaluated by descriptive statistical analyses. The differences in the psychometric scores of the patient and control groups were analysed by the Mann-Whitney U or the Student-t test. The intergroup relationships were demonstrated by bivariate correlation analysis.

RESULTS

The participants of the study consisted of 96 patients with psoriasis and 93 healthy controls. The patient group consisted of 59.4% (n:57) males, the group mean age was 42.5 (±13.3) years; 77.1% (n:74) were married; 52.1% (n: 50) were educated in high school or at higher level and 57.3% (n:55) were cigarette smokers. The control group, consisting of 58.1% (n:54) males; mean age was 41.2 (± 11.8) years; 73.1% (n:68) were married; 60.2% (n:56) were educated in high school or at higher level and 49.5% (n:46) were smokers. The two groups did not differ significantly with respect to age, gender, marital status and educational level ($p>0.5$).

In this study, the relationships between rumination and alexithymia, coping styles, depression and anxiety scores were investigated to determine the factors related to rumination in both the patient and the control groups. The results are summarised in Table 1.

In the patient group, moderately significant positive correlations between the rumination score and the TAS total score ($r=0.47$, $p<0.01$) and the scores on the sub-dimensions of alexithymia, including difficulty in identifying feelings ($r=0.55$, $p<0.01$) and difficulty in describing feelings ($r=0.42$, $p<0.01$) were determined. Statistically significant moderate positive correlations between the scores on rumination and the helpless coping style ($r=0.56$, $p<0.01$); and a significant low level positive correlation between the scores on rumination and the submissive coping style ($r=0.24$, $p<0.05$) were also determined. Rumination scores were positively correlated with the scores on anxiety ($r=0.53$, $p<0.01$) and depression ($r=0.30$, $p<0.01$). There was a significant low-level negative correlation between rumination and self-confident coping style ($r=-0.20$, $p<0.05$).

In the control group, rumination scores showed significant positive correlations with the total TAS score ($r=0.38$, $p<0.01$)

Table 1. Relationship between Rumination and Alexithymia, Coping Style, Anxiety and Depression in Psoriasis Patients and Healthy Controls

	Rumination	
	Psoriasis (r)	**Control (r)**
TAS Total	0.468**	0.384**
Difficulty in Identifying Feelings	0.549**	0.479**
Difficulty in Describing Feelings	0.418**	0.297**
Externally Oriented Thinking	- 0.116	- 0.049
Coping Style		
Seeking Social Support	0.020	0.263*
Self-Confident	- 0.203*	- 0.121
Optimistic	- 0.178	- 0.239 *
Helpless	- 0.559 **	0.573**
Submissive	0.237*	0.158
Depression	0.297**	0.253**
Anxiety	0.526**	0.482**

* p <0.05, ** p <0.01, n = 96. TAS: Toronto Alexithymia Scale

and the alexithymia sub-dimensions difficulty in identifying feelings (r=0.48, p<0.01) and difficulty in describing feelings (r=0.30, p<0.01).

Rumination scores were positively correlated with anxiety scores (r=0.48, p<0.01), depression scores (r=0.25, p<0.01); seeking social support (r=0.26, p<0.05) and helpless coping styles (r=0.57, p<0.01); and negatively correlated with optimistic coping style (r=-0.24, p<0.05). (Table 1). Significant correlations were not determined between the rest of the measurements.

In the patient group, when the results of the anxiety and depression scales were controlled, rumination scores correlated positively at a moderate level with difficulty in identifying feelings (r=0.42, p<0.01), and at a low level with the TAS total score (r=0.29, p<0.01) and the scores on difficulty in describing feelings (r=0.25, p<0.05). A significant moderate correlation was found between the scores on rumination and helpless coping (r=0.41, p<0.01).

In the control group, controlling the results of the scales on anxiety and depression showed a low-level correlation between rumination and difficulty in identifying feelings (r=0.27, p<0.05); and a significant positive moderate correlation between the scores on rumination and helpless coping (r=0.42, p<0.01).

Results of the Mann-Whitney U test on the psychometric scoring on alexithymia, coping, rumination, depression and anxiety by the patients with and without increase in psoriatic plaques in the previous 1 month are given in Table 2. The difference in the rumination scores of patients with and without increase in psoriatic plaques was statistically significant (U=430.0, p<0.001), the mean score being higher in patients with increased psoriatic plaques (mean=88.1) than those without (mean=66.7) such that, as seen in the listing of the means in Table 2, ruminative thought style was more prevalent in patients with increased psoriatic plaques. The patients with and without increased psoriatic plaques also differed significantly in describing feelings (U=564.0, p<0.05) and the TAS total scores (U=568.0, p<0.05). Significant differences were not determined between the other variables.

When the scores of the patient and control groups on alexithymia, coping style, rumination, depression and anxiety scales were compared, significant differences were observed between the groups on the TAS total score and the alexithymia sub-dimensions difficulty in identifying

Table 2. Distribution of the Scores on Alexithymia, Coping Style, Rumination, Depression and Anxiety in Groups with and Without Increase in Psoriatic Plaques

	Non increased psoriatic plaque				Increase in psoriatic plaque					
	n	**Mean rank**	**Median**	**Sum of ranks**	**n**	**Mean rank**	**Median**	**Sum of ranks**	**U**	**P**
Rumination	23	30.70	66.7	706	73	50.11	88.1	3950	430.0 **	0.000
TAS	23	36.70	48.5	844	73	52.22	53.8	3812	568.0 *	0.020
Difficulty in Identifying Feelings	23	39.17	14.6	901	73	51.44	17.6	3755	625.0	0.065
Difficulty in Describing Feelings	23	36.52	12.1	840	73	52.27	14.1	3816	564.0 *	0.018
Externally Oriented Thinking	23	44.26	21.7	1018	73	49.84	22.0	3638	742.0	0.399
Coping Style										
Seeking Social Support	23	53.13	7.5	1122	73	47.04	7.3	3434	733.0	0.353
Self-Confident	23	50.57	14.8	1163	73	47.85	14.5	3493	792.0	0.682
Optimistic	23	48.02	9.4	1104	73	48.64	9.6	3551	828.5	0.924
Helpless	23	39.61	10.7	911	73	51.30	12.7	3745	635.0	0.078
Submissive	23	44.13	6.5	1015	73	49.88	7.3	3641	739.0	0.386
Depression	23	44.57	6.8	980	73	49.03	7.7	3579	727.5	0.504
Anxiety	23	42.34	7.7	931	73	49.71	88.1	3628	678.5	0.271

* p <0.05, ** p <0.01. TAS: Toronto Alexithymia Scale

Table 3. Comparison with T-Test of the Scores on TAS, and the Coping Style, Rumination, Depression and Anxiety Tests in Psoriasis and Healthy Control Groups

	Psoriasis			Healthy Control				
	n	mean	SD	n	mean	SD	t	P
Rumination	96	83.0	25.9	90	76.0	25.4	1.84	0.066
TAS Total	96	52.5	9.7	90	49.2	9.7	2.31 *	0.022
Difficulty in Identifying Feelings	96	16.9	6.2	90	14.7	5.4	2.52 *	0.012
Difficulty in Describing Feelings	96	13.6	3.7	90	12.4	4.1	2.22 *	0.028
Externally Oriented Thinking	96	22.0	3.4	90	22.0	3.3	-0.64	0.949
Coping Style								
Seeking Social Support	96	7.4	2.0	90	7.7	2.6	-1.11	0.265
Self-Confident	96	14.6	3.7	90	15.7	4.0	-2.14 *	0.033
Optimistic	96	9.5	2.9	90	10.1	3.0	-1.30	0.194
Helpless	96	12.2	4.2	90	9.6	4.3	4.21 **	0.000
Submissive	96	7.1	3.2	90	6.6	3.3	1.15	0.251
Depression	96	7.5	3.9	90	6.0	3.6	2.60 **	0.010
Anxiety	96	8.7	4.3	90	7.0	3.9	2.79 **	0.006

* p <0.05, ** p <0.01. TAS: Toronto Alexithymia Scale

feelings and difficulty in describing feelings. There were also significant differences between the groups in terms of the scores on the coping style subscales including self-confident and helpless approaches. Although the depression and anxiety scores of the two groups differed, this was not observed in the rumination scores (Table 3).

DISCUSSION

When the depression and anxiety scales are controlled, the observed significant positive correlation observed between the rumination and alexithymia scores indicated that difficulty in identifying and describing feelings were associated with rumination. The noteworthy work in the literature by Di Schiena et al. indicated that alexithymia increased rumination which correlated with the difficulty in identifying feelings. Our study is one of a limited number of studies showing a correlation between alexithymia and rumination when the depression factor is controlled (Di Schiena et al. 2011).

Analysing the relationship between rumination and stress coping styles in the patient and control groups showed that passive coping styles increase the incidence of ruminative thoughts, while effective coping styles appear to reduce these. It was reported in relation to possible relationships between rumination, alexithymia, and coping styles, that these three factors, and especially rumination, were important in predicting self-injurious behaviour (Borrill et al. 2009). Our study showed a similar relationship between rumination, alexithymia, and coping styles, and demonstrated higher incidence of alexithymia and increased ruminative thinking in psoriasis patients with self-injurious behavior. Also, the incidence of ruminative thoughts and difficulty in describing feelings were higher in patients with increased psoriatic plaques in the previous 1 month.

Another aim of our study was to evaluate whether rumination is a determinant of stress. Finding significantly higher scores on ruminative thinking in the patient group with increased psoriatic plaques suggests that there may be a relationship between rumination and exacerbation of plaque formation. To our knowledge, this is the first study in the literature to evaluate rumination as a factor associated with an increase in the number and/or size of psoriatic plaques.

The predictive significance of rumination for depression and other psychiatric disorders has been investigated (Soo et al. 2009). There are studies demonstrating the role of psychological stress in increasing the severity of psoriasis and showing that psychological stress is caused by environmental stress and results in physiopathological changes (Hunter et al. 2013). Taking rumination as an indicator of the inner world of individuals, a limited number of studies have demonstrated that rumination, resulting from psychological stress, has a negative effect on various diseases. An association was found between increased rumination and delayed improvement in blood pressure in individuals with emotional stress. Patients with less rumination showed more improvement (Glynn et al. 2002). Positive correlations were reported between increased rumination and anger, and the severity of cardiac symptoms in patients undergoing coronary angiography (León et al. 2010). A relationship between rumination and poor treatment outcomes was observed in a group with chronic back pain (Johansen 2008). Increased psychological stress observed in migraine cases was partly due to rumination (Kokonyei et al. 2016). Several studies have reported that rumination was associated with the hypothalomo-pituitary-axis and cortisol

release (Huffziger et al. 2013, Shull et al. 2016, Zoccola et al. 2012). In agreement with these data in the literature, our study showed that the incidence of rumination was significantly elevated in patients with an increase in the number of psoriatic plaques in the previous 1 month, in comparison to the patients without change in plaque formation.

Parallel to the demonstration by Talamonti et al. of a significant difference between the alexithymia scores of 250 psoriatic patients and 215 healthy controls (Talamonti et al. 2016), our study found higher alexithymia scores in the patient group as compared to the control group. Also, depression and anxiety scores were higher in patients with psoriasis than in the healthy controls, similarly to the studies by others (Fleming et al. 2017, Kumar et al. 2011, Lakshmy et al. 2015, Moon et al. 2013).

Rumination scores were higher in the patient group compared to the control group but the difference was not statistically significant. Although, the criteria for inclusion in the control group included not having a history of any psychiatric disorder, skin disease or other immune-mediated disease, the possibility of having been recently exposed to a stressor (Du et al. 2018) and/or being members of the health-care staff may have caused burnout due to harsh working conditions which could have caused increased rumination (Boren 2014).

Our study has limitations. Firstly, the comparison of the groups with and without increase in psoriatic plaques in the previous one month in psoriatic patients necessitated the selection of nonparametric statistical methods due to the low number of participants in the group without increase in plaque formation. During the selection of the control group, the criterion of exclusion from the study did not cover exposure to recent stress, workplace stress and possible chronic diseases. Furthermore, both groups were not clinically interviewed by a psychiatrist to ensure the elimination of psychiatric morbidities. These may have contributed to the statistically insignificant difference in the rumination scores of the patient and control groups. In our study, the data on the increase in the number and/or size of plaques in the previous 1 month was based on subjective information given by the patients to the clinician. Although this method provides information about the increase in plaque formation that cannot be determined by PASI, the lack of an objective method is also one of the limitations of the study.

In conclusion, despite the presence in the literature of reports on the relationship between psoriasis and stress, this study is the first to evaluate the relationship between stress and increase in psoriatic plaques and rumination. Previous research has shown that rumination is a predictive marker for the emergence of psychiatric disorders and that it is a factor affecting the progress of psychiatric diseases and some physical diseases. Our study is one of the few studies showing the relationship between rumination and increase in psoriatic plaques in a stress-related disease such as psoriasis. However, prospective studies are needed to show the relationship between rumination and increases in psoriatic plaques or to show the changes in the severity of the disease based on the results of therapy for rumination.

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