

## INVESTIGATIVE REPORT

# Relevance of Psychosomatic Factors in Psoriasis: A Case-control Study

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**The aim of this study was to assess the role of stressful life events, lack of social support and attachment insecurity in triggering exacerbations of psoriasis. Outpatients experiencing exacerbation of psoriasis in the last 6 months ( $n=110$ ) were compared with outpatients affected by skin conditions in which psychosomatic factors are believed to play a minor role ( $n=200$ ). Stressful life events during the last 12 months were assessed with Paykel's Interview for Recent Life Events. Perceived social support and attachment relationship were assessed with the Multidimensional Scale of Perceived Social Support and Experiences in Close Relationships Scale, respectively. In comparison with controls the patients with psoriasis reported more stressful life events in the last year. The statistically significant difference was found only for the sum of the first 25 events (odds ratio (OR) 1.98; 95% confidence interval (CI) 1.37–2.87;  $p<0.001$ ). Also, patients with psoriasis were more likely to score higher on both anxiety (OR=1.44; CI=1.09–1.92;  $p=0.011$ ) and avoidance attachment scale (OR=1.49; CI=1.04–2.14;  $p=0.030$ ), and perceived less support from their social network than did the comparison subjects. The results of this study confirm the relevance of psychosocial factors in psoriasis. Key words: anxious attachment; avoidant attachment; psychological factors; social support; stressful events; case-control study.**

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Psychosomatic factors have been estimated to be present in at least one-third of patients with dermatological conditions (1). There is extensive literature on the complex, mutual relationship between psychosocial factors and dermatological diseases, such as psoriasis (2–4), atopic dermatitis (3, 4), alopecia areata (5, 4), vitiligo (6) and acne vulgaris (4, 7). Furthermore, psychiatric disorders are frequent in dermatological patients (8) and are strongly associated with lower quality of life (9).

Psoriasis is a multifactorial disorder associated with significant psychological distress (8, 10), social

stigmatization (11, 12), psychiatric morbidity (8, 13) and other psychosocial factors. Patients with psoriasis report that their disease leads to various psychological and psychosomatic consequences, such as feelings of anger, depression, anxiety, and social isolation (14). The degree of pruritus is strongly correlated with depressive psychopathology (15). Furthermore, psychosocial burden plays a substantial role in patient perception of disease severity, quality of life, and disease course (12). Knowledge of mind–body–environment interactions can help to improve patients' skin conditions and, ultimately, their quality of life (1).

The aim of the present study was to assess the role of stressful life events, lack of social support and attachment insecurity in triggering exacerbations of psoriasis in Montenegrin patients. As far as we are aware only one previous study from the South Eastern European region has addressed this issue (16).

## PATIENTS AND METHODS

### Patients

Patients were recruited from the Department of Dermatology and Venereology, Clinical Center of Montenegro in Podgorica. The study group comprised 110 consecutive outpatients with psoriasis. Inclusion criteria were: 18 years of age or over, a minimum education of elementary school (4 years of education), and exacerbation of psoriasis during the last 6 months. The comparison group comprised 200 consecutively enrolled patients 18 years of age or over, with at least 4 years of education, who were affected by skin conditions in which psychosomatic factors are believed to play a minor role (e.g. contact dermatitis, insect bites, bacterial infection, skin tumours, ichthyosis).

The study took place from January to December 2007. The study protocol was approved by the ethics committee in the Clinical Center, Podgorica. Written informed consent was obtained from each subject.

### Instruments

The data about demographic variables, smoking and drinking habits and time of exacerbation of psoriasis were collected using a standardized form questionnaire.

For evaluation of disease severity the Psoriasis Area and Severity Index (PASI) was used (17). In our study mild psoriasis was classified as a PASI less than 7, moderate psoriasis as a PASI between 7 and 12, and severe psoriasis as a PASI of  $>12$ .

Data on stressful life events were obtained by Paykel's Interview for Recent Life Events a semi-structured interview

covering 63 specific and clearly defined life events (18), listed according to the level of their unpredictability and unpleasantness, with a level-1 event indicating extreme long-term threat and the lowest choice on the scale indicating the smallest long-term threat. The first 25 events on the scale represent great and significant long-term threats, with the first five being "life catastrophes" (19). Events ranging from levels 26 to 63 carry small or insignificant long-term threats. All stressful life events that occurred during the 12 months preceding the interview were recorded, except for events that occurred to psoriatic patients after the exacerbation. In addition, responders were asked to indicate any important event that had not been included in the list of life events. The questionnaire was completed by the patients assisted by the interviewer. For each patient the total number of events and the number of events in categories the first 25 and the first five events were computed.

Attachment relationship was measured with the Experiences in Close Relationships Scale (ECRS) (20). The ECRS is a 36-item self-report measure of adult attachment. Each item is responded to on a 7-point Likert-type scale, ranging from 1 ("disagree strongly") to 7 ("agree strongly"). Participants rate how well the statement describes their typical feelings in romantic relationships. This instrument yields two scale scores measuring anxiety and avoidance scores and it allows the assessment of the subject's attachment styles. The anxiety subscale (18 items) assesses fears of rejection and preoccupation with abandonment. The avoidance subscale (18 items) assesses fear of intimacy and discomfort with getting close to others or dependence. Higher scores on the anxiety and avoidant subscales indicate higher attachment anxiety and attachment avoidance.

We used the validated and cross-culturally adapted Serbian version of the questionnaire developed with the authors' permission. Our preliminary evaluation of its measurement properties suggests that it is a reliable and valid measure of the attachment relationship in people who speak the Serbian language. Cronbach's alpha coefficients were 0.94 and 0.91 for the anxiety and avoidance subscales, respectively.

Social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS) (21), a self-report questionnaire that consists of 12 items, each scored on a 7-point Likert scale. It allows the assessment of the subject's perception of the adequacy of support from family, friends, and significant others. Higher scores indicate greater perceived support. Only the total score was used in analyses. Patients with poor social support were those who scored in the lower quintile.

We used the validated and cross-culturally adapted Serbian version of the questionnaire, developed with the authors' permission. Our preliminary evaluation of its measurement properties suggests that it is a reliable and valid measure of the social support in people who speak the Serbian language. The Serbian version was found to have good internal reliability across scales (Cronbach's alpha was 0.92).

#### Statistical analysis

Categorical variables were expressed as counts and percentages. Continuous variables were presented as mean  $\pm$  standard deviation (SD). The differences between groups (patients with psoriasis vs. controls) were assessed by the *t*-test and  $\chi^2$  test. After that univariate and multivariate logistic regression analyses were used. The dependent variable was patient status (patients with psoriasis vs. controls). Each regression model (for stressful life events, attachment style and social support) included next independent variables: age, sex, education, marital status, smoking, alcohol consumption and the risk factor under study. Odds ratios (OR) were estimated from regression coefficients. A two-tailed probability value of 0.05 or less was considered significant. Analysis was performed with the

Statistical Package for the Social Sciences (SPSS) version 8.0 (SPSS Inc., Chicago, IL, USA).

## RESULTS

Studied groups did not differ significantly in sex, education and smoking habits (Table I). However, the patients with psoriasis were younger than controls ( $p=0.024$ ). The majority of patients in both groups were married, but a number of divorced people were greater among psoriatic patients ( $p=0.001$ ). In comparison with controls, cases more frequently consumed alcohol ( $p=0.007$ ).

Patients with psoriasis and controls differed with regard to stressful life events, social support and attachment style (Table II). The former group claimed to have experienced significantly more stressful life events in the 12 months preceding the interview (the total number of events, the number of the major events and the number of the first 25 events). After the effects of confounding factors were removed, only the number of the first 25 events was independently correlated with the exacerbation of psoriasis (OR = 1.98; 95% confidence interval (CI) = 1.37–2.87;  $p < 0.001$ ).

Patients with psoriasis had lower perceived social support and tended to be associated with poor social support, but the borderline significance was exhibited only in univariate logistic regression (OR = 1.73; CI = 0.98–3.05;  $p = 0.059$ ).

Table I. Characteristics of patients with psoriasis and controls included in the study

	Patients with psoriasis (n = 110)	Control group (n = 200)	p
Age (years; mean $\pm$ SD)	45.47 $\pm$ 12.63	46.12 $\pm$ 14.74	0.024 <sup>a</sup>
Sex (n, %)			
Men	52 (47)	82 (41)	0.286 <sup>b</sup>
Women	58 (53)	118 (59)	
Marital status (n, %)			
Single	26 (24)	54 (27)	0.001 <sup>b</sup>
Married	51 (46)	112 (56)	
Divorced	24 (22)	16 (8)	
Widowed	9 (8)	18 (9)	
Education (n, %)			
Elementary school	15 (14)	29 (15)	0.600 <sup>b</sup>
Secondary school	57 (52)	115 (58)	
Higher school	13 (12)	24 (12)	
University degree	25 (23)	32 (16)	
Smoking (n, %)			
Smokers <sup>c</sup>	61 (56)	105 (52)	0.590 <sup>b</sup>
Non-smokers	48 (44)	94 (47)	
Missing data	1 (1)	1 (1)	
Alcohol consumption (n, %)			
Drinkers	49 (45)	63 (32)	0.007 <sup>b</sup>
Non-drinkers	53 (48)	134 (67)	
Missing data	8 (7)	3 (2)	

<sup>a</sup>*t*-test.

<sup>b</sup> $\chi^2$  test.

<sup>c</sup>Ex-smokers included.

SD: standard deviation.

Table II. Psychosomatic risk factors among patients with psoriasis and controls

Risk factor	Patients with psoriasis (n=110)	Control group (n=200)	Univariate logistic regression analysis			Multivariate logistic regression analysis <sup>a</sup>		
	Mean ± SD	Mean ± SD	OR	95% CI	p	OR	95% CI	p
Stressful life events								
Total number of events	1.70 ± 1.77	1.25 ± 1.46	1.20	1.02–1.40	0.024			
Major events (first 5)	0.21 ± 0.43	0.11 ± 0.34	2.02	1.10–3.70	0.023			
First 25 events	1.05 ± 0.88	0.64 ± 1.08	1.52	1.18–1.97	0.001	1.98	1.37–2.87	<0.001
Social support								
Total score	51.71 ± 15.73	56.57 ± 17.76	0.98	0.97–1.00	0.019			
Poor social support <sup>b</sup>	n=28 (25.5%)	n=33 (16.5%)	1.73	0.98–3.05	0.059			
Attachment								
Anxiety attachment score	3.55 ± 1.22	2.69 ± 1.22	1.72	1.36–2.17	<0.001	1.44	1.09–1.92	0.011
Avoidant attachment score	3.70 ± 0.83	2.94 ± 1.12	2.09	1.53–2.84	<0.001	1.49	1.04–2.14	0.030

<sup>a</sup>With control for age, gender, education, marital status, smoking and alcohol consumption.

<sup>b</sup>Lower quintile.

OR: odds ratio; SD: standard deviation; CI: confidence interval.

Psoriatic patients were more likely than comparison subjects to score higher on both anxiety and avoidance attachment scales. It was confirmed by multiple regression analysis (anxiety attachment: OR = 1.44; CI = 1.09–1.92;  $p = 0.011$ ; avoidance attachment: OR = 1.49; CI = 1.04–2.14;  $p = 0.030$ ). In addition, a significant negative correlation (correlation coefficient:  $r = -0.55$ ;  $p < 0.001$ ) was found between social support (total score) and attachment-related avoidance in patients with psoriasis (data not shown in Table II).

## DISCUSSION

To our knowledge this is the first study in the region that met acceptable methodological standards for stress measurement and considered potential confounding, as proposed by experts in the field (22). The fact that only outpatients were involved in the study allowed results to be generalized to all psoriatic outpatients in Montenegro.

The role of psychological stress in aetiology and exacerbation of psoriasis is a controversial issue, although it is widely believed that stress has an important role in triggering psoriasis and that the mechanism of stress-induced exacerbations of psoriasis involved the nervous, endocrine and immune systems (23).

Several studies reported that stress may trigger psoriasis (24–28). The results of the present study are in agreement with the above statement. Our psoriatic patients reported a greater number of stressful life events in comparison with control subjects. However, two groups differed statistically significantly only in the number of the first 25 events. We did not investigate other sources of psychological stress, such as chronic stress and everyday stress.

It is believed that very high rates of stressful life events preceding the onset of the psoriasis, reported in some uncontrolled studies were influenced by perception and recall bias. For example, in a cross-sectional

study conducted in the UK, the belief that stress is a causal factor was associated with lower levels of psychological well-being of interviewed psoriatic patients (23). Most patients who report episodes of psoriasis caused by stress describe disease-related stress as a consequence of unattractive body image and appearance and social stigma of psoriasis (13).

Not all studies have supported the belief that stressful life events precipitate psoriasis (2, 29–31). Although they failed to find an association between stressful life events and the recent exacerbation of psoriasis, Picardi et al. (2) pointed out that their findings did not rule out an association between stress and psoriasis. They set out several potential reasons for that: they did not assess the other important sources of stress, such as chronic stress situations; only patients with diffuse plaque psoriasis were included in the study, although other clinical types might be more susceptible to stress; the control group composed of patients with other dermatological diseases disabled them to exclude potential excess of stressful life events in psoriatic patients in relation to healthy individuals (2).

A recently published Swedish nine-case study, performed in a prospective way, did not support the assumption that stress was a worsening factor in psoriasis (31). However, a limitation of this study is the low number of patients.

Psoriasis may induce different kinds of stressful experiences with which patients must cope (32). Some studies indicate that the adverse impact of psoriasis upon the quality of life can result in significant chronic stress, which may, in turn, exacerbate some types of psoriasis (33).

More powerful study designs, including randomized-controlled trials of stress reduction are needed to determine whether stress is a causal factor for triggering or aggravating psoriasis (34).

In the present study we observed only a slight trend toward an association between perceived poor social

support and exacerbation of psoriasis. However, many studies have demonstrated that social support is a protective factor for the development of psychosomatic diseases (35), including psoriasis (2, 36). Social support belongs to the best-studied resources of resistance to stress (37).

Scientific research into adult attachment styles has revealed a number of associations between attachment and relationship outcomes, emotion regulation, and personality. Adults with a variety of clinical disorders and depressed adults are more likely to report themselves as insecure. It is believed that attachment insecurity leads to disease risk through increased susceptibility to stress, increased use of external regulators of affect, and altered help-seeking behaviour (38). In general, individuals who are secure with respect to attachment have high self-esteem and are considered well-adjusted by their peers (39).

Our finding that, in comparison with the group with other skin conditions, the patients with psoriasis had higher attachment-related anxiety and higher attachment-related avoidance is in accordance with studies suggesting that insecure attachment might increase susceptibility to some skin diseases (2, 5, 6, 40). Croatian investigators found that inpatients with psoriasis had higher levels of trait anxiety compared with healthy subjects. They reported the lower levels of depression and anxiety in patients who perceived their social support as higher (16).

A comprehensive survey of 502 Americans with moderate-to-severe psoriasis revealed that psoriasis imposes psychological and social burdens on sufferers, in addition to the physical burden. The survey discovered that more than one-third of patients with psoriasis experience a disease-related disturbance in day-to-day activity, such as school, work, social interactions, recreational activities, and intimacy. The survey also found a perceived lack of self-confidence, stigmatization and feelings of isolation (41). Vardy et al. (11) showed that patients with psoriasis experience higher levels of stigmatization related to disease than do other dermatological patients, and that these experiences of stigmatization play a role in mediating the impact of disease severity on quality of life in patients with psoriasis.

Our study has some limitations. Firstly, we studied patients who experienced exacerbation of psoriasis in the last 6 months, rather than incidence cases of psoriasis. It is known that diseases such as psoriasis might induce an increase in stressful life events and both attachment anxiety and avoidance. A period of 6 months preceding exacerbation might be too long. However, to our knowledge only a few studies explicitly enrolled patients with a very recent (up to 3 months) exacerbation of psoriasis (2, 30). In addition, more than three-quarters of our patients (79%) experienced exacerbation within

3 months before the interview. Secondly, as in previous studies (2, 5, 6, 27, 30), our control group consisted of patients with skin conditions believed to have a negligible psychosomatic component. It could not exclude an excess of stressful life events in psoriasis patients in comparison with healthy controls. Nevertheless, our findings confirm the relevance of psychosocial factors in psoriasis (1, 5, 42) and support a biopsychosocial approach to the management of this skin condition. Further investigations with larger samples and more powerful study designs are needed to elucidate the complex relationship between psychosocial factors and psoriasis and to determine whether these factors increase the risk of developing psoriasis, aggravate existing disease, or represent responses to already developed psoriasis.

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