

Early Onset (<40 Years Age) Psoriasis Is Comorbid with Greater Psychopathology than Late Onset Psoriasis: A Study of 137 Patients

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Early onset (<age 40 years) psoriasis has been reported to be more readily triggered by environmental factors such as stress, in contrast to late onset (≥age 40 years) psoriasis. We examined whether certain psychopathologic factors differentiated the psoriasis patient with early onset versus late onset disease. One hundred and thirty-seven psoriasis inpatients completed a battery of psychosocial questionnaires. Logistic regression analysis, using the psychologic measures, age and TBSA affected as independent variables, revealed that higher Anger-In (Anger Expression Scale) scores significantly ($p < 0.05$) increased the odds or probability of having early versus late onset psoriasis. Psoriasis with onset prior to age 40 is comorbid with greater difficulties with assertion and expression of anger, a personality trait that may adversely affect the patient's capacity to cope with stress. Key words: age factors; psychological; stress; anger; age of onset.

(Accepted April 9, 1996.)

Acta Derm Venereol (Stockh) 1996; 76: 464–466.

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Psoriasis with onset prior to the age of 40 years has been associated with possibly greater genetic susceptibility and a more severe and recurrent course (1–3). Some investigators have even proposed that the early onset (onset before the age of 40 years) and late onset groups represent two genotypes (3). It has long been recognized that environmental factors, including stress (2, 4–6) and psychopathology (7), play a significant role in the onset and exacerbation of psoriasis. In a recently reported case-control study (8), it was observed that in contrast to late onset psoriasis, early onset (<40 years) psoriasis was associated more frequently with psychosocial factors such as stress and alcohol consumption. The authors (8) reported that early onset psoriasis was more readily triggered by environmental factors such as stress in contrast to late onset disease.

In this study we have carried out a more in-depth evaluation of psychopathologic factors in early onset (age of onset <40 years) versus late onset (age of onset ≥40 years) psoriasis. The purpose of this study was to better understand whether certain psychopathologic traits, which may render the patient more susceptible to environmental factors such as stress, are more frequently associated with early onset than late onset psoriasis.

MATERIAL AND METHODS

One hundred and thirty-seven consecutive consenting psoriasis patients who were all inpatients in the Department of Dermatology, University

of Michigan Hospitals (69 men, 68 women; mean ± SD age: 47.8 ± 16.2 years; mean ± SD duration of psoriasis: 18.8 ± 14.2 years) with age at onset of psoriasis ranging from 5 to 76 years, mean ± SD age at onset of 28.6 ± 15.7 years, underwent a clinical dermatologic evaluation and completed a battery of psychologic questionnaires as part of a larger study of psychosocial factors in psoriasis (6, 7, 9). One hundred and six patients (77.4%) (mean ± SD age: 42.5 ± 13.7 years) had early onset (i.e. age at onset of psoriasis under 40 years) psoriasis and 31 patients (22.6%) (mean ± SD age: 64.5 ± 10.1 years) had late onset (i.e. age at onset of psoriasis at 40 years or older) psoriasis.

Clinical dermatologic evaluation

The clinical dermatologic evaluation was carried out within the first week of admission to the inpatient service and included the percentage total body surface area affected by psoriasis (9).

Psychologic measures

All the psychologic measures were patient self-ratings, and the patients were identified by a code number only on the questionnaires. Several psychologic instruments were used to screen for the broad range of psychopathologic factors that have been implicated in psoriasis. The psychologic instruments used were as follows: 1) the *Symptom Checklist, Revised version, (SCL90R)* (10), a 90-item instrument that measures 9 psychologic symptom dimensions including obsessive-compulsiveness, somatization, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism; 2) the *Carroll Rating Scale for Depression (CRSD)* (11), a 52-item instrument used to screen for the clinical depressive syndrome; 3) the *Spielberger State-Trait Personality Inventory (STPI)* (12), two 30-item instruments each measuring state and trait anger, anxiety and curiosity, respectively; 4) the *Anger Expression Scale (AX)* (13), a 20-item self-rated instrument that consists of two independent subscales that measure "anger-in" and "anger-out". The "anger-in" subscale measures suppressed anger and addresses how often angry feelings are experienced but not expressed (13). The "anger-out" subscale measures the degree to which an individual engages in aggressive behavior when motivated by angry feelings (13); 5) *Rosenberg's Self-Esteem Questionnaire* (14), a 10-item instrument used as a measure of self-esteem; 6) a subscale of the *Interpersonal Dependency Inventory (IDS)* (15), an 18-item subscale of the 48-item IDS which measures the extent to which a person relies upon the approval of others; 7) the *Self-Administered Alcoholism Screening Test (SAAST)* (16), a 34-item screening questionnaire to detect the presence of alcoholism in the general medical-surgical patient. The questionnaire assesses alcoholic habits and behavior and screens for the patient who may not be currently engaged in excessive alcohol use but has a serious potential for developing alcoholism; and (8) patients' self-reports of their average daily consumption of alcoholic beverages (i.e. glasses of wine, bottles of beer, ounces of hard liquor) during 6 months prior to admission (17). These ratings were converted to grams of ethanol used per day (17).

Statistical analysis

The patients were categorized into the early onset (i.e. age at onset <40 years) and late onset (i.e. age at onset ≥40 years) groups for

the final analyses. As an initial step, nonparametric Spearman rank order correlations were calculated between the various psychologic measures and (i) age at onset and (ii) age at onset after controlling for age. Since age can be a confounding factor (the mean ages of the early and late onset groups in our study differed by 22 years) for many psychopathologic parameters, only the psychologic variables which were significantly correlated with age at onset after controlling for chronologic age were included in a logistic regression analysis, in order to determine which variables significantly affected the probability of having early onset versus late onset psoriasis. In addition to the psychologic factors, age and total body surface area affected by psoriasis were also included in the logistic regression analysis.

Using an appropriate analysis of covariance (ANCOVA) model, least squares means for anger-in (AX) (13), the psychologic variable that was significant in the logistic regression, was obtained for the early and late onset psoriasis groups. It was then determined if there was a significant difference in the anger-in (AX) (13) score between the early and late onset groups. The following procedure was used to find the appropriate ANCOVA model for the anger-in (AX) (13) variable. Firstly, Spearman rank order correlations were calculated between the anger-in (AX) (13) variable and the various psychologic measures, after partialling out the possible effect of age of onset. The variables that were found to be significantly correlated with anger-in (AX) (13) were included in a linear stepwise regression along with percentage of total body surface area affected, and age as a means for finding a model which best accounted for the variation in the anger-in (AX) (13) scores. The variables that emerged as being significant in the stepwise linear regression were then used in the ANCOVA model along with the age of onset variable (which had two levels, early and late onset with a cut-off at 40 years).

RESULTS

The psychologic measures that were significantly correlated with age at onset of psoriasis by Spearman rank order correlation were as follows: hostility (SCL90R): $\rho = -0.24$, $p = 0.004$; interpersonal sensitivity (SCL90R): $\rho = -0.24$, $p = 0.005$; depression (SCL90R): $\rho = -0.23$, $p = 0.008$; phobic anxiety (SCL90R): $\rho = -0.17$, $p = 0.04$; paranoid ideation: $\rho = -0.20$, $p = 0.01$; trait anger (STPI): $\rho = -0.26$, $p = 0.002$; trait anxiety (STPI): $\rho = -0.19$, $p = 0.02$; anger-in (AX): $\rho = -0.25$, $p = 0.007$; SAAST: $\rho = -0.20$, $p = 0.02$; and ethanol (average number of grams used over the previous 6 months): $\rho = -0.20$, $p = 0.02$. However, the psychologic measures that were significantly correlated with age of onset of psoriasis by Spearman rank order correlation after the possible effect of chronologic age was partialled out were as follows: interpersonal sensitivity (SCL90R): $\rho = -0.23$, $p = 0.02$; and anger-in (AX): $\rho = -0.21$, $p = 0.03$.

Logistic regression analysis using the two psychologic variables, i.e. interpersonal sensitivity (SCL90R) and anger-in (AX), the total body surface area affected by psoriasis and chronologic age indicated that patients with higher anger-in (AX) scores ($p < 0.05$) and lower chronologic age ($p < 0.0001$) had significantly higher odds of being in the early onset than the late onset group. The least squares means \pm SE (by ANCOVA) for the anger-in (AX) variable in the early (<40 years) vs late (≥ 40 years) onset groups, respectively, were as follows: 15.9 ± 0.4 vs 13.9 ± 0.7 , $p = 0.01$. The final model using ANCOVA for the anger-in (AX) (13) score explained 56% of the variance, i.e. $r^2 = 0.56$.

The anger-in subscale of the *Anger Expression Scale* (AX) (13) provides an index of a style of coping with anger, i.e. with suppression and internalization of anger (13). The 8 items of the anger-in subscale (13) that the subjects endorsed

using a 4-point scale are as follows: "I keep things in", "I pout or sulk", "I withdraw from people", "I boil inside but I don't show it", "I tend to harbor grudges that I don't tell anyone about", "I am secretly quite critical of others", "I am angrier than I am willing to admit", and "I am irritated a great deal more than people are aware of". Studies (13, 18, 19) examining the relation of anger-in (AX) to blood pressure show a remarkable increase in blood pressure, both systolic and diastolic, at anger-in (AX) scores of 16–18. The mean \pm SE of 15.9 ± 0.4 in the early onset patients is very close to the threshold range of 16–18 for suppressed anger that is associated with pathologically increased blood pressure, believed to be secondary to increased autonomic reactivity (13, 18, 19).

DISCUSSION

We examined psychologic differences between psoriasis patients with early onset (i.e. onset prior to age 40 years) and late onset (i.e. onset at 40 years age or older) disease. Logistic regression analysis, taking into account the total body surface area affected by psoriasis, and chronological age in addition to the psychologic variables as independent variables, indicated that patients with higher anger-in (AX scale) (13) ($p < 0.05$) scores had greater odds of being in the early onset than the late onset group. Among the non-psychologic measures, younger patients had greater odds of being in the early onset group, a finding which is intuitively expected. Our inpatients had relatively severe psoriasis and the total body surface affected did not cover a large range. This could be a reason why the total body surface area affected was not significant in the logistic regression analysis.

Examination of the anger-in (AX scale) (13) scores revealed that among the early onset group, the mean \pm SE score of 15.9 ± 0.4 was in the lower range of the threshold for increased autonomic reactivity (13, 18, 19). Anger has been previously described as a factor that plays a role in the onset or exacerbation of psoriasis (7, 20). It is possible that personality traits associated with ineffective anger management result in greater stress for the patient, especially when the patient is faced with a significant psychosocial stressor. Such patients may tend to use maladaptive coping mechanisms and/or experience excessive autonomic reactivity, when faced with stressful or anger-provoking situations. One can speculate that this comorbidity of early onset psoriasis with greater difficulties with expression of anger is a primary feature of early onset psoriasis. This personality characteristic means that the patient has less effective coping skills when faced with a stressful life situation, and as a result the patient's psoriasis is more vulnerable to stress. These preliminary findings from our cross-sectional study have to be confirmed with prospective studies involving early and late onset psoriasis patients.

ACKNOWLEDGEMENT

We wish to thank the Department of Dermatology, University of Michigan, Ann Arbor, Michigan, USA, for allowing us to study their patients.

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