

PSYCHOLOGICAL BURDEN IN ATOPIC DERMATITIS PATIENTS

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Abstract

Background: Atopic dermatitis (AD) patients present a high prevalence of psychological distress. They experience discomfort due to visible erythema and intense pruritus affecting sleep, mood and relationship quality. Patients need both medical and psychological assistance to improve symptoms and stress coping. Psychodermatological approach implies the presence of both psychologist and dermatologist in the patient's care process.

Objective: Given the anxiety and depression prevalence in AD patients and their possible influence on treatment adherence, the present ongoing study investigates the relationship between different treatments (i.e., standard vs. biological drugs) and both dermatological and psychological outcomes.

Methods: AD patients attending at the San Gallicano Dermatological Institute in Rome, Italy, between November 2022 and December 2023, were enrolled. Primary outcomes included the Hospital Anxiety and Depression Scale (HADS, range: 0-42), and its dimensions, i.e. depression and anxiety (range: 0-21). Dermatological Life Quality Index (DLQI, range: 0-30), Peak Pruritus Numerical Rating Scale (NRS, range: 0-10) and Eczema Area and Severity Index (EASI, range: 0-72) were also measured.

Results: Of the 112 AD patients enrolled 62 were female (55.4%), mean age was 29.4 years, ($SD=13.6$). Most were students ($N=45$; 40.2%). The majority were receiving biological therapy ($N=63$; 56.3%), followed by topical ($N=33$; 29.5%), or standard systemic treatment ($N=8$; 7.1%). Outcomes' mean scores were: HADS, $M=11.5$ ($SD=6.6$); anxiety, $M=7.5$ ($SD=4.1$); depression, $M=3.4$ ($SD=3.03$); DLQI, $M=6.14$ ($SD=6.3$); NRS, $M=4.4$ ($SD=3.2$); EASI, $M=8.7$ ($SD=11.1$). Over half of the participants ($N=57$, 50.9%) had an anxiety level above the cut-off. Biological therapy showed a positive effect on dermatological and psychological outcomes with a lower disease severity, lower mean level of anxiety, depression and pruritus compared to standard treatments. There were significant correlations between time on biological therapy, EASI ($r=-0.38$ $p<0.05$), NRS ($r=-0.42$, $p<0.01$) and DLQI ($r=-0.044$, $p<0.01$). No correlation emerged between time on biological therapy and anxiety.

Discussion: Preliminary data show that clinically relevant anxiety level is high in AD patients. Although recent biological therapies seem to be effective in reducing dermatological symptoms and improving quality of life in this population, greater attention should be given to AD distressed patients. In the next study phase, participants with an anxiety and/or depression score above the HADS cut-off (≥ 8) will be offered psychological support. The clinical impact of this intervention will be also evaluated.

Keywords: Atopic dermatitis, anxiety, depression, quality of life, psychodermatology.

1. Introduction

Atopic dermatitis patients are children, adolescents and adults who suffer from a chronic, relapsing, inflammatory skin disease characterized by visible, itching eczemas and several other comorbidities. These often include all the typical manifestation of the so called "atopic march" namely food allergy, allergic asthma and allergic rhinitis (Yang, Fu, & Zhou, 2020). Dermatological treatments for atopic patients include topical (emollients, corticosteroids, topical calcineurin inhibitors), systemic drugs (conventional immunosuppressants, biologics and small molecules) and phototherapy according to the severity of the disease and the impairment of patients' quality of life (Wollenberg et al., 2022).

Atopic dermatitis (AD) is the disease that causes the highest psychological burden compared to other dermatological conditions (Fasseeh et al., 2022); in fact, affected patients often suffer from anxiety, depression and sleep disturbance given the severe itch that often intensify at nighttime. The AD is characterized by periodic relapses distinguished by inflamed, dry, itchy skin that affect the emotional

resilience of patients and their psychological vulnerability. The uncontrollable urgency to scratch together with the presence of eczemas on the visible areas of body (i.e.; face, neck and hands) can also represent solid barriers to relationship, particularly among children and adolescents who might react with stigmatization and social isolation. Moreover, adults with atopic dermatitis are often those adolescents who have had the mentioned psychosocial difficulties and consequently might have developed low self-esteem, scarce relational skills and lower social productivity than dermatological healthy counterparts.

Focusing on environmental factors, psychosocial stressors can represent relevant correlates of exacerbation, worsening and relapses. Thus, AD exacerbation and psychological distress are often associated. Several studies focus on atopic dermatitis patients' distress manifestation reporting psychosocial comorbidities like depression, anxiety, sleep disorders, suicidal ideation (Kage, Simon, & Treudler, 2020; Kage, Zarnowski, Simon, & Treudler, 2020; Kwatra, Gruben, Fung, & Di Bonaventura, 2021). Other authors report the impaired psychosocial function of atopic dermatitis patients as a consequence of the dermatological manifestation of the disease (e.g., Tuckman, 2017; Iida et al., 2023). Distress and anxiety are associated with the release of neuromediators which have the function of regulating neurocutaneous inflammation, immune response and skin barrier functions (Suárez, Feramisco, John, & Steinhoff, 2012). Although the understanding of the link between genetic, environmental and psychological factors in AD is not yet known, it is crucial to provide a multidisciplinary approach to the patients in the care settings. Within this model of care, the present study is aimed to assess the psychological burden of the AD among consecutive outpatients attending the Unit for AD of the San Gallicano Dermatological Institute of Rome, Italy, and its relationships with different pharmacological treatments and prognosis.

2. Methods

This is an ongoing observational, longitudinal study enrolling atopic patients in different stages of the disease. The present paper reports preliminary findings collected during the enrollment phase of the study.

All AD patients attending at regular follow-up visits were proposed to participate in this study. No selection criteria were used beyond the diagnosis of atopic dermatitis and the ability to speak and read in Italian. Patients were recruited between November 2022 and December 2023. After informed consent to participate in the study was given, a psychologist administered the psychometric instruments to measure psychological outcomes within the dermatological visits. Demographic information and clinical data about ongoing pharmacological treatments and dermatological outcomes were also collected through both patients' reports and medical records.

2.1. Assessment of clinical outcomes

Current emotional vulnerability was screened using the Hospital Anxiety and Depression Scale (HADS) (Costantini et al., 1999; Zigmond & Snaith, 1983). The scale includes 14 items rated on a 4-point choice (0 to 4) and two subscales to assess anxiety and depression vulnerability, each one with a score ranging between 0 and 21. The clinical cut-off for the two subscales is 8 points, scores between 8 and 11 could identify patients at risk of developing the two mental disorders. A score above 11 in a subscale indicates a clinical presence of the specific disorder (Zigmond & Snaith, 1983). Quality of life was measured using the Dermatological Life Quality Index (DLQI) (Finlay & Khan, 1994; Mazzotti, Barbaranelli, Picardi, Abeni, & Pasquini, 2005) which includes 10 items rated on a 4-point scale (0 to 3). Total score ranges between 0 and 30. Scores between 6 and 10 indicate a moderate effect of the dermatological condition on the patients' quality of life, a score between 11 and 20 identifies patients whose dermatological condition has a very large effect on their quality of life. Finally, scores between 21 and 30 indicate an extremely large effect of the illness on the person's quality of life. Pruritus and disease severity were measured using the Peak Pruritus Numerical Rating Scale (NRS) and the Eczema Area and Severity Index (EASI), respectively. The Peak Pruritus Numerical Rating Scale (NRS) (Yosipovitch et al., 2019), is a single-item patient reported outcome (PRO) that measures the most severe level of itch perceived by the patient during the previous 24 hours. The Eczema Area and Severity Index (EASI) was routinely used in dermatological wards to assess extension and severity of the eczema, it ranges between 0 and 72 (Hanifin et al., 2001). Further information collected during clinical consultation or extracted from medical records included: age, occupation, atopic dermatitis family history, age of atopic dermatitis onset, type of current pharmacological therapy (biological drugs vs. topical/standard treatments), duration of therapy and visible or sensitive body's area affected (i.e.; face, neck, hands).

2.2. Statistical analysis

Demographic and clinical characteristics of the sample were summarized through descriptive statistics which include frequencies, means and proportions. After that, in order to compare patients undergoing biological drugs with patients on traditional therapies (topical or systemic) on every dermatological and psychological outcome assessed, independent samples *t*-tests were performed. Measures of association were calculated in order to explore the relationship between length of time patients were on biological therapy, clinical outcomes and PROs.

3. Results

From 1 November 2022 to 31 December 2023, 112 participants accepted to participate in the study. Just above the half of them were female ($N=62$, 55.4%), the mean age was 29.4 years ($SD=13.6$) and most of them were students ($N=45$, 40.2%). The majority of patients had no AD family history ($N=65$, 58%) and a disease onset within the 12 years of age ($N=81$, 72.3%). A relevant part of the sample had eczemas on visible or sensitive areas of the body (i.e. face, neck or hands) ($N=49$, 43.8%) and 64 patients (57.1%) reported a pruritus NRS equal or above the score of 4. Most of them had a mild level of AD ($N=35$, 31.25%) or were clear from eczema ($N=35$, 31.25%), 24 patients (21.43%) had a moderate AD level and a minority had severe ($N=18$, 16.7%) or very severe ($N=1$, 0.89%) AD manifestation. Almost all patients were included in a treatment protocol at the time of enrollment. Most ($N=63$, 56.3%) were on therapy with biological drugs, 33 (29.5%) were using traditional topical therapy, 8 (7.1%), were under standard systemic treatment and 3 patients were not on therapy (first diagnosis). Therapy information about 5 patients (4.5%) could not be retrieved.

The HADS mean total score of the entire sample was 11.5 ($SD=6.6$), the anxiety subscale mean score was 7.5 ($SD=4.1$) and the depression subscale mean score was 3.4 ($SD=3.03$). The DLQI mean score was 6.14 ($SD=6.3$) and the NRS scored in average 4.4 ($SD=3.2$). Mean score for the EASI was 8.7 ($SD=11.1$). Just over half of the sample ($N=57$, 50.9%) reached a score above the cut-off of 8 at the HADS anxiety subscale, while a score above the cut-off for depression was reached by 15 patients (13.4%).

When comparing patients in biological therapy with patients in topical and standard systemic therapies together, a significant difference between groups was found in disease severity as measured by the EASI, $t(99)=5.103$, $p<0.001$. Mean scores of the two groups show this difference (biological: $M=4.52$, $SD=6.12$; vs. topical/standard therapies: $M=14.92$, $SD=14.05$). Data from the PROs showed lower level of distress, anxiety and pruritus among patients on biological therapy than patients on topical/standard therapies. Data showed a significant difference in the anxiety subscale $t(102)=3.12$, $p=0.002$; mean scores of the two groups reveal the difference (biological: $M=6.53$, $SD=4.21$ vs. topical/standard therapies: $M=9$, $SD=3.52$). Finally, a significant difference emerged in pruritus, $t(101)=4.56$, $p<0.001$ with a NRS mean scores of 3.21 ($SD=2.78$) and 5.88 ($SD=3.07$) respectively for patients in biological and in topical/standard therapies. No significant differences between groups were found for depression. Moreover, a significant inverse correlation emerged between time on biological therapy and EASI score ($r=-0.38$, $p<0.05$), NRS score ($r=-0.42$; $p<0.05$) and with DLQI ($r=-0.044$, $p<0.01$), but not with level of anxiety measured by the HADS.

4. Discussion

Our study reports on the real-world experience of the atopic dermatitis Unit of the San Galliciano Dermatological Institute of Rome where both a dermatological and a psychological assessment were performed in order to shed light on the patients' level of burden according to the type of treatment undergone. Specifically, traditional systemic or topical treatments and more recent biological drugs.

Results show that most of patients are undergoing a biological therapy and that distress level is high in this population. In particular, anxiety level is generally high, also it is alarming for a great number of patients who overcome the clinical cut-off. Surprisingly depression do not appear to characterize this sample. Comparisons between biological therapy and standard systemic and topical treatments taken together, show that patients in the former group have less severe disease, lower overall distress and anxiety and less pruritus compared to the latter.

Notwithstanding the important impact that the biological drugs seems to have on both dermatological and psychological health, it is crucial to give psychological support to patients with a clinically relevant anxiety level. Indeed, psychological support for these patients is planned for the next face of the study and the impact of the intervention will be evaluated.

Although these results deriving from a single institute are not generalizable, they show the important impact that biological treatments could have on both dermatological and psychological outcomes. Moreover, this model of care with dermatologists and psychologists working together for AD patients'

assessment and management, could be a global approach able to detect and take care of the patients' global burden.

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