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The association of atopic dermatitis (AD) with anxiety and depression

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Abstract

Atopic dermatitis (AD), a common chronic inflammatory skin disease that may persist into adulthood, is associated with intense itching and a high incidence of sleep disturbances [1, 2]. The worldwide prevalence of AD is 15-20% among children [3] and 1-3% among adults. Psychological distress is a common comorbidity associated with atopic dermatitis and can negatively impact the quality of life [4]. Previous large-scale population-based studies have identified an association between AD and psychiatric illness [5–8]. Children with AD in the United States had a significantly higher prevalence of attention-deficit/hyperactivity disorder (ADHD, depression, anxiety, behavioral disorders, and autism) than children without AD [5]. Other authors [6] found that Taiwanese patients with AD had an increased risk of developing the major depressive disorder (MDD) and anxiety disorders. And also, depressive symptoms were significantly higher in patients with AD than in the control group [7, 8].

This study aimed to evaluate the association of AD with anxiety and depression using a data mining approach to match patients with AD with controls by sex and age.

Materials and methods

Patients with atopic dermatitis were interviewed at the Allergology and Clinical Immunology Department of the Tbilisi State Medical University clinics. Their medical records (2018-2021 years) were analyzed to determine the coexistence of this disease with anxiety and depression. The study was conducted according to the case-control protocol and included 315 people aged 18 to 69. The "case" and "control" groups consisted of 154 people with chronic atopic dermatitis and 161 randomly selected

healthy individuals (including medical students, their family members, and teaching staff without the presence of asthma, rhinitis, urticaria, seborrheic dermatitis, psoriasis and contact dermatitis). We classified patients by age: 18-29 years old, 30-49 years old, and 50-69 years old. Since the severity of AD is difficult to classify, we assess the severity of the disease based on the drugs used by patients: mild AD (patients used only moisturisers and topical therapy - topical corticosteroids (TCS) short course and topical calcineurin inhibitors (TCIs), moderate AD (patients who received additional oral antihistamines), and severe AD (patients who received other oral immunosuppressants).

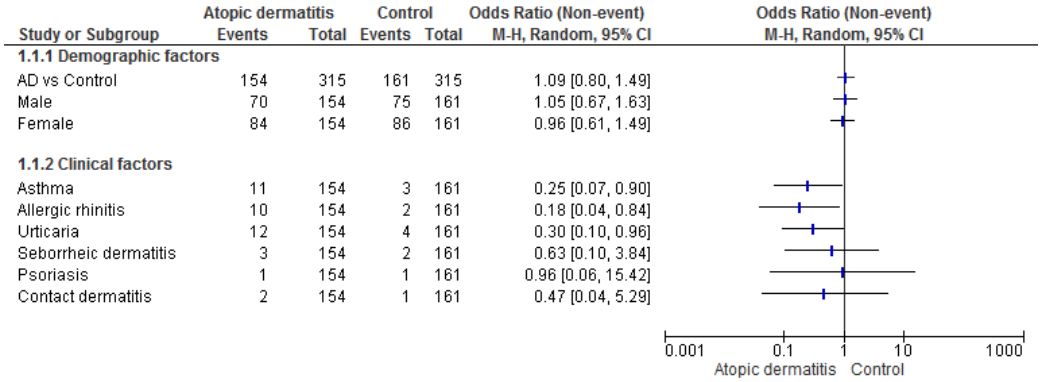
Anxiety and depression were identified through appropriate questionnaires GAD-7 (Generalized Anxiety Disorder) and PHQ-9 (Patient Health Questionnaire) by allergists, dermatologists, and general practitioners.

Statistical analysis was performed using software version 25 SPSS and Review Manager 5.4.1. The study was carried out in 4 subgroups according to demographic and clinical characteristics. Odds ratios (ORs) utilised a 95% confidence interval, with a p-value lower than 0.05 considered significant.

Results

Demographic and clinical parameters of the study population are presented in Table. 1. There were no significant differences in gender; the mean age of patients with AD was 44.26 (SD = 14.76), and the control group was 46.38 (SD = 15.91). The percentage ratio between patients with AD and control was 45.4% vs 46.6% in men and 54.5% vs 53.4% in women. There were no significant differences in the overall number of participants in AD and control (OR = 1.09, 95% CI 0.80-1.49) and gender groups (Case vs Control in male, OR=1.05, 95% CI 0.67-1.63; Case vs Control in female, OR=0.96, 95% CI 0.61-1.49). Significant differences were found in the prevalence of only three (out of six) clinical variables studied (asthma, allergic rhinitis, urticaria, respectively: OR = 0.25, 95% CI 0.07-0.90; OR = 0.18, 95% CI 0.04-0.84; OR = 0.30, 95% CI 0.10-0.96), but not in seborrheic dermatitis, psoriasis, and contact dermatitis.

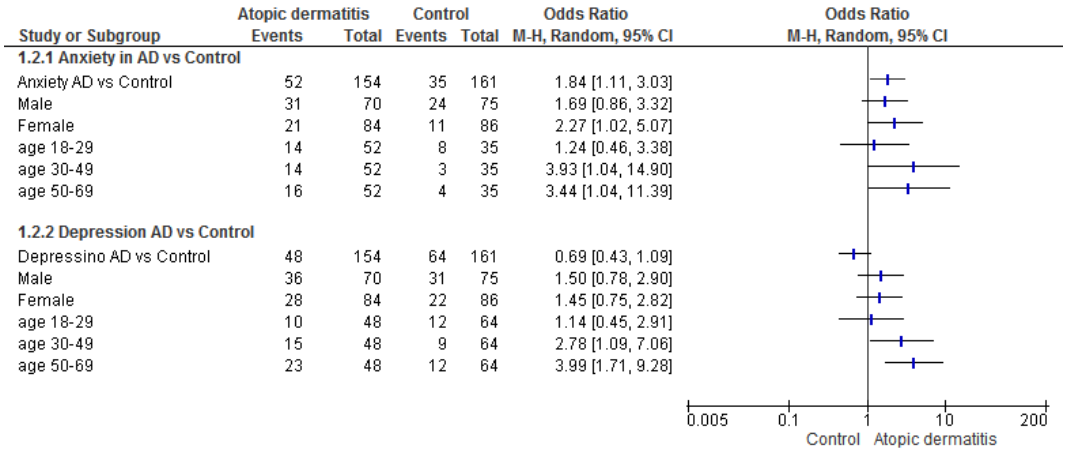
Table 1. Demographic and clinical parameters of the study population



Odds ratios for the association between atopic dermatitis (AD), anxiety, and depression stratified by age and sex, are demonstrated in Table 2. Anxiety was nearly 1.5 times more prevalent in the AD group than in the controls (33.7% vs 21.7%; OR 1.84, 95% CI 1.11–3.03, $p < 0.001$). Anxiety prevalence also was higher in women (OR = 2.27, 95% CI 1.02–5.07, $p < 0.001$) and two age groups: 30-49 y, 50-60 y (respectively OR = 3.93, 95% CI 1.04–14.90, $p < 0.001$; OR = 3.44, 95% CI 1.04–11.39, $p < 0.001$).

There was no difference between the prevalence of depression in men and women. (31.2% vs 39.7%; OR 0.69, 95% CI 1.11–3.03, p<0.001). However, depression was more prevalent in the following age groups (30-49 y, 50-69 y; OR = 2.78, 95% CI 1.09–7.06, OR = 3.99, 95% CI 1.71–9.28 respectively) of both sexes.

Table 2. Association between Atopic Dermatitis (AD), anxiety and depression



Discussion

Previous research on the relationship between anxiety/depression and atopic dermatitis has been inconsistent. Several studies have reported no significant difference in anxiety levels between AD patients and controls [1, 2] and no significant correlation between AD severity and anxiety [10]. However, other studies have shown that AD patients are more likely to experience anxiety than healthy individuals [5, 6]. A recent large population-based study showed that moderate to severe AD is significantly associated with an increased risk of using anxiolytics and antidepressants [11].

Anxiety and depression are the primary disorders associated with chronic skin diseases. This disease can contribute significantly to psychological distress and is often associated with other atopic conditions such as allergic rhinitis (AR) and asthma.

Our study confirmed the association between AD and some mental illnesses (depression and anxiety) in the 30-69 age group compared to healthy individuals; It was also revealed that patients with atopic dermatitis suffer more often from diseases such as bronchial asthma, allergic rhinitis and urticaria.

Many authors failed to confirm the hypothesis that the severity and duration of dermatitis affect depression because they couldn't find a correlation, probably due to the shortage of observed individuals in the respective groups. Some publications claim that depressive symptoms in

dermatological patients are associated with cosmetic malformations and body image problems [12, 13] and that most pruritic depressive skin diseases include psoriasis and chronic idiopathic urticaria [14]. The mechanisms underlying mental illness and AD are unknown. One theoretical tool is that mental illness may be a common consequence of many chronic illnesses, including AD. Blackman et al. [15] found that children with chronic illnesses are at increased risk of emotional and behavioural problems. The link between mental illness and AD can be explained by elevated levels of pro-inflammatory cytokines in AD, which can lead to depression, anxiety, and autism [15,16]. Schmitt et al. [17] suggested that sustained overexpression of inflammatory mediators released during atopic reactions may influence brain circuits.

Several candidate genes encoding significant elements of the immune system and proteins involved in regulating Th1/Th2 cell differentiation and effector function for atopic traits have been identified [18]. In particular, genetic variants in the gene encoding signal transducer and activator of transcription 6 (Stat6), a key regulatory element of Th2 immune response, have been associated with atopy-related traits [19].

Activator of transcription 6 (Stat 6) is also highly expressed in the central nervous system and is suggested to play a significant role in Attention deficit hyperactivity disorder (ADHD) pathogenesis [19]. In addition, previous research on the association between atopy and behavioural symptoms in twins has supported the hypothesis of shared genetic factors influencing the risk for atopic and behavioural disorders [18].

Conclusion

Our study has shown that concomitant diseases (bronchial asthma, allergic rhinitis and urticarial) were more often observed in patients with atopic dermatitis; Depression and anxiety are also more common in this condition in the 30-69 age group.

The association of depression and anxiety with chronic AD is not well understood. Future studies recommend exploring the inverse relationship between atopic dermatitis and psychiatric disorders (depression and anxiety).

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Связь атопического дерматита (АД) с тревогой и депрессией

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Атопический дерматит (АД), распространенное хроническое воспалительное заболевание кожи, которое может сохраняться во взрослом возрасте, связано с интенсивным зудом, высокой частотой нарушений сна и низким качеством жизни. Распространенность АД среди детей составляет 15–20%, и 1-3% среди взрослых во всем мире. Психологический дистресс является одним из распространенных сопутствующих заболеваний, связанных с атопическим дерматитом, и может негативно влиять на качество жизни. Предыдущие крупномасштабные популяционные исследования выявили связь между АД и психическими заболеваниями. Целью нашего исследования было провести всестороннее сравнение психических заболеваний во всех возрастных группах пациентов с АД среди Грузинского населения.

Исследование проводилось по протоколу случай-контроль и включало 315 человек в возрасте от 18 до 69 лет. В основную и контрольную группы вошли 154 человек с хроническим атопическим дерматитом и 161 произвольно выбранных здоровых лиц (включая студентов-медиков, членов их семьи и преподавателей). Пациенты были стратифицированы по демографическим (пол и возраст) и клиническим характеристикам (астма, аллергический ринит, крапивница, себорейный дерматит, псориаз и контактный дерматит). Мы классифицировали пациентов по возрасту: 18-29 лет; 30-49 лет и 50-69 лет.

Статистический анализ проводили с использованием программного обеспечения версии 25 SPSS и Review Manager 5.4.1. Отношения шансов (OR) использовали 95% доверительный интервал, при этом p-значение ниже 0.05 считалось значимым. Анализ проводился в 4 подгруппах по демографическим и клиническим характеристикам. Наши исследования показали, что у больных с атопическим дерматитом, по сравнению со здоровыми лицами в возрасте 30-69 лет частота депрессии и тревоги была выше. У больных атопическим дерматитом коморбидные заболевания, такие как бронхиальная астма, аллергический ринит, крапивница, также наблюдались чаще, чем в контрольной группе.

Наше исследование показало, что у больных атопическим дерматитом чаще

наблюдались сопутствующие заболевания по сравнению с контрольной группой в виде бронхиальной астмы, аллергического ринита и крапивницы; Депрессия и тревога также чаще встречаются при АД. Поскольку нам не удалось сопоставить проявления депрессии и тревоги с тяжестью атопического дерматита, необходимы дальнейшие исследования для уточнения этих взаимосвязей.

ატოპიური დერმატიტის (AD) კავშირი შფოთვასთან და დეპრესიასთან

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[1] თბილისის სახელმწიფო სამედიცინო უნივერსიტეტის ალერგოლოგიისა და კლინიკური იმუნოლოგიის დეპარტამენტის დოქტორანტი

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ატოპიური დერმატიტი (AD), კანის გავრცელებული ქრონიკული ანთებითი დაავადებაა, რომელიც შეიძლება გაგრძელდეს ზრდასრულ ასაკშიც. ეს დაავადება მნიშვნელოვნად აქვეითებს ადამიანის ცხოვრების ხარისხს. უკანასკნელი კვლევების თანახმად ატოპიური დერმატიტი შესაძლოა იწვევდეს სხვადასხვა ფსიქოლოგიურ დისტრესულ მდგომარეობებს. ჩვენი კვლევის მიზანი იყო შეგვესწავლა ფსიქიკური დაავადებების (შფოთვა და დეპრესია) თანაარსებობა ატოპიური დერმატიტით დაავადებულ სხვადასხვა ასაკის და სქესის პირებში.

კვლევა ჩატარდა საცდელ-საკონტროლო პროტოკოლით და მოიცავდა 18-დან 69 წლამდე ასაკის 315 პირს. საკვლევ და საკონტროლო ჯგუფებში შევიდა 154 ქრონიკული ატოპიური დერმატიტით დაავადებული და 161 შემთხვევით შერჩეული ჯანმრთელი ინდივიდი. საკვლევი სუბიექტების დაჯგუფება მოხდა დემოგრაფიული და კლინიკური მახასიათებლების მიხედვით (ასთმა, ალერგიული რინიტი, ჭინჭრის ციება, სებორეული დერმატიტი, ფსორიაზი და კონტაქტური დერმატიტი) მიხედვით.

სტატისტიკური ანალიზი ჩატარდა 25 SPSS და Review Manager 5.4.1 სტატისტიკური პროგრამების საშუალებით. შანსების კოეფიციენტები (ORs) გამოთვლა განხორციელდა 95% ნდობის ინტერვალით, 0.05-ზე. მონაცემების ანალიზი ჩატარდა 4 ქვეჯგუფში დემოგრაფიული და კლინიკური მახასიათებლების მიხედვით.

ჩვენმა კვლევამ აჩვენა, რომ ატოპიური დერმატიტის მქონე (30-69 წლის) პაციენტებში, ამავე ასაკის ჯანმრთელ პირებთან შედარებით, დეპრესიისა და შფოთვის სიხშირე უფრო მაღალი იყო. ატოპიური დერმატიტის მქონე პირებში საკონტროლო ჯგუფთან შედარებით ასევე უფრო ხშირად აღინიშნებოდა თანმხლები დაავადებები, როგორიცაა ბრონქული ასთმა, ალერგიული რინიტი, ჭინჭრის ციება. ვინაიდან ჩვენ ვერ შევძელით დეპრესიისა და შფოთვის გამოვლინებების კორელაციის შესწავლა ატოპიური დერმატიტის სიმძიმესთან, მიზანშეწონილია შემდგომი კვლევების ჩატარება ამ ურთიერთობების დასადგენად.