Original Article

Psychiatric Disorders, Family Functions, and Parent Psychiatric Symptoms in Children and Adolescents with Chronic Dermatological Diseases Treated with Phototherapy

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Abstract

Objective: The aim of this study was to examine comorbid psychiatric disorders, family functioning, and parental psychiatric symptoms in children and adolescents with chronic dermatological diseases and compare them with those of healthy controls. **Materials and Methods:** The research sample consisted of patients between the age of 9 and 18 years ($n = 45$) with alopecia areata, vitiligo, or psoriasis and a control group (CG) of healthy children and adolescents of the same age ($n = 42$). The psychiatric diagnoses of cases were established using Schedule for Affective Disorders and Schizophrenia for School Aged Children Present-Lifetime Version. Family assessment device (FAD) was used to evaluate family functioning levels. Parental psychiatric symptom levels were obtained by the Symptom Checklist-90-R. **Results:** Children and adolescents with chronic dermatological diseases had significantly higher rates of any anxiety disorders and any axis I comorbid psychiatric disorders than healthy controls after adjusting for socioeconomic status ($P < 0.05$). There were no significant differences in parental psychiatric symptom levels and family functioning levels between two groups; however, families of patients with comorbid psychiatric disorders had significantly higher scores in problem-solving and communication subscales of the FAD when compared to those of patients without psychiatric disorders and CG. **Conclusions:** Our findings suggest that children and adolescents with chronic dermatological diseases have higher risk for anxiety disorders. When psychiatric disorders co-occur with the dermatological disease in children and adolescents, they may adversely affect the family functioning, in the domains of problem-solving and communication skills.

Keywords: Alopecia, children, psoriasis, psychopathology, vitiligo

Introduction

Psoriasis is a chronic, inflammatory skin disease that affects approximately 1% of the children and adolescents.[1] Although the etiology of the disease is not yet known, it is thought to be a T-cell-dependent autoimmune disorder caused by genetic and environmental factors.[2]

Vitiligo is another chronic dermatological illness characterized with depigmented macules due to loss of epidermal melanocytes. The prevalence of vitiligo is roughly 0.1%–2% worldwide.[3] Intrinsic defects within melanocytes which make these cells less tolerant to stress, activation of innate immunity, cytotoxic T cells associated with melanocyte destruction and autoimmunity, and genetic factors play a major role in vitiligo development.[4]

Alopecia areata (AA) is a complex genetic, immune-mediated disease that targets hair follicles. The disease affects children and adults and is characterized by round or oval patches of hair loss, loss of all scalp hair or body hair.[5,6] AA nearly affects males and females equally. Its lifetime prevalence is approximately 1.7% and as many as 60% of patients with AA have their first patch before 20 years of age.[7]

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These chronic, disfiguring skin diseases negatively affect a person's appearance, self-esteem, and quality of life.[8-10] In significant amount of cases, the onset of these diseases is before 18 years of age, yet there are limited data regarding co-occurring psychiatric disorders in children and adolescents.

In recent years, there has been an increasing interest in the differences in patients' responses to chronic diseases. Individual factors such as temperament and coping styles, and environmental factors such as family functioning, parent's psychopathology, and social support are found to be contributing factors regarding differences in individual responses.[11,12] There are a few studies demonstrating that family functioning is an important indicator of treatment adherence, quality of life, and well-being in children and adolescents with chronic medical illnesses.[13-15]

In the present study, we aimed to compare children and adolescents with a diagnosis of psoriasis, vitiligo, or AA with a healthy control group (CG) in terms of family functioning levels, psychiatric comorbidities, and parental psychiatric symptom scores.

Materials and Methods

Participants

The sample included 45 patients (study group [SG]) and 42 children and adolescents free of any chronic disease (CG), aged between 9 and 18 years. Psoriasis ($n = 16$), vitiligo ($n = 12$), and AA ($n = 17$) patients who were referred to the Phototherapy Unit for ultraviolet B treatment were recruited. This was a cross-sectional study, and all patients were under treatment. The exclusion criteria were the presence of mental retardation, pervasive developmental disorders, and significant neurological illness including history of head injury leading to loss of consciousness. Research Ethics Committee approved the study with the protocol number 09.2016.144.

Procedure

All patients were examined by a dermatologist in the phototherapy unit. Disease severity was assessed by Psoriasis Area and Severity Index (PASI) and Severity of Alopecia Tool (SALT) score in psoriasis and AA patients, respectively. Psoriasis patients with a PASI score below 5 and AA patients with a SALT score below 50% were considered to have mild disease. No severity assessment tool was used for vitiligo, rather, the disease was classified as localized or generalized. There are studies reporting that body surface area involvement in vitiligo patients may be useful in assessing the severity of the disease.[16] The sociodemographic data of all sample were collected by a researcher using a detailed form and socioeconomic status (SES) was calculated based on parents' education and income levels. Written informed consent was obtained.

Measures

Schedule for Affective Disorders and Schizophrenia for School-Aged Children Present-Lifetime Version

The psychiatric diagnoses were established using Turkish version of Schedule for Affective Disorders and Schizophrenia for School Aged Children Present-Lifetime Version. K-SADS, developed by Kaufman *et al*., is a semi-structured diagnostic interview designed to assess current and past episodes of psychopathology in children and adolescents, according to DSM-IV criteria.[17] The validity and reliability study in Turkey was carried out by Gokler *et al*. in 2004.[18]

Family assessment device

Family assessment device (FAD) is a 60-item tool based on the McMaster Model that assesses family functioning on six different dimensions: problem solving (ability to resolve problems), communication (exchange of clear and direct verbal information), roles (division of responsibility for completing family tasks), affective responsiveness (ability to respond with appropriate emotion), affective involvement (family members are involved and interested in one another), and behavior control (express behaviors of family members against problems). The FAD also includes an independent dimension of general functioning (overall functioning of family). FAD items require individuals to rate their level of agreement/disagreement on specific family behaviors using a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). Higher scores are indicative of poorer family functioning.[19] The Turkish validity and reliability study of the scale was conducted by Bulut[20] In our study, one of the parents was asked to fill this scale.

The Symptom Checklist-90-R

The Symptom Checklist-90-R, a self-report screening tool, was used to assess the presence of psychiatric symptoms in parents. The scale was developed by Derogatis and Unger in 1973 and the reliability and validity study of the scale was conducted by Dağ in 1991. It generates scores for nine dimensions of symptoms (somatization, obsessive–compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism), as well as a sum score-Global Severity Index.[21,22] In our study, one of the parents was asked to fill this test.

Statistical analysis

The data were evaluated using the IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. Descriptive statistics were shown as mean–standard deviation, median, interquartile range, or frequency (%). A 95% confidence interval was used to assess the data. The Chi-square test was applied to categorical variables for comparing gender distributions and psychiatric diagnosis between two groups of children. Student's *t*-test was used to evaluate mean scores for age and SES, Mann–Whitney U-test was used to determine the differences in family functions and parent's psychiatric symptom levels between two groups, and Kruskal–Wallis test was used for comparing family functioning between three groups. SES was adjusted by one-way analysis of covariance. Significance was set at $P < 0.05$.

Results

There were no significant differences between groups in terms

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of age and gender distributions; however, SES of the children with chronic dermatological diseases were significantly lower than the CG [Table 1].

The mean duration of disease in patients with psoriasis was 5.6 ± 4.1 years; 4.4 ± 1.7 for patients with vitiligo and 5.7 ± 3.6 for patients with AA. According to the PASI score, 61% of the patients with psoriasis were mild (PASI <5); according to the SALT score, 55.6% of the AA patients were mild (SALT <50%); and 57.2% of vitiligo cases had localized disease.

Comorbid psychiatric disorder rates were 52.9% in AA, 56.3% in psoriasis, and 75% in vitiligo patients. There was no statistically significant difference between the disease groups in terms of psychiatric comorbidity rates (P = 0.441). The prevalence of at least one psychiatric disorder, and among them, the rate of comorbid anxiety disorder was significantly higher in the SG than CG, even when SES was controlled for [Table 1].

When the psychiatric symptom levels of the parents were examined; there was a significant difference between groups in terms of only the phobic anxiety subscale, but when the SES was controlled, the significant difference disappeared [Table 2].

No significant difference was found between the SG and CG in terms of family functions assessed with the FAD [Table 2]. All cases were classified according to the presence of comorbid psychiatric disorder: parents of children with chronic dermatological diseases plus psychiatric disorders (Group 1), parents of children with chronic dermatological diseases without psychiatric disorders (Group 2), and parents of healthy controls without psychiatric disorders (Group 3). The scores of the family assessment scale were re-evaluated. Problem-solving and communication subscale scores were significantly higher in Group 1 compared to Group 2 and Group 3, while there was no significant difference between Group 2 and Group 3 [Table 3].

Discussion

In recent years, studies about the psychological effects of various skin diseases and the quality of life of individuals with these diseases have been increasing. Although skin diseases such as psoriasis, vitiligo, and AA that may adversely affect the external appearance usually onset in childhood and adolescence, studies regarding comorbid psychiatric disorders in children are limited. In this study, 45 healthy children and adolescents aged 9–18 years with psoriasis, vitiligo, and AA who were under phototherapy treatment at Marmara University, Department of Dermatology, and 42 healthy children and adolescents who were free of any dermatological disease were compared in terms of psychiatric comorbidities, family functioning, and parental psychiatric symptoms.

In our study, at least one psychiatric disorder was found in 60% of patients with chronic dermatological disorders. Similar to our study, in a study, in which psychiatric diagnoses were determined through structured interviews, at least one psychiatric disorder was reported in 78% of children and adolescents with AA.[23] In a study conducted with adult AA patients using structured interviews, the rate of psychiatric disorders was found to be 66%.[24] In a new study from Turkey, the prevalence of presence of at least one psychiatric disorder and comorbid psychiatric disorders in children and adolescents with psoriasis was higher than the CG.[25]

Our study revealed that anxiety disorders were more frequent in cases with chronic dermatological disease than the controls. There are still considerable differences in the results of previous studies regarding psychiatric comorbidities in patients with chronic dermatologic diseases. For example, Ghanizadeh reported major depression and obsessive–compulsive disorder as the most frequent disorders in patients with AA,[23] whereas Bilgiç *et al*. found that children and adolescents with AA had higher anxiety and depression symptom levels compared to controls.[26] In another study, depressive symptoms were reported to be more common in children and adolescents with psoriasis than CG.[27] Similarly, Chu *et al*. found 2.23 time increase in the risk of depression in AA patients under 20 years of age.[28] In a study of vitiligo patients, no significant difference was found compared to healthy controls

Table 1: Sociodemographic and clinical characteristics of children with chronic dermatologic diseases and healthy controls

	Study group (n=45), n (%)	Control group (n=42), n (%)	χ^2/t	P	OR (95% CI) adjusted[a]
Age (mean±SD)	12.6±2.2	11.9±1.3	1.85	0.063	
Sex: Female	25 (55.6)	18 (42.9)	1.40	0.23	
SES (mean±SD)	11.7±2.3	14.1±2.4	4.75	0.000***	
Any Axis I disorder	27 (60)	7 (16.7)	17.13	0.000***	1.90 (0.04-0.44)**
MDD	7 (15.6)	1 (2.4)	4.51	0.059	1.81 (0.01-1.56)
Anxiety disorders	13 (28.9)	3 (7.1)	6.84	0.009**	1.49 (0.05-0.95)*
ADHD	12 (26.7)	5 (11.9)	3.01	0.083	0.88 (0.11-1.46)
OCD	4 (8.9)	0	3.91	0.11	0.10 (0.56-1.44)
Tic disorders	2 (4.4)	0	1.91	0.49	0.15 (0.63-2.12)
Enuresis nocturna	3 (6.7)	0	2.90	0.24	0.05 (0.64-1.75)
Axis I comorbidity	15 (33.3)	3 (7.1)	9.08	0.003**	1.70 (0.04-0.76)*

[a]Adjusted for SES, *P<0.05, **P<0.01, ***P<0.001. SES: Socio-economic status, MDD: Major depressive disorder, ADHD: Attention deficit hyperactivity disorder, OCD: Obsessive compulsive disorder, SD: Standard deviation. OR: Odds ratio, CI: Confidence interval

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Table 2: Comparison of family functioning and parent's symptom levels between study and control groups

	Median (IQR)		*Z* (*P*), unadjusted	*F* (*P*), adjusted[a]
	Study group	Control group		
Family assessment device				
Problem-solving	1.6 (1.3-2.3)	1.6 (1.5-2.2)	0.10 (0.91)	0.01 (0.92)
Communication	1.8 (1.4-2.3)	1.6 (1.2-2.1)	1.57 (0.11)	1.47 (0.22)
Roles	2.0 (1.7-2.5)	2.0 (1.6-2.3)	0.51 (0.60)	0.009 (0.92)
Affective responsiveness	1.5 (1.1-2.0)	1.5 (1.0-2.0)	1.01 (0.31)	0.10 (0.74)
Affective involvement	2.4 (2.0-2.8)	2.1 (2.0-2.5)	1.49 (0.13)	0.31 (0.57)
Behavior control	2.1 (2.0-2.4)	2.1 (1.8-2.3)	1.45 (0.14)	0.71 (0.40)
General functioning	1.5 (1.3-2.1)	1.6 (1.2-2.0)	0.24 (0.81)	0.10 (0.75)
The symptom checklist-90-R				
Somatization	0.8 (0.4-1.4)	0.8 (0.2-1.1)	0.74 (0.45)	0.01 (0.89)
Anxiety	0.4 (0.2-0.9)	0.4 (0.2-0.8)	0.42 (0.67)	0.06 (0.80)
Obsessive compulsive	0.7 (0.3-1.5)	0.8 (0.5-1.4)	0.16 (0.87)	0.08 (0.77)
Depression	0.8 (0.3-1.3)	0.8 (0.3-1.0)	0.49 (0.61)	0.01 (0.90)
İnterpersonal sensitivity	0.6 (0.3-1.7)	0.5 (0.2-1.1)	0.88 (0.37)	0.84 (0.36)
Psychoticism	0.2 (0.0-0.7)	0.2 (0.1-0.6)	0.72 (0.47)	0.05 (0.81)
Paranoid ideation	0.6 (80.2-1.5)	0.7 (0.3-1.0)	0.29 (0.76)	0.13 (80.71)
Hostility	0.6 (0.3-1.2)	0.5 (0.3-0.8)	1.18 (0.23)	0.82 (0.36)
Fobic anxiety	0.1 (0.0-0.5)	0.0 (0.0-0.1)	2.67 (0.008)*	0.69 (0.40)
Additional score	0.7 (0.2-1.3)	0.5 (0.2-1.0)	1.33 (0.18)	0.72 (0.39)
Global severity index	0.6 (0.3-1.2)	0.5 (0.3-0.8)	0.54 (0.58)	0.13 (0.71)

*P<0.01, [a]Adjusted for SES. *Z*: Mann-Whitney U test, *F*: One-way ANCOVA. IQR: Interquartile range, ANCOVA: Analyses of covariance, SES: Socio-economic status

Table 3: Assessment of family functioning in three groups

	Median (IQR)			*P*	Contrasts
	Group I (*n*=22)	Group II (*n*=18)	Group III (*n*=30)		
Problem-solving	2.0 (1.6-2.5)	1.5 (1.1-1.8)	1.5 (1.4-2.0)	0.028*	1>2* 1>3* 2=3
Communication	2.1 (1.6-2.4)	1.6 (1.3-2.0)	1.4 (1.2-1.9)	0.004**	1>2* 1>3* 2=3
Roles	2.3 (1.6-2.5)	1.9 (1.7-2.2)	1.9 (1.6-2.1)	0.28	1=2=3
Affective responsiveness	1.9 (1.1-2.2)	1.4 (1.1-1.5)	1.2 (1.0-1.8)	0.064	1=2 1>3* 2=3
Affective involvement	2.4 (2.0-2.7)	2.4 (2.1-2.8)	2.1 (2.0-2.5)	0.26	1=2=3
Behavior control	2.1 (1.8-2.3)	2.1 (2.0-2.4)	2.0 (1.7-2.3)	0.09	1=2 1=3 2>3*
General functioning	1.5 (1.2-2.2)	1.4 (1.2-1.7)	1.4 (1.0-1.9)	0.42	1=2=3

*P<0.05, **P<0.01. Group I: Chronic dermatologic disease plus psychiatric morbidity, Group II: Chronic dermatologic disease without psychiatric morbidity, Group III: Healthy controls without psychiatric morbidity. IQR: Interquartile range

in terms of depression and anxiety symptoms.[29] In another study conducted with a large sample of adolescents aged 16–18 years from Israel, anxiety disorders in patients with psoriasis were significantly higher than controls, similar to our findings.[30] A population-based large-sample study in Denmark also presented an increased risk of depression, alcohol and substance abuse, and eating disorders in patients with psoriasis under 18 years of age compared to the CG.[31] Some studies have indicated higher levels of depression symptoms in childhood than in adolescence in patients with chronic dermatological disease, while others have not reported any difference in adolescents.[26,27,32]

Family functioning and parental mental health of the youth with chronic dermatological disease was relatively less studied. In this study, although the family functioning areas of the patients were like healthy controls, the families of patients in the chronic dermatological disease plus psychiatric disorders

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group had significantly more deficits in the problem-solving and communication skills. In one previous study, it has been reported that there was a significant deterioration in the family functions of patients with psoriasis and vitiligo.[33]

Manzoni *et al*. reported that depression and anxiety levels were higher in caregivers of children with dermatological disease compared to healthy controls.[34] Tollefson *et al*. examined the impact of childhood psoriasis on parental health-related quality of life and founded that emotional well-being of parents was the mostly affected dimension.[35] In another study, the Beck Depression Inventory scores of the parents of children with vitiligo were reported to be significantly higher than the CG.[29] However, there were no significant relationship between chronic dermatological disease and parental psychiatric symptom levels in our sample. Since the disease severity was low-to-moderate level and some of the patients were in remission, we might have failed to show a difference in parental psychiatric symptom levels between the patients and the healthy controls.

Psoriasis, vitiligo, and AA patients were not analyzed separately but grouped altogether. This is one of the limitations of the present study. However, number of patients in each of the three groups was too low to make individual comparisons. Furthermore, the fact that all patients were under treatment may have caused patients and their parents to report lower problems. Another limitation in our study is that VASI, which is a reliable instrument to measure disease severity in vitiligo patients, was not used. Despite these limitations, the finding that anxiety disorders are more frequent in children and adolescents with chronic dermatological disorders than healthy controls is remarkable. As anxiety and stress can have negative effects on the immune system, it is important to screen youths with dermatological diseases of immunological origin in terms of psychiatric disorders, especially anxiety disorders. As with most chronic medical diseases, both patients with dermatological diseases and their families will benefit from early psychotherapeutic interventions. Since the number of studies examining family functioning and mental status of parents of children with chronic dermatological disease is scarce, our findings regarding the deteriorations in the problem-solving and communication skills in the families of patients with chronic dermatological disorder and comorbid psychiatric disorders may contribute to the related literature.

Conclusions

Our work highlighted that children and adolescents with chronic dermatological diseases had significantly higher rates of psychiatric disorders, especially anxiety disorders were more commonly encountered. Co-occurrence of psychiatric disorders in youth with chronic dermatological diseases puts the families under a risk of potentially dysfunctional relationships, especially in terms of communication and problem-solving skills. Therefore, further studies need to be done to promote psychotherapeutic interventions targeting patients with chronic dermatological diseases.

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Conflicts of interest

There are no conflicts of interest.

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