Correlations Between the Clinical and Sociodemographic Characteristics of Patients with Alopecia Areata

Alopesi Areatalı Hastaların Klinik ve Sosyodemografik Özellikleri ve Bu Özellikler Arası İlişkiler

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Geliş Tarihi/*Received:* 08.09.2016
Kabul Tarihi/*Accepted:* 28.12.2016

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ABSTRACT Objective: Alopecia areata (AA) is a chronic inflammatory disease that affects hair follicles. This study aimed to determine the clinical and sociodemographic characteristics of patients with AA, and the correlations between them. **Material and Methods:** A hundred and fifty three AA patients (49 female and 104 male with a mean age 28 years) were included in the study. Their sociodemographic characteristics, clinical data and etiologic data were recorded. The severity of disease was determined using Severity of Alopecia Tool (SALT) scores. **Results:** Mean SALT scores increased significantly in patients whose onset of the disease was in the childhood, and in patients who had multiple episodes of AA previously. Mean SALT scores also increased for patients with a positive family history of AA, nail involvement, ophiasis, nevus flammeus or autoimmune diseases ($p< 0.05$). No significant difference was found between SALT scores, and sex and presence of atopy. **Conclusion:** Early stages of the disease, positive family history of AA, the presence of the nail involvement, nevus flammeus, ophiasis, and autoimmune diseases were associated with severe involvement in this study. Considering the correlation between these factors in patient management is thought to be helpful in selecting a more appropriate and effective treatment.

Key Words: Alopecia areata; demography; hair; scalp

ÖZET Amaç: Alopesi Areata (AA) kıl folikülünü etkileyen kronik inflamatuar bir hastalıktır. Bu çalışmada Alopesi Areatalı hastaların klinik ve sosyodemografik özellikleri ile bu özellikler arası ilişkilerin belirlenmesi amaçlandı. **Gereç ve Yöntemler:** Çalışmaya yaş ortalamaları 28 yıl olan 153 (49 kadın, 104 erkek) AA tanılı hasta dâhil edildi. Hastaların sosyo demografik özellikleri, klinik ve etiyolojik verileri kaydedildi. Hastalığın şiddetinin belirlenmesinde Severity of Alopecia Tool (SALT) skoru kullanıldı. **Bulgular:** Ortalama SALT skoru, hastalık başlangıç yaşı çocukluk döneminde olan ve daha önce birden fazla atak geçiren hastalarda anlamlı derecede daha yüksek bulundu. Pozitif aile öyküsü, tırnak tutulumu, ofiazis, nevus flammeus varlığı veya otoimmün hastalık varlığı olan hastalarda SALT skoru yüksekti ($p <0,05$). Cinsiyet ve atopi varlığı ile SALT skoru arasında istatistiksel açıdan anlamlı bir farklılık saptanmadı. **Sonuç:** Bu çalışmada hastalık başlangıç yaşı, pozitif AA aile öyküsü, tırnak tutulumu, nevüs flammeus, ofiazis ve otoimmün hastalık varlığı şiddetli tutulum ile ilişkili bulundu. Hasta takibinde bu değişkenler arası ilişkilerin göz önüne alınması prognozun öngürülmesinde ve daha uygun ve etkili tedaviyi seçmede yardımcı olabilir.

Anahtar Kelimeler: Alopesi areata; demografi; saç; saçlı deri

Turkiye Klinikleri J Dermatol 2016;26(3):132-9

Alopecia areata (AA) is a chronic inflammatory disease that affects hair follicles and, in certain cases, nails. The etiopathogenesis of the disease is not clearly known, but AA is considered to be an autoimmune disease that occurs due to genetic predisposition.[1-4] Genetic structure and nonspecific immune and organ-specific autoimmune reactions, partic-

doi: 10.5336/dermato.2016-53246

ularly T cell mediated autoimmunity, have become the most highlighted topics in the pathogenesis of AA.[5,6] The lifetime risk of developing AA is reported to be 1.7%. Its prevalence in the general population is 0.1-0.2%.[7] AA may be seen in anybody regardless of their race or sex.[8,9] However, some studies suggested that the incidence rate of the disease is higher in females, while other studies found this rate to be higher in males.[10,11] The onset of the disease is observed more frequently in the first three decades of life, but AA can occur at any age.[2]

Although AA can involve in any area with hair, it is observed most frequently on the scalp, beard, extremities and eyebrows.[8-10] The disease is mostly asymptomatic, but mild paresthesia with itching, burning sensation, and pain can also be observed.[7,8] The frequency of positive family history of AA in affected patients is estimated to be 10-20%, and more frequently in cases with early onset and severe forms.[8-11] Disease onset at a young age, atopy, ophiasis, and nail involvement are regarded as malign prognostic factors in AA, and they are associated with severe disease.[8,12-14] The co-occurrence of the disease with other autoimmune diseases (generalized vitiligo, lichen planus, morphea, lichen sclerosus et atrophicus, pemphigus foliaceus, Hashimoto's thyroiditis, Addison's disease, pernicious anemia, lupus erythematosus, type 1 diabetes mellitus) is frequently observed.[15,16] Acute or chronic psycho-emotional stress has also been associated with the onset and progression of AA.[17-19] Also AA is an easily-diagnosed disease, but its prognosis cannot be fully predicted. Predicting the prognosis at the moment of diagnosis will help identify treatment options. To this end, this study evaluates the relationship between the clinical and sociodemographic characteristics of AA patients and determined the characteristics that can be associated with the severity of the disease.

Studies were conducted to determine the sociodemographic variables in patients with AA. However, the number of studies and assessment tools examining the correlations between the severity of disease and these variables is too few. This study is thought to contribute to the epidemiological data of Turkey, literature, and further studies to be conducted on this topic.

MATERIAL AND METHODS

A descriptive and correlation research model was used in this study. A hundred and fifty three patients with AA (49 females and 104 males; aged between 4 and 65 years) were included into this study. The data of the study were collected using an interview form prepared by the researcher in accordance with the literature and included the clinical and sociodemographic characteristics of patients, and through physical examination findings. The Severity of Alopecia Tool (SALT) was used to estimate the percentage of hair loss in the scalp. For the SALT score, the scalp is divided into four quadrants: vertex (40% (0.4) of the scalp surface area), right side (18% (0.18) of the scalp surface area), left side (18% (0.18) of the scalp surface area) and posterior (24% (0.24) of scalp surface area). The percentage of hair loss in each area is calculated using formulas.[20] The SALT score is obtained by adding all percentages, and the hair loss percentega in each area is calculated. In this study, according to the assessments, the hair loss percentages were classified as follows: S1 = < 25% hair loss; S2 = 25%-49% hair loss; S3 = 50%-74% hair loss; S4 = a: 75%-99% hair loss, b: 96%-99% hair loss; and S5 = 100% hair loss. The age of onset of the disease, clinical types, the number of episodes of AA, family history of AA, nail involvement, presence of atopy, nevus flammeus, and autoimmune disease in patients and their families, presence of emotional/physical stress at the onset of AA, subjective symptoms, treatment received, the localizations of alopecia, and the percentage of hair loss on the scalp (SALT scores) were noted. The correlations between clinical characteristics and sociodemographic variables were also determined. The data were assessed with the open-coded "R" program. For the study, ethics committee approval dated July 25, 2014, and numbered 24237859-530 was obtained. The patients were informed in detail about the study and informed consents were taken.

RESULTS

A hundred and fifty three patients whose ages ranged between 4 and 65 years (mean age 28 ± 12.20 years), 49 (32%) were females, and 104 (68%) were males, 133 (86.9%) had AA, 17 (11.1%) had alopecia universalis, and 3 (2%) had alopecia totalis. 120 (90.2%) of AA patients had scalp involvement. The second most frequent involvement with 44 patients (28.7%) was observed on the beard area. Eighty seven AA patients (56.9%) had multiple involvement sites (scalp, beard, eyebrow, body), and 72 (47%) had at least one episode of AA previously. The duration of the disease was longer than one year in 108 patients (69.3%), and 24 patients (15.7%) had a positive family history of AA.

The family history of AA was positive for the first-degree relatives in 21 (13.7%) of these patients. Twenty six patients (17%) had atopy. Nail involvement was observed in 62 (40.5%) patients. The most common nail findings were as follows: pitting, leukonychia, longitudinal ridging and thickening of the nail plate. Ophiasic patterns of alopecia were observed in 26 patients (17%). Nevus flammeus accompanied AA in 18 patients (11.8%). Autoimmune disease (autoimmune thyroid disease, pernicious anemia) was present in 26 patients (17%). Fifty six patients with AA (36.6%) were found to have subjective symptoms like pruritus, burning sensation, paresthesia, pain. A total of 127 patients (83%) experienced emotional stress in the last 6 months. Table 1 demonstrates the distribution of patients' sociodemographic and clinical variables by sex. The personal history of atopy and autoimmune disease, and the family history of autoimmune disease were found to be significantly higher in female patients than in male patients (p= 0.03; p= 0.000; p= 0.04). The mean age at onset of the disease was 23.18 ± 12.90 years for females and 25.50 ± 10.92 years for males. A statistically significant difference was found between the patients' age at onset of the disease and their sex (p= 0.02).

In the present study, age range between 0 and 18 years was regarded as the childhood age group. Among the patients with AA, 34 patients' age at onset of the disease was at the childhood (22.2%) and 119 patients' (77.8%) was at the adulthood. The nail involvement and ophiasis were found significantly higher in patients at the childhood (p= 0.03, p= 0.02). Emotional stress was found to be significantly higher for adults than for children (p= 0.02) (Table 2).

A hundred twenty patients (78.4%) were found to have scalp involvement. The severity of scalp involvement was classified according to the SALT score; 88 patients (81%) were in the S1 group, 7 patients (5.9%) were in the S2 group, 9 patients (3.9%) were in the S3 group, 2 patients (1.3%) were in the S4 group, and 14 patients (7.8%) were in the S5 group. The mean SALT score was 19.67 ± 28.01. The mean SALT scores of female and male patients were 25.87 ± 31.46 and 16.8 ± 25.92, respectively. The SALT score did not demonstrate a statistically significant difference by sex (p > 0.05). The severity of disease on the scalp was mild in 95 patients (79.1%) (S1 and S2) and severe in 25 patients (20.9%) (S3, S4, and S5). The mean SALT score of single, and high school graduate female patients were found to be higher than those of married male patients whose educational status varied. A weak negative correlation was found between the SALT scores and age at onset of the disease (r = -.257; p= 0.001).

Table 3 shows the correlation of SALT scores and clinical characteristics. The SALT score of patients with alopecia universalis was found to be significantly higher than that of patients with other types of alopecia (AA and alopecia totalis) (p= 0.000). The SALT scores were found to be higher in patients who had multiple alopecia episodes than patients who had not AA before (p= 0.000). SALT scores were also found to be significantly higher in patients who had positive family history of AA, in patients with autoimmune disease and in patients with positive family history of autoimmune disease. It was also higher in patients with nail involvement, patients with nevus flammes and patients with ophiasis (p= 0.020; p= 0.015; p= 0.001; p= 0.000; p= 0.004; p= 0.000).

TABLE 1: Distribution of patients' sociodemographic and clinical variables by sex.

	Female (n=49)	%	Male (n=104)	%	Statistics
Marital status					
Married	21	42.8	38	36.5	X^2= 0.48
Single	28	57.2	66	63.5	p= 0.45
Educational status					
Primary school	21	42.8	34	32.6	
High school	18	36.7	37	35.5	X^2= 2.48
University and above	10	20.5	33	31.9	p= 0.28
Attack number					
One attack	18	36.7	63	60.5	X^2= 7.60
Two attacks or more	31	63.3	41	39.5	p= 0.006
Duration of disease					
1 year <	18	36.7	27	25.9	X^2= 1.86
1 year ≥	31	63.3	77	74.1	p= 0.10
Family history	11	22.4	13	12.5	
Yes	38	77.6	91	87.5	X^2= 2.49
No					p= 0.10
Atopy history					
Yes	13	26.5	13	12.5	X^2= 4.64
No	36	73.5	91	87.5	p= 0.03
Nail involvement					
Yes	22	44.8	40	38.4	X^2= 0.57
No	27	55.2	67	61.6	p= 0.40
Ophiasis					
Yes	12	24.4	14	13.4	X^2= 2.87
No	37	75.6	90	86.6	p=0.09
Nevus flammeus					
Yes	7	14.2	11	10.5	X^2= 0.44
No	42	85.6	93	89.5	p= 0.50
Autoimmune disease					
Yes	17	34.6	9	8.6	X^2= 16.01
No	32	65.4	95	91.4	p= 0.000
Autoimmune disease in the family					
Yes	15	30.6	17	16.3	X^2= 4.09
No	34	69.4	87	83.7	p= 0.04
Emotional Stress					
Yes	39	79.5	88	84.6	X^2= 0.59
No	10	20.5	16	15.4	p= 0.40
Subjective symptom					
Yes	22	44.8	34	32.6	X^2= 2.13
No	27	55.2	70	67.4	p= 0.10

DISCUSSION

AA can occur in any individual regardless of their race, sex, and age. The male predominance was found in this study. The findings were compatible with many studies conducted in Turkey and abroad.[9,10,12,21] However, some studies indicated a female predominance in AA.[2,22] High admission rates regarding the males and male dominance in the study population might have affected this re-

TABLE 2: Distribution of patients' clinical variables by age group.

	Child (n=34)	%	Adult (n=119)	%	Statistics
Attack number					
One attack	20	58.8	61	51.2	X^2= 0.60
Two attacks or more	14	41.2	58	48.8	p= 0.40
Duration of disease					
1 year <	6	17.6	39	32.7	X^2= 2.91
1 year ≥	28	82.4	80	67.3	p= 0.08
Family history					
Yes	3	8.8	21	17.6	X^2= 1.55
No	31	91.2	98	82.4	p= 0.20
Atopy history					
Yes	5	14.7	21	17.6	X^2= 0.16
No	29	85.3	98	82.4	p= 0.60
Nail involvement					
Yes	19	55.8	43	36.1	X^2= 4.27
No	15	44.2	76	63.9	p= 0.03
Ophiasis					
Yes	10	29.4	16	13.4	X^2= 4.77
No	24	70.6	103	86.6	p=0.02
Nevus flammeus					
Yes	5	14.7	13	10.9	X^2= 0.30
No	29	85.3	106	89.1	p= 0.50
Autoimmune disease					
Yes	9	26.4	17	14.2	X^2= 2.78
No	25	73.6	102	85.8	p= 0.09
Autoimmune disease in the family					
Yes	8	235	24	20.1	X^2= 0.18
No	26	76.5	95	79.8	p= 0.60
Emotional Stress					
Yes	24	70.5	103	86.5	X^2= 4.77
No	10	29.5	16	13.5	p= 0.02
Subjective symptom					
Yes	8	23.5	48	40.3	X^2= 3.21
No	26	76.5	71	59.7	p= 0.07

sult. AA can occur at any age. The mean age of occurrence is found to be distinct in different studies.[5,9,23] In the present study, patients' ranged from 4 to 65 years and their mean age was found to be 28 ± 12.20 years. In addition, the age at onset of the disease ranged from 2 to 53 years and the mean age at onset of the disease was found to be 24.75 ± 11.60 years, which is compatible with the literature. In this study, no statistically significant difference was found between sex and age at onset of the disease ($p > 0.05$). Similarly to the present study, no significant correlation was found between sex and age at onset of the disease in the study conducted by Yorgancılar et al. in Turkey and in the study conducted by Goh et al.[5,13] In this study, 133 (86.9%) patients were found to have AA. The most frequent type of the disease was AA, which is compatible with the literature.[9,24-26] Eighty one (52.9%) patients experienced at least one attack previously and this was found to be compatible with that in the literature.[5,12,26] The duration of the disease was found to be shorter than one year in 29.4% of the patients.

TABLE 3: The correlation of SALT score and clinical characteristics.

Disease-related variables	Total SALT Score Mean Standard Deviation Median (25%-75%)	Test and p-value
Type of disease		
Areata	11.62±14.82	
	6 (4-12)	X2= 35.10
Totalis	43.33±49.89	p= 0.000
	24 (15-62)	
Universalis	78.47±31.81	
	100 (70-100)	
Attack number		
One attack	8.98±13.34	Z=-4.65
	6 (0-12)	
Two attacks or more	31.69±34.67	p= 0.000
	18 (5.50-54.50)	
Duration of disease		
1 year <	16.88±27.54	Z=-1.053
	9 (0-20)	
1 year ≥	20.83±28.25	p= 0.20
	10 (4.50-20.50)	
Family history		
Yes	38.25±39.28	Z=-2.31
	23 (5.50-74)	
No	16.21±24.03	p= 0.02
	10 (4-18)	
Atopy history		
Yes	27.73±35.69	Z=-.94
	12 (4-46)	
No	18.02±26.03	p= 0.30
	10 (4-20)	
Nail involvement		
Yes	31.50±34.47	Z=-4.11
	12 (6-52)	
No	11.61±18.91	p= 0.000
	6 (0-12)	
Ophiasis		
Yes	51.92±33.05	Z=-6.14
	50.50 (24-100)	
No	13.07±21.70	p= 0.000
	6 (0-12)	
Nevus flammeus		
Yes	41.61±40.78	Z=-2.90
	16.50 (10-100)	
No	16.74±24.61	p= 0.004
	9 (4-20)	
Autoimmune disease		
Yes	34.84±37.46	Z=-2.42
	15 (5-60)	
No	16.88±25.51	p= 0.015
	9 (4-18)	
Autoimmune disease in the family		
Yes	31.84±34.06	Z=-3.21
	20.50 (6-43.50)	
No	16.78±26.19	p= 0.001
	8 (4-16)	
Emotional Stress		
Yes	19.81±28.75	Z=-.50
	10 (4-20)	
No	20.50±28.22	p= 0.60
	10 (5-21)	
Subjective symptom		
Yes	20.28±28.18	Z=-.89
	10 (5-22.50)	
No	19.73±28.93	p= 0.30
	9 (4-20)	

continue →

TABLE 3: *continue.*

This rate was found to be lower than that found in the literature.[12,27] This may be related to the characteristics of the study population. The urban ve rural areas where patients live and cultural differences affect the duration of the communication between the patients and the physicians for visual problems such as AA.

The family history was positive for the first-degree relatives of 21 (13.7%) patients. The results were compatible with those in the literature.[9,28,29] The prevalence of accompanying atopy was found to be compatible with that in the literature.[8,25,29-31] In a study conducted by Koçak et al. on 100 patients with AA, 6 (15%) patients were found to have a coexisting autoimmune disease.[32] Similarly, the present study found an autoimmune disease in 26 patients (17%). The most common subjective symptom was itching in the present study. The results were compatible with those in the literature.[5] Similar to the results obtained by Sharma et al., a statistically significant correlation was found between the presence of autoimmune disease and the disease severity of AA in the present study (p=

0.015).[10] Although the data related to the presence of emotional/physical stress were smilar to those of certain studies, the presence of emotional/physical stress was found to be higherin this study when compared to the relevant studies in the literature.[5,31]Emotional and physical stress can be evaluated in various ways based on patients' statements. This study report stress through various examination conducted by the physicians for the patients.

In the present study, the scalp involvement was observed most frequently (120 patients, 78.4%) and this rate was compatible with that in the literature.[10,12,27] Among the 120 patients with scalp involvement, 95 (79.1%) were found to suffer from mild disease (S1 and S2) and 25 (20.9%) from severe disease (S3, S4, and S5). The mild involvement was found most commonly as compatible with the literature.[9-13]

The mean SALT scores of female and male patients were found to be 25.87 ± 31.46 and 16.89 ± 25.92, respectively. No statistically significant difference was found between sex and the severity of disease, which was in line with the literature.[12,28,29] A few studies assessing the correlations between some sociodemographic variables of patients and their mean SALT scores are available in the literature.[5,33] In this study, the mean SALT scores and some sociodemographic variables of patients were assessed and no statistically significant difference was found between the mean SALT scores of patients and their sex, marital status, and educational levels ($p > 0.05$). However, the mean SALT score was found to be higher for single, high school graduate females than for married males with different levels of education. This difference may results from the male-to-female ratio in the study population.

As the total SALT score increased, the age at onset of the disease decreased ($r = -.257$; $p= 0.001$). The effect of the increase in SALT score on the age at onset of the disease was found to be moderately strong, negative, and significant. No correlation was found between the SALT scores and patients' age ($r = -.147$; $p= 0.070$). The SALT score of patients with alopecia universalis was found to be higher compared to patients with other alopecia types (AA and alopecia totalis). This difference was statistically significant ($p= 0.000$).

The results were found to be compatible with those in the literature in general. The distinct results in this study from those in the literature could result from the sex and age distribution of patients, the geographical regions in which they lived, and also their different socioeconomic levels. Studies conducted for determining sociodemographic variables that are thought to affect the severity of disease in patients with AA, and the correlations between them and the disease will help in developing treatments that will produce more successful results. Moreover, studies were conducted to determine the sociodemographic variables in patients with AA, but the number of studies and assessment tools examining the correlations between the severity of disease and these variables is quite low. The present study assessed the correlations between sociodemographic variables (age, sex, marital status, education level), peculiar features of AA (variables such as type of disease, number of attacks, duration of disease, duration of the last attack, AA history, atopy, nail involvement, autoimmune disease), and the severity of disease. Considering the correlation between these factors and the severity of disease in patient follow-up can be beneficial in selecting appropriate treatments prescribed according to the severity of disease. A variety of factors, apart from sociodemographic variables, affecting the severity of disease in patients with AA is the limitation of this study. Therefore, studies with larger sample sizes including different types of alopecia are needed.

Conflict of interest

The authors have no conflict of interest.

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