

Depression among Alopecia Areata Patients: Prevalence and associated factors in a Tunisian sample

Dépression chez les patients atteints d'alopecie Areata: Prévalence et facteurs associés dans un échantillon tunisien

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ABSTRACT

Introduction: Alopecia areata (AA) is a common, chronic inflammatory, non-scarring form of hair loss affecting 0.1-0.2% of the population. It is a psychosomatic disease involving a T-cell-mediated immune reaction against hair follicle antigens during the anagen phase. Psychiatric morbidity in dermatological patients can significantly affect their quality of life and disease progression. Identifying and addressing these comorbidities in AA patients is crucial.

Aim: This study aimed to estimate the prevalence of depression and its associated factors among patients diagnosed with alopecia areata (AA).

Methods: The present study is a cross-sectional, descriptive, and analytical study conducted at Farhat Hached Hospital in Sousse, Tunisia, during the period from August to December 2019. Participants were recruited from the Dermatology Outpatient Department. The questionnaire covered socio-demographic characteristics, personal and family history, AA history, clinical presentation, disease severity (SALT score), nail involvement, and depression assessment using the Hamilton Depression Scale (validated Arabic version).

Results: A total of 60 AA patients were enrolled, with a mean age of 37.6 ± 12.9 years. Females exhibited a predominant representation, with a male to female ratio (M/F) of 0.76. According to the Hamilton Depression Scale (HAM-D), 31 cases (51.7%) were depressed, with a mean depression scale score of $11.33 (\pm 6.57 \text{ SD})$. The presence of depression was significantly associated with younger age ($p=0.018$), the presence of the eyelashes/eyebrows form ($p=0.035$), nail involvement ($p=0.03$), and a poor response to treatment ($p=0.004$).

Conclusion: Our research highlights the importance of providing psychological support to alopecia areata patients.

Key words: Alopecia Areata, depression, age, nail involvement, eyelashes, response to treatment

RÉSUMÉ

Introduction: L'alopecie areata (AA) est une forme courante, chronique et inflammatoire de perte de cheveux non cicatricielle, touchant 0,1 à 0,2 % de la population. La morbidité psychiatrique chez les patients peut altérer leur qualité de vie et la progression de la maladie.

Objectif: Estimer la prévalence de la dépression et de ses facteurs associés chez les patients diagnostiqués avec l'alopecie Areata (AA).

Méthodes: Il s'agit d'une étude transversale, descriptive et analytique menée à l'hôpital Farhat Hached à Sousse, en Tunisie, d'août à décembre 2019. Les participants ont été recrutés au département de dermatologie en consultation externe. Le questionnaire explorait les caractéristiques sociodémographiques, les antécédents personnels et familiaux, l'historique de l'AA, la présentation clinique, la sévérité de la maladie (score SALT), l'implication des ongles et l'évaluation de la dépression à l'aide de l'échelle de dépression de Hamilton (version arabe validée).

Résultats: Soixante patients atteints d'AA ont été inclus, avec un âge moyen de $37,6 \pm 12,9$ ans. Les femmes étaient majoritairement représentées, avec un ratio homme/femme (H/F) de 0,76. Selon l'échelle de dépression de Hamilton (HAM-D), 31 patients (51,7 %) étaient déprimés, avec un score moyen de dépression de $11,33 (\pm 6,57 \text{ SD})$. La présence de dépression était significativement associée à un âge plus jeune, à la forme cils/sourcils, à l'implication des ongles et à une mauvaise réponse au traitement.

Conclusion: Cette étude souligne l'importance de fournir un soutien psychologique aux patients atteints d'alopecia Areata.

Mots clés: Alopecia Areata, dépression, âge, implication des ongles, cils, réponse au traitement

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INTRODUCTION

Alopecia areata (AA) is a common, chronic inflammatory, non-scarring form of hair loss that affects nearly 0.1-0.2% of the general population(1). It is characterized by sudden onset of focal patches of hair loss that can progress to involve the entire scalp (alopecia totalis/AT) or the entire body (alopecia universalis/AU)(2,3). Although AA can occur at any age, it often develops before the age of 20 in about 60% of patients (4).

The exact cause of AA remains unknown. However, it is believed to be a tissue-specific disease of the hair follicles with a genetic predisposition and an autoimmune pathogenesis triggered by environmental factors(2,4). Current research suggests that AA is a psychosomatic disease involving a T-cell-mediated immune reaction against unidentified antigens on the hair follicle during the anagen phase(4-7). Stress and exposure to proinflammatory agents or certain dietary factors may also contribute to the development of AA(5).

Psychiatric disorders, particularly depression and anxiety disorders, are more prevalent in individuals with AA compared to healthy controls (8). The presence of psychiatric morbidity in dermatological patients can significantly affect their quality of life and potentially worsen the progression of the disease (9). Therefore, it is crucial to identify and address these comorbidities in patients with AA.

The objectives of this study were to determine the prevalence of depression in a population of patients with Alopecia Areata (AA) and to investigate the factors associated with depression in these patients.

METHODS

Study Design and Setting

This cross-sectional study was conducted between August and December 2019 at the Farhat Hached dermatology outpatient clinic in Sousse, Tunisia. A consecutive sampling to recruit participants was used in the present study.

Participants

Inclusion criteria included patients with Alopecia Areata (AA) aged between 18 and 65 years. Non-inclusion criteria were: patients under psychotropic treatment, individuals unable to provide consent due to conditions such as psychotic disorders, mood disorders with psychotic features, dementias, or cognitive problems, patients with life-threatening illnesses (e.g., neoplasia, unstable coronary disease), individuals who were unable to complete the questionnaires, pregnant women, non-cooperative subjects, patients with other skin disorders or alternative causes of alopecia, patients with a history of head radiotherapy or chemotherapy, and illiterate patients. Dermatologists based on clinical examination made the diagnosis of AA.

Variables

The primary outcome was the prevalence of depression, assessed using the Hamilton Depression Rating Scale (HAM-D). Data on epidemiological and clinical characteristics were collected using a pre-established questionnaire. This included information on the patient's medical history, clinical presentation of AA, disease severity using the Severity of Alopecia Tool (SALT) score, and nail involvement. Patients were categorized as having mild to moderate AA (S1-S2) or severe AA (S3-S4-S5) based on the SALT score.

Data Sources/Measurement

Depression was assessed using the Hamilton Depression Rating Scale (HAM-D)(10). Clinical characteristics were collected using a pre-established questionnaire, which included the Severity of Alopecia Tool (SALT) score(11). Demographic information and associated factors were gathered through structured interviews using the pre-established questionnaire.

Quantitative Variables

Depression scores were treated as continuous variables for descriptive statistics and categorized for correlation and t-test analyses. Disease severity (SALT score) was categorized into mild to moderate (S1-S2) and severe (S3-S4-S5) for comparative analysis.

Statistical Methods

Descriptive statistics were used to summarize demographic and clinical characteristics. Pearson correlations and independent t-tests were employed to examine the relationships between psychometric variables and sociodemographic factors. Statistical analysis was performed using SPSS version 22.

RESULTS

Descriptive statistics

Sociodemographic and anamnestic Characteristics

Our study enrolled 60 patients with AA. The mean age was 37.6 ± 12.9 years. The sex ratio was 0.76. Personal history of atopy was observed in 26.7%. Personal history of other autoimmune diseases was noticed for 13.3% of the patients (autoimmune thyroiditis (6.7%), vitiligo (5%), and diabetes mellitus (5%)). Out of 60 patients, 6 (10%) have had a personal psychiatric history. Psychiatric diagnosis included 3 cases (5%) of depression and 3 cases (5%) of anxiety disorders. A total of 28.3 % of patients (n=17) with AA were smokers and cigarette consumption have ranged from one to 76 pack years with average pack years of $22.2 (\pm 20.8)$. Out of 60 patients, 15% (n=9) were current occasional alcohol drinkers. Among our AA patients, 12 (20%) patients reported a regular participation in physical activity (Table 1).

Table 1. sociodemographic and anamnestic characteristics (n=60)

		N	%
Gender	Males	26	43.3
	Females	34	56.7
Marital status	Married	26	43.4
	Single	23	38.3
	Others	11	18.3
Education status	Bachelor's degree or higher	11	18.3
	High school diploma	27	45
	No high school diploma	22	36.7
Individual socioeconomic status	High level	0	0
	Mild level	37	61.7
	Low level	23	38.3
Personal history	Atopic disorders	16	26.7%
	Autoimmune thyroiditis	4	6.7%
	Vitiligo	3	5%
	Diabetes mellitus	3	5%
	Psychiatric disorders	6	10%
Lifestyle habits	Cigarettes smoking	17	28.3%
	Alcohol use	9	15%
	Regular physical activity	12	20%

Clinical characteristics of alopecia areata

Most of the patients (90%) have had scalp involvement. The most prevalent clinical pattern was patchy alopecia (58.4%), of whom 36.7% had multifocal patchy disease, 6.7% had a single patchy disease and 15% had a combination of patchy and ophiasis. Other clinical AA patterns observed were alopecia totalis (6.7%), alopecia universalis (6.7%), ophiasis (10%) and diffuse AA (8.3%). Ophiasis pattern was observed in 25% of the patients. Eyebrows and eyelashes have been affected in 13 patients (21.6%) and eyelashes have been affected in 3 cases (5%). Concurrent scalp involvement was seen in all patients. Beard involvement was seen in 42.3% of males; 54.5% have had concomitant alopecia patches on the scalp, and 45.5% of the male patients were diagnosed with AA on the beard area as the first and unique clinical manifestation.

Nail involvement was observed in 15.2% of the patients. The most common nail finding was pitting seen in 13.3% of the patients, followed by longitudinal ridging in 6.7% and trachyonychia in 5%. No patient has had severe nail dystrophy. Most of the patients (66.7%) have had a mild to moderate AA and 14 patients (23.3%) have had had severe AA (Table 2).

As for the initial site of alopecia, scalp had been the initial site involved in 90% of the patients. Upon first presentation, 66.7% of the patients have had patchy hair loss with less than half the scalp involved. On the other hand, 23.3% patients have had severe hair loss involving more than half the scalp.

All patients have been treated with a variety of treatments, among which were minoxidil solutions, topical corticosteroids, intralesional corticosteroids and systemic corticosteroids. More than half of terminal hair regrowth was reached in 68.3% of cases; 48.3% of the

patients have had partial hair regrowth (50–90% terminal hair); 20% have achieved almost complete hair regrowth (>90% terminal hair); and 20% have had minimal hair regrowth with stable AA.

Table 2. Clinical characteristics of Alopecia Aereata

Clinical pattern	N (%)	
Scalp involvement	54 (90%)	
Single patchy disease	4 (6,7%)	
Multifocal patchy disease	22 (36,7%)	
Ophiasis only	6 (10%)	
Ophiasis and patchy disease	9 (15%)	
Diffuse pattern	5 (8,3%)	
Alopecia Totalis	4 (6,7%)	
Alopecia Universalis	4 (6,7%)	
Eyelashes and eyebrows involvement	13 (21.6%)	
Beard involvement	11 (42.3% of males)	
Nail involvement	15 (25%)	
Severity	Mild to moderate	46 (66.7%)
	Severe	14 (23.3%)

Depression assessment

According to HAM-D, 51.7% of the patients have had depression. The mean score of depression scale was 11.33 ± 6.57 . Overall, 40% of the patients have had mild (score 8-13) to moderate (score 14-18) depression, whereas one (1.7%) patient have had severe (score 19-22) and six (10%) patients have had very severe (score ≥ 23) depression.

Analytical study

Patients were divided into two groups according to the presence or absence of depression based on the scores obtained on the HAM-D.

There was no significant difference between males and females ($p = 0.15$). Regarding the age at the diagnosis, AA patients suffering from depression were significantly younger ($33.7 \text{ years} \pm 13$) compared to those without symptoms of depression ($41.8 \text{ years} \pm 11.7$); ($p = 0.018$). Similarly, regarding the age of onset, AA patients with depression were significantly younger ($28.4 \text{ years} \pm 14.3$), compared to AA patients without depression ($37.6 \text{ years} \pm 12.8$); ($p = 0.013$).

The scalp was involved in most patients with (90.3%) or without depression (89.7%). Patchy alopecia was the most common pattern of AA seen in 72.4% of the patients without depression and 64.5% of the patients with depression. AA of eyelashes/eyebrows was seen more in patients with depression (41.9%) than those without depression (17.3%); ($p = 0.035$). Nail involvement was seen in 35.5% of patients with depression and 13.8% of those without depression ($p = 0.032$).

Regarding the severity of AA, the mean SALT score was 21.9 ± 4.2 in depressed patients and 6.8 ± 2.3 in patients without depression ($p = 0.011$). For the disease course, 13.8% of the patients without depression have had poor response to treatment versus 48.4% of the patient with depression ($p = 0.004$).

Multivariate analysis

A binary logistic regression analysis with the presence of depression as a dependent variable and sex, age, age of onset, duration of evolution, SALT severity score,

nail involvement, and response to treatment such as cofactors established that the presence of depression was independently associated with the age of onset, and the SALT severity score (table 3).

Table 3. Factors associated to depression among patients with alopecia areata

		Depressed AA patients	Non depressed AA patient	OR 95% CI	Statistics p
Age at the diagnosis (years)		33.7years \pm 13SD	41.8years \pm 11.7SD	0.95[0.9-0.99]	p=0.018
Age of onset (years)		28.4years \pm 14.3SD	37.6years \pm 12.8 SD	0.95[0.9-0.99]	p=0.013
SALT score (Mean score-SD)		21.9 [4.2-67.35]	6.8 [2.3-17.6]	1.3 [1.01-1.05]	p=0.011
Eyebrows/Eyelashes	Yes	13 (41.9%)	5 (17.3%)	3.47 [1.05-11.5]	p= 0.035
	No	18 (58.1%)	24 (82.7%)		
Nail changes	Yes	11 (35.5%)	4 (13.8%)	3.43 [0.95-12.4]	p=0.03
	No	20 (64.5%)	25 (86.2%)		
Course of disease	Good	16 (51.6%)	25 (86.2%)	0.17[0.05-0.6]	p=0.004
	Poor	15 (48.4%)	4 (13.8%)		

DISCUSSION

Since many years, AA have been considered as a psychosomatic disorder with many psychiatric comorbidities. In this study, the prevalence of depression was 51.7% in patients with AA. It's widely higher than the prevalence of depression in general population found in other Tunisian studies(12,13).The range of patients with AA affected by this condition is 30-80% across studies(9,14,15).This variation of the prevalence can be attributed to differences in patient population and scales and the cutoffs used in the diagnosis.

Depression may play a role in the occurrence or relapse of AA (13). However, depression may also be secondary to hair loss because of the negative impact on self-esteem, body image, and confidence. The precise pathogenic mechanism underlying this overlap is unclear. The comorbidity may be due to common genetic risk factors and common immunological pathways, with shared environmental factors increasing risk of both disorders. Moreover, many studies highlighted the effect of affects on the cell mediated immunity, which is implicated in AA. A study by Segerstrom et al. examined the relationship between positive and negative affects and cell immunity and suggested the implication of affects in the cell mediated immunity (16). In addition, there is evidence suggesting that depression exerts a large influence on autoimmune disease pathogenesis (17).

A new study of Vallerand et al. (18) found that the presence of AA was associated with 34% higher risk of subsequent major depressive disorder (MDD), which is consistent with previous scientific evidence. Less expectedly, however, the presence of MDD was found to be associated with 90% higher risk of subsequent AA, with antidepressant use as a confounder. In a review of the literature, Colon et al. (17) estimated a high lifetime prevalence rates of major depression (39%) in patients with AA. Another retrospective cross sectional study found high prevalence of depression (25.5%) in AA patients during an eleven years period (19). Recent Tunisian study supports the idea that depression is more common in people with alopecia than in the general

population, with high prevalence (38%)(20).

In this study, depression was associated to younger age of onset. Onset age of AA seems to play a role in its association with different comorbid psychiatric diseases and an increased risk of depression was found in AA patients younger than 20 years old (18,20). Similarly, Masmoudi et al. have reported a significantly altered mental health domain in younger patients with AA(18). Concerning the duration of the disease, previous studies have shown that a longer duration of different skin diseases was associated with an increased vulnerability to depression (15,17,18). This is probably due to an emotional reaction to chronic condition requiring long-term treatment.

Similarly, to Hunt's study (21), we found that depressed patients have had more AA of eyelashes or eyebrow (41.9%) than those without depression (17.3%).Because eyebrows/eyelashes frame the face, AA in this area can dramatically change one's appearance. It can be, for some patients, an even more devastating loss than scalp hair loss. Across studies, factors associated with a greater risk of hair loss-related depression include young age, strong reliance on physical appearance as a source of self-esteem, and having preexisting poor self-esteem (22). Regardless of clinical pattern of AA, this finding may confirm that AA patients may experience lower self-esteem and poorer body image that can lead to depression.

In this study, depression was associated to severe AA. Indeed, the mean SALT score was significantly higher in patients with depression (p=0.011). Given the reciprocal relationship between AA and depression, it is not surprising that the presence of depression was associated to the severity of the disease(23). What is less understood is how depression can have an impact on the severity of AA. There is no doubt that the severity of AA can have a profound effect on the mental health. The severity of AA can have a significant negative impact on self-esteem, confidence, and body image. Hence, many studies showed that depression was associated with the severity of disease (23).

In the present study, depression was associated to nail

changes. Considering the relationship between nail involvement and severe form of AA, and on the other hand between depression and severity of AA (24), it is possible that nail involvement may be indirectly associated with depression. However, on reviewing the literature, there is no scientific paper, to our knowledge, discussing this association.

In our study, patients without depression have had better response to treatment with a significant hair regrowth (>50% terminal hair regrowth) compared to patients suffering of depression ($p=0.004$). The course of AA is unpredictable (17). In each episode of the disease, the alopecia may remain active, expand, or resolve with spontaneous hair regrowth months, or even years later. Studies have suggested that depression may influence long-term disease activity and indirectly the response to therapy (17,25,26). However, they cannot claim the associations reported there to be causal relationships. Further research using randomized controlled trials would allow confirmation of the direction of causality. Thus, we can speculate that depression have a negative effect on the therapeutic response in AA treatment.

CONCLUSION

AA and its relationship with psychiatric disorders has been widely studied. This study showed that the prevalence rates of depression associated with AA were higher than those of the general population and confirmed that some clinical features of AA were associated with depression. The prevalence of depression was 51.7%. Younger patients were more vulnerable to depression. Eyelashes/eyebrows and nail involvement AA were clinical features associated to depression. Depression was also associated to severe AA. Regarding the disease course, patients suffering from depression have had poor response to therapy compared to patients without depression.

Optimistic expectancies affect many psychosocial outcomes and may also predict immune system changes and health (27), so care for the psychological condition of Alopecia areata patients may have an impact on their course of the disease.

List of abbreviations

AA = Alopecia Areata;
AT = Alopecia Totalis;
AU = Alopecia Universalis;
HAM-D = Hamilton Depression Rating Scale;
SALT = Severity of Alopecia Tool

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