

Original Article

Quality of life, anxiety and depression in patients with androgenetic alopecia

雄性禿患者的生活質量、焦慮和抑鬱

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Background: Androgenetic alopecia (AGA) is a common form of hair loss, which can result in body image disorder and negative social feelings. **Aim:** The aim of this study was to evaluate the quality of life (QoL) and the risk of anxiety and depression in AGA patients. **Method:** Sociodemographic data of the patients and clinical severity of the disease were recorded. The QoL score of patient and controls was evaluated with DLQI and SF-36 instruments, their anxiety and depression risks were evaluated with HAD (HAD-A and HAD-D) instruments. **Results:** Sixty-eight patients with AGA were included in our study. Young male AGA patients' quality of life levels were found to be low according to role limitations due to emotional problems, emotional well-being and emotional scores of SF-36 scale and younger female AGA patients quality of life levels were also found to be low according to role limitations due to emotional problems, and emotional scores of SF-36 scale. The DLQI scores of patients of both sex were found to be significantly higher compared to control group. According to anxiety and depression risk assessment with HAD scale, it was found that 28.6% and 73.5% of patients were prone to suffer from anxiety and depression respectively. **Conclusion:** Apart from managing alopecia, practitioners should be aware of the possible psychosocial distress of AGA patients and manage accordingly.

背景：雄性禿是脫髮的一種常見類型，可能導致身體形象紊亂和負面的社交感覺。目的：本研究的目的是評估雄性禿患者的生活質量以及其焦慮和抑鬱的風險。方法：記錄患者的社會人口學資料和疾病的臨床嚴重程度。使用了皮膚學生活品質量表（DLQI）和健康調查簡表（SF-36）工具來評估患者和對照組的生活質量評分，另使用醫院焦慮抑鬱量表（HAD-A 和 HAD-D）工具評估其焦慮和抑鬱風險。結果：本研究納入了 68 例雄性禿患者。發現年輕男性雄性禿患者的生活質量水平較低，是關係於情緒問題、情緒健康和 SF-36 量表的情緒評分相關的角色限制；而年輕女性雄性禿患者的生活質量水平也較低，則受限於情緒問題以及

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SF-36 量表的情緒評分。發現兩性患者的皮膚學生活品質量表得分均顯著高於對照組。根據使用醫院焦慮憂鬱量表進行的焦慮和抑鬱風險評估，發現分別有 28.6% 和 73.5% 的患者容易患焦慮和抑鬱。結論：除處理脫髮外，醫護還應留意到雄性禿患者可能產生的心理困擾，並進行相應治理。

Keywords: Androgenetic, alopecia, anxiety, depression, quality of life

關鍵詞： 雄性徵的、脫髮、焦慮、抑鬱、生活質量

Introduction

The skin has a major social and mental impact on a person throughout life.¹ As hair is an important in self-identity and self-image, even partial hair loss (alopecia) can cause psychological complications such as psychological problems,^{2,3} depression, low self-esteem and self-image disorder.^{4,5} Studies have shown that there is an obvious impairment in quality of life (QoL) of patients with both obvious and unnoticeable hair loss.^{2,6-8}

Androgenetic alopecia (AGA) is usually known as male-pattern baldness and affects 50% of males across the world.⁹ Though it does not cause any health problems, it can significantly affect social relationships and causes a significant decrease QoL of individuals.¹⁰ Androgenetic alopecia patients may have body image disorder and negative feelings.¹¹⁻¹⁵

Method

Our study included 68 patients with AGA (18-68 years old) patients without other dermatological and psychiatric disease (49 female, 19 male; mean age 30.73 ± 12.45) from the Manisa Celal Bayar University Medical Faculty Dermatology Outpatient Clinic and Istanbul University-Cerrahpaşa, Cerrahpaşa Medical Faculty, Dermatology Outpatient Clinic. A control group (20 female and 10 male, between 18-68 years old and mean age 32.53 ± 13.31) consisted of 30 healthy volunteer people without chronic disease and with similar characteristics to the

patient group in terms of age, sex, marital status status, and educational status.

The study was conducted in accordance with Declaration of Helsinki after approval was received from Manisa Celal Bayar University Medical Faculty Ethics Committee and AGA patients and control group members were included in the study after their informed consent forms were taken. The inclusion criteria were determined as; "being diagnosed with AGA by an dermatologist, being between 18-70 years old and being literate".

Sociodemographic data of the patients and clinical severity of the disease (based on Ludwig Classification for females,¹⁶ and Hamilton-Norwood Classification for males¹⁷) were recorded. The clinical features of Ludwig Classification and Hamilton-Norwood Classification stages are given in Table 1. As the number of patients was limited, AGA patients were grouped as mild (Ludwig 1 for male; Hamilton-Norwood Type 1 and 2 for males) and moderate/most severe (Ludwig 2 and 3 for females and Hamilton-Norwood 2a-7 for males).

Quality of life levels of patients and control group was evaluated with DLQI and SF-36 instruments, their anxiety and depression risks were evaluated with HAD (HAD-A and HAD-D) instruments.

DLQI, developed by Finlay and Khan,¹⁸ consists of 10 questions that evaluates the last seven days of patients in terms of symptoms and emotions, daily activities, the way of spending free time, work/school,

personal relationships and treatment. The higher the score, the more quality of life is impaired.^{18,19} Turkish validity and reliability of DLQI instrument was performed by Öztürkcan et al.²⁰

SF-36 was developed by Ware and Sherbourne in 1992,²¹ and validity and reliability study of Turkish version of this instrument was carried out by Koçyiğit et al.²² The questionnaire measures eight domains as follows: physically based: physical functioning [PF], role limitations due to physical health [RP], bodily pain [BP], general health [GH] and emotionally based: energy/fatigue [EF], social functioning [SF], role limitations due to emotional problems [RE], emotional well-being [EW].²² Subscales scores range from 0 to 100 and low scores mean bad health condition and high score means good health condition.²³

HAD scale was developed by Zigmond and Snaith to determine the anxiety and depression risk of patients and to measure the level and severity change of these problems.^{23,24} Validity and reliability

study of Turkish version of this scale was carried out by Aydemir et al.²⁵ It is used to diagnose the anxiety and depression in a short time and to determine the risk group.²⁴⁻²⁶

Results

Sixty-eight patients with androgenetic alopecia (AGA) were included in our study. The patients were between 18-68 years old and the mean age was 30.73 years (SD=12.45). 72.06% of patients were female (n=49) and 27.94% were male. Control group was formed from 30 healthy volunteer people (20 female and 10 male, 18-65 years old, mean age 32.53±13.31).

Upon comparisons of QoL, anxiety and depression risks for patients according to their age (25 years old and under versus 26 years old and above), in young male patients' QoL levels were found to be adversely affected due to role limitations and emotional problems, emotional well-being and emotional scores

Table 1. Hair loss characteristic according to Ludwig Classification for AGA severity among female patients and Hamilton-Norwood Classification among male patients

Ludwig 1: Noticeable widening at hair parting line, decrease in hair density on the top of the scalp.

Ludwig 2: Noticeable widening at hair parting line, moderate decrease in hair density on the top of the scalp.

Ludwig 3: Noticeable decrease in hair density on top of the scalp. It is noticed that frontal hair line is protected.

Type 1: Very minor or no recession of hair line at front temporal area.

Type 2: Triangular and typically symmetrical areas of recession at the front temporal area. Although there occurs hair loss or thinning at frontal area, it is less than front temporal area.

Type 3: It is the stage that hair loss becomes noticeable symmetrical deep recession at front temporal area becomes noticeable.

Type 4: Hair recession is at extreme level at frontal and front temporal area. Visible thinning at vertex.

Type 5: The hair of band stated at Type 4 becomes thinness. Bald areas increases at vertex and front temporal areas.

Type 6: Hair loss is seen at the areas called band of hair. Bald areas increase at vertex and front temporal areas.

Type 7: This is the most advanced or severe form of hair loss. Only a narrow band of hair in a horseshoe shape survives on the sides and back of the scalp. At the nape of the neck the hair is sparse with a semi circle over both ears.

of SF-36 scale and younger female patients QoL levels were also adversely affected in terms of mental and role limitations as reflected by the emotional scores of SF-36 scale. There was no statistically significant difference was found among other SF-36 subscales, DLQI, HAD-A and HAD-D scores.

Upon the comparison of scores according to patients' marital status, occupational and educational status, no statistically significant difference was found among AGA males, AGA female patients and control group. The sociodemographic characteristics of patients are shown at Table 2.

Anxiety and depression risk assessment with HAD scale showed that 28.6% of the patients were at risk of anxiety and 73.5% were at risk of depression. While there was no statistically significant difference between the HAD-A (anxiety) and HAD-D (depression) scores of AGA male and female patients, it was found that scores of patients from both sexes were statistically significantly higher than control group's scores ($p=0.000$) (Table 3).

While DLQI scores of AGA patients ranged between 0-21, it was found that the average of DLQI score

was 5.37 (± 5.54) for AGA male patients, 5.63 (± 4.66) for AGA female patients and 0.93 (± 1.34) for control group. While there was no statistically significant difference between DLQI scores of AGA male patients and AGA female patients, the scores of patients of both sex were found to be statistically significantly higher compared to control group's scores ($p=0.000$) (Table 4).

When we analysed QoL parameters that were assessed with SF-36 scale, it was found that scores that both male and female AGA patients from these subscales [role limitation due to physical health, general health, role limitations due to emotional problems and mental score (MCS)] were lower compared to control group. It was also found that there was no significant difference between scores of male and female AGA patients. Assessment of scores of the other subscales of SF-36 scale [(physical functioning, pain, energy/fatigue, social functioning, mental well-being and physical score (PCS))], scores of female AGA patients were significantly lower than male AGA patients and control group which shows a greater adverse effect on their QoL and no significant difference was found between male AGA patients and control group (Table 3).

Table 2. Sociodemographic characteristics of study group and control group

	AGA men (n=19)	AGA women (n=49)	Control group (n=30)	P
Age (Mean \pm SD)	28.37 \pm 10.71	30.5 \pm 12.60	32.53 \pm 13.32	0.534*
Marital status (%)				
Single	63.2%	59.2%	n/a	0.437**
Married	36.8%	32.7%	n/a	
Divorced	0%	8.2%	n/a	
Occupation (%)			n/a	
Unemployed	31.6%	51%	n/a	0.252**
Student	31.6%	16.3%	n/a	
Employed	36.8%	32.7%	n/a	
Education level (%)			n/a	
Up to Secondary School	0%	12.2%	n/a	0.175***
High School and University	100%	87.8%	n/a	

*Kruskal Wallis, **Chi square test, ***Fisher's exact test

DLQI, HAD-A and HAD-D scores of male AGA patients were found to have higher when compared to control group which indicates low QoL and risk increase in terms of anxiety and depression. Analysis of quality of life parameters according to SF-36 such as general health, role limitations due to emotional problems and MCS showed that while there was no significant difference between mild AGA patients and moderate and severe AGA patients, it was

found that the quality of life of these groups were impaired compared to control group (Table 4).

In female AGA patients, the DLQI, and HAD-D scores were found to be higher than the control group, which indicates low QoL and increased risk of depression. Mild and moderate/severe AGA patients' HAD-A scores were higher than the control group. However, in mild AGA patients, HAD-A

Table 3. Quality of life (DLQI, SF-36) and anxiety & depression (HAD-A, HAD-D) scores of male AGA, female AGA patients and control group

	AGA male^a (n=19) mean±sd	AGA female^b (n=49) mean±sd	Control group^c (n=30) mean±sd	P value*
DLQI	5.37±5.54	5.63±4.66	0.93±1.34	0.000* a=b>c
HAD-A	7.68±5.28	8.69±3.35	5.43±3.10	0.000* a=b>c
HAD-D	7.26±5.48	7.78±3.85	3.10±2.93	0.000* a=b>c
SF-36				
PF	91.58±15.10	83.37±17.00	91.67±12.48	0.009* b<a=c
RP	72.37±31.06	71.43±31.46	93.33±17.29	0.001* a=b<c
BP	73.47±28.39	65.86±23.23	86.73±21.77	0.002* b<a=c
GH	56.16±21.21	54.37±17.62	75.53±16.78	0.000* a=b<c
EF	59.21±23.94	54.39±15.33	69.50±13.79	0,001* b<a=c
SF	74.34±25.51	69.69±23.23	87.42±14.32	0.001* b<a=c
RE	59.64±39.42	65.31±33.31	85.55±31.18	0.006* a=b<c
EW	60.42±20.65	54.94±14.74	71.60±16.15	0.000* b<a=c
PCS	51.15±7.86	48.56±6.87	54.64±5.54	0.001* b<a=c
MCS	41.77±11.60	41.17±9.05	49.53±9.35	0.001* a=b<c

*Kruskal Wallis Test for three groups comparisons; Mann Whitney U test with Bonferroni correction for pairwise comparisons. Physical functioning (PF), role limitations due to physical health (RP), bodily pain (BP), general health (GH), energy/fatigue (EF), social functioning (SF), role limitations due to emotional problems (RE), emotional well-being (EW), Physical Component Summary (PCS), Mental Component Summary (MCS)

scores were significantly higher than control group. On analysis of QoL parameters according to SF-36 such as general health, energy/fatigue, social functioning and pain, while there was no significant difference between mild AGA patients and moderate/severe AGA patients, it was found that the QoL of these groups were impaired compared to control group ($p < 0.05$). It was found that QoL scores of moderate/severe AGA patients were statistically significantly lower than control group. Upon the analysis of MCS scores, it was found that scores of mild AGA patient group were statistically significantly lower compared to control group (Table 5).

Discussion

AGA is a common form of hair loss that starts at any age after adolescence among genetically

susceptible male and female individuals. It is a characteristic that is benign but alterations in appearance can have a significant adverse effect, both psychologically and socially on the QoL of an individual.²⁷ Also, their social life and relationship with opposite sex are affected negatively.²⁸

According to a study of Sawant et al, analysis of QoL levels of male AGA patients by HAIRDEX scale, showed that in younger patients (15-25 years old), there was a negative emotional impact while older patients were mostly affected in terms of stigmatisation, functioning, self-confidence.²⁹ According Wells et al, in young male AGA patients (15-25 years old), as they are more conscious of their appearance, AGA resulted in low self-esteem and feelings of being unattractive.³⁰ It can be said looking at the difference between the findings of these two studies that it may be due to changing

Table 4. The relationship of alopecia severity with quality of life, anxiety and depression among male AGA patients

	Mild^a (Grade I-II) N:7	Moderate/Severe^b (Grade IIa-IV)/(Grade IVa-VII) N:12	Control group^c	P
DLQI	5.86 (±7.15)	5.08 (±4.70)	1.40 (±1.65)	0.085
HAD-A	8.71 (±7.59)	7.08 (±3.63)	3.50 (±2.75)	0.070
HAD-D	7.71 (±6.87)	7.00 (±4.81)	3.00 (±3.74)	0.066
SF-36				
PF	87.86 (±20.18)	93.75 (±11.70)	94.00 (±10.49)	0.857
RP	75.00 (±38.19)	70.83 (±27.87)	90.00 (±24.15)	0.154
BP	76.14 (±29.94)	71.92 (±28.69)	82.80 (±25.17)	0.436
GH	53.29 (±28.59)	57.83 (±16.79)	83.30 (±14.65)	0.006* a=b<c
EF	52.14 (±28.70)	63.33 (±20.93)	71.00 (±15.24)	0.366
SF	67.86 (±27.82)	78.13 (±24.50)	90.00 (±16.46)	0.223
RE	67.86 (±40.51)	72.21 (±34.35)	90.00 (±31.62)	0.015* a=b<c
EW	38.10 (±20.25)	64.00 (±20.89)	73.20 (±17.59)	0.187
PCS	52.67 (±10.62)	50.26 (±6.10)	54.84 (±3.73)	0.274
MCS	35.90 (±11.44)	45.20 (±10.68)	50.94 (±10.81)	0.028* a<b=c

*Kruskal Wallis Test for three groups comparisons; Mann Whitney U test with Bonferroni correction for pairwise comparisons. Physical functioning (PF), role limitations due to physical health (RP), bodily pain (BP), general health (GH), energy/fatigue (EF), social functioning (SF), role limitations due to emotional problems (RE), emotional well-being (EW), Physical Component Summary (PCS), Mental Component Summary (MCS)

attitudes towards baldness together with increased social acceptance.²⁹

In our study, when we compared the QoL with anxiety and depression risks according to age among AGA patients, QoL levels of younger male patients is low due to emotional problems, emotional well-being and mental score subscales of SF-36 scale and the QoL levels of female patients were reduced due to emotional problems and mental

score subscales of SF-36. However, there was no statistically significant difference between the subscales of SF-36, DLQI, HAD-A and HAD-D scores.

Studies have shown that female patients with hair loss due to AGA are more self-conscious, feel unattractive, leading to social withdrawal, emotional stress and sadness compared to healthy female individuals and male AGA patients.^{31,32} A study of

Table 5. The relationship of alopecia severity with quality of life, anxiety and depression among female AGA patients

	Mild^a (Grade I) N:26	Moderate/Severe^b (Grade II-III) N:23	Control^c	P
DLQI	6.08 (±4.90)	5.13 (±4.42)	0.70 (±1.13)	0.000* a=b>c
HAD-A	9.54 (±3.29)	7.74 (±3.22)	6.40 (±2.85)	0.006* a=b, b=c, a>c
HAD-D	8.38 (±4.15)	7.09 (±19.91)	3.15 (±2.54)	0.000* a=b>c
SF-36				
PF	87.69 (±12.82)	78.48 (±19.91)	90.50 (±13.47)	0.037* a=b, a=c, b<c
RP	75.96 (±26.91)	66.30 (±35.84)	95.00 (±13.08)	0.002* a=b, a=c, b<c
BP	67.00 (±24.17)	64.57 (±22.59)	88.70 (±20.27)	0.002* a=b<c
GH	53.50 (±19.43)	55.35 (±15.70)	71.65 (±16.74)	0.002* a=b<c
EF	52.12 (±16.20)	56.96 (±14.20)	68.75 (±13.36)	0.002* a=b<c
SF	68.37 (±19.92)	71.20 (±21.13)	86.13 (±13.39)	0.007* a=b<c
RE	69.23 (±29.71)	60.87 (±37.14)	83.33 (±31.54)	0.062
EW	50.92 (±15.54)	59.48 (±12.61)	70.80 (±15.79)	0.000* a=b<c
PCS	50.13 (±6.17)	46.84 (±7.32)	54.55 (±6.34)	0.004* a=b, a=c, b<c
MCS	39.60 (±8.87)	42.95 (±9.11)	48.82 (±8.76)	0.007* a=b, b=c, a<c

*Kruskal Wallis Test for three groups comparisons; Mann Whitney U test with Bonferroni correction for pairwise comparisons. Physical functioning (PF), role limitations due to physical health (RP), bodily pain (BP), general health (GH), energy/fatigue (EF), social functioning (SF), role limitations due to emotional problems (RE), emotional well-being (EW), Physical Component Summary (PCS), Mental Component Summary (MCS)

females with AGA and diffuse alopecia by Schmidt found that AGA has a serious emotional impact on these patients.³³ In a study conducted by Ceren et al, in female AGA patients, the most affected domains were emotion, functioning, self-confidence and stigmatisation.³⁴ In a study conducted in Netherland of 58 female AGA patients, there was a negative impact in 88% of patients leading to a decrease in self-esteem of 75% of patients, social difficulties for 50% and general maladaptation for one third of the patients.³⁵ The same team found that female AGA patients seeking treatment are more likely to have social maladaptation and more psychological problems compared to male AGA patients.³²

In our study, while no significant difference was found between DLQI, HAD-A and HAD-D scores of female and male AGA patients, QoL levels of female patients as analysed by SF-36 were significantly lower than male patients in terms of physical functioning, pain, energy/fatigue, social functioning, emotional well-being and PCS.

In the literature, there are few data on the relationship between clinical severity of hair loss due to AGA and psychosocial changes. It was reported that increase in the severity of hair loss was related with "decrease in self-esteem, depression, social introversion, neuroticism and less attractiveness feeling" in studies.^{30,36} Schmidt et al found that compared to slightly visible hair loss, visible hair loss has negative effect on function, emotion, self-confidence and stigmatisation scales of HAIRDEX. It was stated that although female AGA patients did not have clearly visible hair loss, they had deterioration in quality of life.³⁷

In our study, in both male and female patients, the DLQI, HAD-A and HAD-D scores of mild states were higher than moderate and severe states although this result was not significant. The reason why mild AGA patients have lower QoL compared to moderate and severe AGA patients according to DLQI and have higher anxiety and depression risks

is that hair loss might have more negative effects on patients' QoL and psychological well-being in the early stages. According to SF-36 scores, male patients with mild AGA had statistically lower mental scores than male patients with moderate and severe AGA.

In a study by Yamazaki et al,³⁸ the mean DLQI score of AGA patients at first visit was 5.74. In our study were comparable to that of Yamazaki: the mean of DLQI score of patients was 5.37 (± 5.54) in male patients and 5.63 (± 4.66) for female patients. Hirsso et al reported that female AGA patients obviously had statistically lower scores on physical functions, role limitations due to physical health and general health areas, indicating a poorer QoL.³⁹ In our study, both male and female AGA patients had worse QoL on role limitations due to physical problems, general health, emotional role and MCS compared to control group and female AGA patients had worse QoL on physical functions, pain, energy/fatigue, social functions, mental health and PCS compared to male AGA patients and control group.

Fischer et al found that the scores of androgenetic alopecia states were higher than diffuse alopecia states. In case of obvious hair loss, the symptom and stigmatisation scales were significantly higher. However, they recorded significantly high values on emotional scores of patients with no obvious hair loss. According to function scale, they found out that those with obvious hair loss were affected more than other groups. Considering all the patients, they found out that emotional scores were higher than other scores.²⁸

Analysis of the relationship between duration of disease and scores, it was reported that no relationship was found between QoL scores and duration of disease except stigmatisation score.³⁴ On the contrary, there are studies showing that QoL is affected by AGA duration. Indeed, Williamson et al found that higher DLQI scores are more common with a longer duration of hair loss.³ In a study by

Ceren et al, female patients, a higher self-confidence score was more common in patients with a higher education level although the association was not statistically significant.³⁴ Ceren et al found that in the analysis of relationship between occupational group and QoL of patients, QoL of retired patient group was found to be less than other occupational groups.³⁴ In our study, there was no relationship between the duration of disease, level of education, occupational group and QoL of patients and anxiety and depression risks.

In a study conducted by Yamazaki et al reported a statistically significant improvement in QoL and anxiety in 27 male AGA patients treated with finasteride (1 mg/day) for six months.³⁸ In a study by Olsen et al, there was an obvious improvement in QoL of 393 male AGA patients treated with topical 5% minoxidil in terms of social life, the effect of hair loss on first impression at social relationships and work areas.⁴⁰

Conclusion

It is known that alopecia has many psychosocial complications such as depression, low self-esteem, self-image change and less frequent social engagement. Therefore, it is recommended that psychosocial effects of AGA and QoL issues should not be neglected during the treatment of alopecia patients.

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