Dermatology Life Quality Index in Thai Male Androgenetic Alopecia Patients attending Dermatology Outpatient Clinic

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Background: Androgenetic alopecia (AGA), regarded as the most common cause of hair disorder with increased frequency and severity as patients become older, negatively affects patients' self-image, activities of daily living, and quality of life.

Objective: To assess the quality of life of Thai male AGA patients using the Thai-language Dermatology Life Quality Index (DLQI) questionnaire and evaluate the associations among AGA patients' demographic data, clinical characteristics, severity of AGA, socioeconomic status, and their quality of life.

Materials and Methods: The study design was a cross-sectional descriptive analysis. One hundred two male patients diagnosed as AGA were included in the present study. All patients were interviewed about their demographic data, clinical characteristics of the disease, and then asked to complete the Thai version of the DLQI questionnaires.

Results: There were 102 patients with a mean (SD) age of 36.5 (12.25) years. The first presentation of AGA was between the age of 16 and 59 years with the mean (SD) age of 27.0 (12.5) years. Type III vertex of the Hamilton-Norwood classification of male pattern baldness was the most common presentation (52.0%). Eighty-five (83.3%) patients had a family history of AGA with the majority from fathers (69.4%). The mean (SD) of the total DLQI score was 5.24 (5.19). Differences between the groups of patients aged 30 years and below and aged above 30 years showed that the younger group had significantly higher mean total DLQI scores, 6 versus 3 (p=0.02).

Conclusion: The DLQI score of male AGA patients in the present study indicates that the younger age group, 30 years and below, of male AGA patients is significantly associated with higher mean DLQI score suggesting more undesirable effect on patient's quality of life. Also, most male AGA patients have a family history of AGA, from the paternal side.

Keywords: Male androgenetic alopecia; Quality of life; DLQI questionnaire

Androgenetic alopecia (AGA) is the condition of hair loss from the impact of androgen hormone and genetic susceptibility resulting in hair miniaturization in a symmetric pattern on the frontal and vertex scalp[1,2]. In Thai population, the mean prevalence is 38.52%[2].

Hair is a defining characteristic of human beings. It also has a feature of acknowledging one's identity[3]

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and physical attractiveness. Some AGA patients have psychosocial problems, including depression, low self-esteem, and social isolation. Hair loss can decrease quality of life (QoL) in some patients. Many physicians consider AGA as a mild dermatological condition. However, some patients feel differently. Reid et al demonstrated that the patients rate their hair loss more severely than their dermatologists do. Therefore, understanding the QoL of AGA patients is essential[4].

The present study aimed to investigate the clinical factors such as age, duration, and severity of AGA, that could affect the QoL of AGA patients.

The University of Wales, United Kingdom, first introduced the Dermatology Life Quality Index (DLQI) to assess the QoL in atopic dermatitis, psoriasis, and acne patients[5]. Afterward, the DLQI was validated worldwide, translated to 55 different languages, and applied in more than 33 dermatologic conditions[6]. In Siriraj Hospital, Thailand, the DLQI

was translated to Thai and validated by Professor Kanokvalai Kulthanan and colleagues in 2004[7]. The Thai-language DLQI has been applied to assess the QoL of dermatology patients ever since and showed significant reliability when comparing between patients and healthy individuals[7].

There have been several studies about the QoL of AGA patients in western countries. In addition, in Asia, the studies have been done in Pakistan, South Korea, and China and found that the younger and more severe the patients have been, the worse the QoL would have become[1-3,8,9]. Nevertheless, there has not been any study applying the DLQI in Thai AGA patients. Therefore, the authors aimed to study the QoL of Thai AGA patients using the Thai-language DLQI questionnaire. The study evaluated the associations of AGA patients' demographic data, clinical characteristics, and severity of AGA, socioeconomic status, and their QoL.

Materials and Methods

The study design was a cross-sectional descriptive analysis. One hundred two male patients diagnosed as androgenetic alopecia who attended the Dermatology Outpatient Clinic, Siriraj Hospital, Bangkok, between January and June 2018 were included in the present study. The diagnosis of AGA and clinical staging were made by dermatologists. All patients were mentally and physically healthy. Patients with scalp disorders or other conditions contributing to hair loss, except for androgenetic alopecia, such as scalp psoriasis, infection, anemia, trichotillomania or telogen effluvium were excluded. The sample size was calculated on the result of Zhang's study[3], which showed that mean DLQI score of AGA patients was 5.51 (5.03). In the present study, the expected DLQI score was 7 and standard deviation (SD) score was 5. Sample size was 88 by using one mean for comparing with a reference value. With an expected loss of follow-up, a sample size of 100 was needed.

The written informed consent was provided before participation, and the present study was approved by the Institutional Review Board Ethics Committee of the Faculty of Medicine Siriraj Hospital, Mahidol University, 561/2560(EC1). All patients were interviewed about their demographic data and clinical characteristics of the disease, and then asked to complete the Thai version of the DLQI questionnaires. Dr. Finlay AY had kindly given formal permission by Dr. Kulthanan K to use the Thai version of the DLQI questionnaire in practice and research[5]. This questionnaire consists of 10 questions, each referring to the previous seven days. The questions cover disabilities on work, leisure, daily activities, personal relationship, and treatments. Each question had five possible answers, not relevant or not applicable, not at all, a little, a lot, or very much with the corresponding scores of 0, 0, 1, 2, and 3, respectively. The questions are simple and short and take only a few minutes to complete. The total DLQI score is calculated by adding the scores of all 10 questions, with the maximum scores of 30 and the minimum score of 0. The higher score is the greater impairment of the QoL. The interpretation of the DLQI scores is categorized into five groups, including (i) 0 to 1=no effect at all on patients' life, (ii) 2 to 5=small effect on patient's life, (iii) 6 to 10=moderate effect on patient's life, (iv) 11 to 20=very large effect on patient's life, (v) 21 to 30=extremely large effect on patient's life.

Statistical analysis

A chi-square test was used to compare differences in categorical data, independent t-test for two-group continuous variables. A p-value of less than 0.05 was considered statistically significant. Odds ratio (OR) was used to show associated factor. All analyses were performed using SPSS for Windows version 18.0 software (SPSS Inc., Chicago, IL, USA)

Results

All male AGA patients completed all ten questions in the DLQI questionnaire. It took each patient between one and three minutes to fill out the questionnaire. There were 102 patients with a median [interquartile range (IQR)] age of 36.5 [12.25] years, ranging from 19 to 63. Most of the patients were private company workers, government officials, and freelancers, respectively. The AGA first presented at the age of 16 to 59 with the median [IQR] age of 27.0 [12.5] years. The median duration of clinical presentation at the first visit was two years from a wide range from two weeks to 20 years. Type III vertex of the Hamilton-Norwood classification of male pattern baldness was the most common presentation (52.0%). Eighty-five (83.3%) patients had a family history of AGA with paternal side predominant (69.4%) (Table 1).

Mean (SD) of the total DLQI score was 5.24 (5.19), with a range of 0 to 20. Question 2 had the highest mean DLQI score of 0.95, while question 9 had the lowest mean DLQI score of 0.18 (Table 2).

Differences between the groups of patients aged 30 years and below and aged above 30 years

showed that the younger group had significantly higher median total DLQI scores, 6 versus 3 (p=0.02) (Table 3).

Patients with family history of AGA, did not demonstrate increased likelihood of having higher total DLQI score. However, there are no association between DLQI score and the disease severity, which was performed by Pearson chi-square, (p=0.07).

Discussion

Male AGA is the most common hair loss disease affecting patients worldwide. The onsets of AGA vary from early adulthood to the elderly in both genders. The present study also showed a wide range of patients from 19 to 63 years old with a median age of 36.5 years. AGA has a considerable effect on patients' psychological aspects. The mean duration of clinical presentation at first visit varies from two weeks to 20 years, depending on patients' concerns. Most male AGA patients had a family history of AGA, especially from the paternal side. The family history

Table 1. Clinical characteristics of male AGA patients

Patients	Total (n=102); median [IQR]
Age of onset (year)	36.5 [12.25]
Range	19 to 63
1st presentation of AGA (year)	27.0 [12.5]
Range	16 to 59
Duration of clinical presentation at 1st visit (year)	2 [4]
Range	2 weeks to 20 years
Most common presentation; %	
Type III vertex of the Hamilton-Norwood classification	52
Family history of AGA; n (%)	85 (83.3)
Paternal family history	82 (69.4)

IQR=interquartile range; AGA=androgenetic alopecia

Table 2. DLQI scores

DLQI	Total patients	DLQI score; n (%)				Mean DLQI	Standard deviation
		0	1	2	3		
DLQI 1	102	58 (56.9)	32 (31.4)	11 (10.8)	1 (1.0)	0.56	0.725
DLQI 2	102	45 (44.1)	24 (23.5)	26 (25.5)	7 (6.9)	0.95	0.989
DLQI 3	102	67 (65.7)	20 (19.6)	12 (11.8)	3 (2.9)	0.52	0.817
DLQI 4	102	69 (67.6)	21 (20.6)	7 (6.9)	5 (4.9)	0.49	0.829
DLQI 5	102	46 (45.1)	35 (34.3)	16 (15.7)	5 (4.9)	0.80	0.879
DLQI 6	102	66 (64.7)	22 (21.6)	9 (8.8)	5 (4.9)	0.54	0.852
DLQI 7	102	80 (78.4)	15 (14.7)	7 (6.9)	0 (0.0)	0.28	0.587
DLQI 8	102	76 (74.5)	16 (15.7)	9 (8.8)	1 (1.0)	0.36	0.686
DLQI 9	102	89 (87.3)	8 (7.8)	5 (4.9)	0 (0.0)	0.18	0.496
DLQI 10	102	64 (62.7)	25 (24.5)	8 (7.8)	5 (4.9)	0.55	0.840
Mean total DLQI scores						5.24	5.194

DLQI=Dermatology Life Quality Index

Table 3. Difference in DLQI scores in younger group and older group of patients

DLQI in 5 categories by effect on patient's life	Number of patients (n=102); n (%)		p-value
	Age ≤30 (n=25)	Age >30 (n=77)	
0 to 1: No effect at all	3 (12.0)	25 (32.5)	-
2 to 5: Small effect	8 (32.0)	28 (36.4)	-
6 to 10: Moderate effect	8 (32.0)	11 (14.3)	-
11 to 20: Very large effect	6 (24.0)	13 (16.9)	-
21 to 30: Extremely large effect	0 (0.0)	0 (0.0)	-
Total DLQI scores; median [IQR]	6 [6]	3 [6]	0.02*

DLQI=Dermatology Life Quality Index; IQR=interquartile range

* Mann-whitney U test, p<0.05 is statistically significant

Table 4. Mean total DLQI score in AGA patients in previous studies

Mean total DLQI score and domain of the highest DLQI in Thai male AGA patients	Mean total DLQI score in AGA patients in previous studies	
	Asian countries and DLQI score (or other measurements)	Remark
5.24, Question 2 (Feelings or Embarrassment)	Pakistan (12.80)[8]	Subjects: both male and female
	South Korea[10]	Hair-Specific-Skindex-29
	China (6.3)[3]	-
	India[9]	HAIRDEX

DLQI=Dermatology Life Quality Index; AGA=androgenetic alopecia

Table 5. Mean total DLQI score in other dermatologic conditions

Mean total DLQI score and domain of the highest DLQI in Thai male AGA patients	Mean total DLQI score in other dermatologic conditions	
	Dermatologic conditions (DLQI)	Domain(s) of the highest mean DLQI
5.24, Question 2 (Feelings or Embarrassment)	Urticaria (11.05)[11]	Question 1 (Symptoms)
	Herpes zoster (10.7)[12]	Question 1 (Symptoms)
	Psoriasis (10.6)[13]	Questions 1 and 2 (Symptoms and Feelings)
	Nummular eczema (9.2)[14]	Question 1 (Symptoms)
	Acne (8.95)[15]	Question 2 (Feelings or Embarrassment)
	Seborrheic dermatitis (8.1)[16]	Questions 1 and 2 (Symptoms and Feelings)
	Melasma (7.3)[17]	Question 2 (Feelings or Embarrassment)
	Systemic sclerosis (6.3)[18]	Question 2 (Feelings or Embarrassment)

DLQI=Dermatology Life Quality Index; AGA=androgenetic alopecia

Table 6. DLQI in 5 categories by effect on patient's life

DLQI in 5 categories by effect on patient's life (n=102)	Group 0 to 1 "no effect at all"	Group 2 to 5, 6 to 10, and 11 to 20 "small to very large effect"	Group 0 to 1 and 2 to 5 "no to small effect"	Group 6 to 10 and 11 to 20 "moderate to very large effect"
Age 30 and below (n=25)	3 (12.0%)	22 (88.0%)	11 (44.0%)	14 (56.0%)
Age >30 (n=77)	25 (32.5%)	52 (67.5%)	53 (68.8%)	24 (31.2%)
Odds ratio (95 % CI)		3.1 (0.9 to 1.3)		2.8 (1.1 to 7.1)

DLQI=Dermatology Life Quality Index; CI=confidence interval

accounts for 83.3% of the present study emphasizes the genetic involvement in AGA.

The QoL assessment in AGA patients, using the DLQI questionnaire, were done in many countries. To the best of the authors' knowledge, the current study is the first published series applying the Thai DLQI questionnaire in male AGA patients visited a dermatology clinic in a tertiary care medical school hospital in Thailand. The mean (SD) of the total DLQI score was 5.24 (5.19). The mean total DLQI score in the present study was comparable to the study from China (Table 4).

Question 2 (Feelings or Embarrassment) had the highest mean DLQI score of 0.95, while Question 9 (Sexual difficulties) had the lowest mean DLQI score of 0.18. The self-esteem, confidence, personal image, and psychosocial interaction were all essential factors implying the effects shown in the highest mean DLQI score of Question 2. Previous DLQI studies on different dermatological conditions also showed that Question 2 contributed most to the total DLQI score (Table 5).

Moreover, the authors categorized the recruited patients into two age groups, 30 years and below and more than 30 years. The younger group had a significantly higher mean total DLQI score of 6 compared to 3 of the older group, indicating the worse QoL. Additionally, there were almost three times more patients in the moderate to very large effect on patient's QoL (higher DLQI score), OR 2.8 (95% CI 1.1 to 7.1) (Table 6). This OR represented a younger group of more social, more communication,

and more concerned about personal image than those of the older group resulting in lower QoL. The present study demonstrated that the younger age group, at 30 years and below, of male AGA patients significantly associated with a higher mean DLQI score, suggesting that a more undesirable effect on patient's QoL, particularly in the Feelings or Embarrassment categories. It is essential to address the psycho-social concerns of these patients regardless of disease severity. These concerns may result in the more aggressive choices of AGA treatment in the younger age group patients.

What is already known on this topic?

AGA is the most common hair loss disorder. AGA have a negative effect on the patients' QoL.

What this study adds?

The younger age group, which are 30 years and below, of male AGA patients is significantly associated with a higher mean DLQI score suggesting a more unwelcome effect on patient's QoL. The physicians should be concerned on psycho-social condition of this group regardless of the disease severity.

Presentation at a meeting

Organization: Dermatological Society of Thailand; Place: Centara Grand & Bangkok Convention Centre at Central World, 22nd Floor, Bangkok, Thailand; Date: March 20th to 22nd, 2019.

Conflicts of interest

All authors have no conflicts of interest to declare.

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