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A CLINCO-DEMOGRAPHIC PERSPECTIVE ON MALE ANDROGENETIC ALOPECIA WITH IMPLICATIONS ON QUALITY OF LIFE IN AN INDIAN ARMED FORCES COHORT

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Abstract
Introduction: Androgenetic alopecia (AGA) is the most common form of alopecia in men and women. AGA affects approximately 50% of the male population and by the age of 20 years, over 90% of men demonstrate some degree of AGA. The present work was conducted with the aim of studying the clinical profile and quality of life in these patients. **Materials & Methods:** This hospital-based analytical study was conducted at the Dermatology department of a tertiary care hospital in Mumbai for duration of 2 years. Consecutive type of non-probability sampling was used for selection of study subjects after taking prior written informed consent. A total of 150 patients with AGA were selected on basis of eligibility criteria and informed consent. Detailed history, examination and relevant examination was carried out for all patients. Based on examination findings, patients were graded into one of the seven grades as per the Norwood Hamilton Scale. Patient's Self-Satisfaction was evaluated by the Male Androgenetic Alopecia Quality-of-Life Questionnaire. **Results:** Mean age of study subjects was 36.78 years while age of onset was 33.93 years. Most common presentation was insidious hair loss (68%) from fronto-temporal region (56.7%). Thinning of hair was seen in 84% cases while light coloured hair were present in 10.7% cases. Family history of baldness was given by 66% cases. About 2/3rd cases were in Norwood Hamilton grade II or III while remaining 1/3rd had significant frontal and vertex hair loss (i.e. Types IV–VI). A strong association was observed between age, duration of disease and its severity with quality of life ($p<0.05$). **Conclusion:** AGA can be a source of significant psychological distress to the affected patient especially at a younger age. It is thus important that physicians should consider the psychosocial impact of AGA on patient's lives during treatment.
Key words: Androgenetic Alopecia,demographic, Norwood Hamilton Scaling, Quality of Life.

Introduction

Androgenetic alopecia (AGA) is the most common type of hair loss [1]. It is characterized by progressive thinning of the scalp hair and a reduction in hair density and diameter [2,3]. Male AGA presents with a typical pattern of bitemporal and frontal recession of the hair line or vertex thinning which gradually extends anteriorly [4-7]. By the age of 20 over 90% of men demonstrate some degree of AGA. The prevalence increases with age, from 30% for men in their 30s to 50% for men in their 50s[5].

The development and occurrence of AGA depends on an interaction of endocrine factors and genetic predisposition. It is an androgen-related condition in genetically predisposed individuals and can be seen as a genetically pre-determined event[8].

As hair is an important component of identity and self-image, patients with androgenetic alopecia (AGA) may experience a distorted body image and negative feelings of social disadvantages [9-13]. Notably, even clinically imperceptible hair loss has been correlated with a decreased quality of life (QoL) [14,15]. Furthermore, Reid et al. [14] demonstrated that patients may rate their hair loss as more severe than dermatologists. Consequently, understanding the psychosocial concern and QoL of patients with AGA has become a matter of great concern.

The aim of this study was to investigate the clinical profile of patients presenting with AGA and effect of various factors on their quality of life.

Materials and Method

This hospital-based analytical study was conducted at Department of Dermatology of a tertiary care hospital in Mumbai for duration of 2 years.

Eligibility criteria:

1. Male patients in the age group of 20-50 years with AGA stage II-VI Hamilton-Norwood classification.
2. Those giving informed consent for participation in study.

Sampling Technique & Sample Size

Consecutive type of non-probability sampling was used for selection of study subjects after taking prior written informed consent. A total of 150 patients coming to our hospital with newly diagnosed Androgenetic Alopecia (AGA) were selected on basis of eligibility criteria.

Methodology

All patients were subjected to detailed history including:

- Demographic history - name, age, sex, address, contact number, marital status, occupation.
- Disease history - age of onset of hair loss, duration of hair

loss, pattern of baldness (fronto-temporal, vertical, generalized, patchy etc.), course of hair loss (acute or insidious), thinning, history of short light-coloured hair, associations (Itching / Flaking / Scaling/ Rash)

- Treatment history (5% Minoxidil / Finasteride / Dutasteride / Hair Growth Serums / Hair Restoration Surgeries)
- Family history of AGA
- Other Medical and Surgical history (to rule out differentials and associations with AGA)

Detailed examination was done for patterned/ patchy hair loss, generalized or focal, extent of hair loss, evidence of wispy, depigmented Vellus hair, and patients were graded into one of the seven grades as per the Norwood Hamilton Scaling (NHS). A set of basic investigations was conducted on patients to rule out other causes of baldness and for pre-operative work-up.

Patient's Self-Satisfaction was evaluated by the Male Androgenetic Alopecia Quality-of-Life (QoL) Questionnaire, assessing Emotional, Social and Functional outcomes of therapy.

Statistical Analysis

All statistical calculations were done using computer programs Microsoft Excel 2007 (Microsoft Corporation, NY, USA) and SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 21.

Results

Mean age of study subjects was 36.78 years while age of onset was 33.93 years (Table 1). Out of total 150 cases of AGA, 80.7% were married while 14% were unmarried. Most common presentation was insidious hair loss (68%) from fronto-temporal region (56.7%). Thinning of hair was seen in 84% cases while light coloured hair were present in 10.7% cases. Past history of treatment was positive in 62% cases with minoxidil being the most common treatment taken (43.3%) followed by finasteride (11.3%) and growth serum (7.3%). Family history of baldness was given by 66% cases (Table 2). Based on the examination findings, about 2/3rd cases were in Norwood Hamilton grade II or III while remaining 1/3rd had significant frontal and vertex hair loss (i.e. Types IV–VI) (Table 3). Mean Quality of life of study subjects was 36.7 +/- 11.1 A strong association was observed between age, duration of disease and its severity with quality of life ($p<0.05$). Quality of life was lower in younger patients (<30 years), those with greater duration (> 5 years) and increased severity (Hamilton grade IV-VI) (Table 4).

Table 1. Baseline variables among study group

Variable	N	Mean	SD
Age (years)	150	36.78	7.50
Age of Onset (years)	150	33.93	5.70
Duration (years)	150	2.85	2.30

Discussion

In our study, mean age of subjects was 36.78 years while age of onset was 33.93 years. Age distribution in present study was in accordance with previous studies [16-18]. In the study by Shankar DK, including 1005 subjects, 58% prevalence of AGA was seen in males aged 30-50 years [16]. In a study by Norwood et al., almost all patients have an onset prior to 40 years [17]. In a multinational study by Cash et al. investigating men with male pattern hair loss, 96% of participants across various countries were of age group 25–49 years and reported they were at least somewhat concerned about their hair loss, and 75% were concerned to extremely concerned [18].

In the present study, majority of patients had gradual onset of hair loss that was comparable to previous studies. In a study by Hamilton JB, both males and females with androgenetic alopecia had gradual transition from large, thick, pigmented terminal hairs to thinner, shorter, indeterminate hairs and finally to short,

Table 2. Baseline variables among study group

Variable	N	%
Marital Status		
Maried	121	80.7%
Unmarried	21	14.0%
Widowed/ Divorced	8	5.3%
Pattern of Baldness		
Fronto-temporal	85	56.7%
Central	25	16.7%
Generalized	40	26.7%
Course of Hair Loss		
Acute	48	32.0%
Insidious	102	68.0%
Personal History		
Thinning of hair	126	84.0%
Short, light coloured hair	16	10.7%
Treatment History		
Finasteride	17	11.3%
Hair growth Serum	11	7.3%
Minoxidil	65	43.3%
None	57	38.0%
Family History		
Positive	99	66.0%
Negative	51	34.0%

Table 3. Distribution of subjects as per Norwood Hamilton Grading

Norwood Hamilton Grading	Mean	SD
II	81	54.0%
III	23	15.3%
IV	7	4.7%
V	26	17.3%
V	13	8.7%
Total	150	100%

Table 4. Association of Quality of life with clinical features

Quality of Life comparison (Mean - 36.76 +/- 11.1)				
Variables		**Mean**	**SD**	**p- value**
Age (years)	< 30	31.24	10.30	<0.05
	> 30	40.32	11.21	
Duration (years)	< 5	39.41	10.89	<0.05
	> 5	33.03	11.19	
Norwood Hamilton Grade	I-III	39.12	10.33	<0.05
	IV-VI	30.28	12.12	

wispy, non-pigmented vellus hairs in the involved areas [5]. Rushton DH et al. found an average rate of hair loss of about 5% per year [19].

In our study, it was found that 84% of patients gave history of thinning of hair. Short, light coloured hair was observed infrequently. The reason behind these observations could be because of the progressive nature of androgenetic alopecia. Similar findings have been described by other authors in the literature. Paus R et al, and Plerard–Franchimont C et al. described that in AGA, the duration of anagen phase gradually decreases and that of telogen phase increases. As the duration of anagen phase determines the hair length, the maximum length of the new anagen hair becomes shorter than that of its predecessor, leading to miniaturization and eventually a bald appearance [20,21].

About 2/3rd cases were in Norwood Hamilton grade II or III while remaining 1/3rd had significant frontal and vertex hair loss (i.e. Types IV–VI). Norwood observed in his study that higher percentage of patients in Norwood type 1-3 in age groups 19-49 years. Type 4-7 being common over 60 years of age [17]. A study by Grover S et al in an Indian population had type II as the commonest presentation of AGA [22]. Similarly another study by Segal VN et al, in an Indian population had type II and III as the commonest presentation [23]. While a Chinese study by Wang et al., had type IV as the commonest type [24], and the Korean study by Paik et al., had type III as the commonest type [25].

In the present study, family history of alopecia was observed in two third of the subjects. Family history plays an important role in the onset of AGA, which is believed to be influenced by genetic factors. However, the exact mode of inheritance has not been well characterized. Although there are some reports regarding the prevalence of AGA in male paternal family members, reports regarding the maternal side are rare [26]. A very strong correlation in incidence was found in study involving 54 sets of sons and fathers, with 81.5% of balding sons having balding fathers (Hamilton-Norwood scale III or higher) [27,28].

In present study most common treatment taken by study subjects was topical Minoxidil (43.3%) followed by finasteride (11.3%) and hair growth serums (7.3%). The choice of treatment for AGA depends on various factors including efficacy, practicability, risks and costs. Important recommendations stemming from a large meta-analysis are that topical minoxidil lotion, 2% and 5% were the most commonly prescribed medication in clinical practice followed by oral finasteride[29].

Patients with AGA are significantly affected with self-image satisfaction, with potentially adverse psychosocial factors and with negative impact on a patient's QoL [30]. Alopecia has many known psychosocial complications, including depression, low self-esteem, an altered self-image, and less frequent social engagement [30]. Therefore, it has been suggested that physicians should address these psychosocial and QoL issues when treating patients with alopecia[31].

In present study strong association was observed between age, duration of disease and its severity with quality of life. Quality of life was lower in younger patients (<30 years), those with greater duration (> 5 years) and increased severity (Hamilton grade IV-VI). Not surprisingly, patients of younger age and longer durations of AGA had a decreased QoL. Physical appearance is extremely important to most young men, and early onset of hair loss can have a definite negative effect on self-image and self-esteem. Low self-esteem makes life difficult when finding life partners and employment [31].

Various studies have demonstrated that AGA can have a significant negative impact on the quality of life (Qol) of the affected persons [32-37]. A study by Kranz [34] of 160 university students with AGA revealed that the psychological distress due to AGA was not dependent on the age of the patient or stage of baldness. Hair loss affects self-esteem, personal attractiveness and may lead even to depression and other negative effects of life, especially in women. For women affected with AGA the main factors contributing to psychological distress were - inability to style their hair, dissatisfaction with their appearance, concern about the continuing hair loss and concern about others noticing their hair loss [35]. In a study Han et al. investigated the QoL of AGA patients. Their results showed that AGA could harmfully affect the patients' QoL. QoL was more damaged if the patient had severe alopecia, a longer duration of AGA, younger age, had received previous non-medical hair care, and visited the hospital for AGA treatment. They concluded that dermatologists should address these QoL issues when treating patients with alopecia [36].

Conclusion

Androgenetic alopecia is one of the commonest dermatological complaints for which patients seek treatment. The disease is generally presents in mid-thirties with gradual loss of hair from fronto-temporal region. AGA can be a source of significant psychological distress to the affected patient especially at a younger age. It is thus important that physicians should consider the psychosocial impact of AGA on patient's lives during treatment. Patients with low quality of life might need both medical treatment and psychotherapy, as well. Further research is needed to better understand the effects of AGA and to improve treatment on self-image, psychological functioning and quality of life.

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