ORIGINAL ARTICLE

Association of Sociodemographic Factors and High Body Mass Index with Severity of Androgenetic Alopecia

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ABSTRACT

Objective: To determine the association of sociodemographic factors with severity of androgenetic alopecia (AGA) at tertiary care Hospital.

Methods: This cross-sectional Study was conducted at dermatology department of Liaquat University of Medical and Health Sciences Hospital, Jamshoro/Hyderabad. Study duration was one year from December 2018 to November 2019. All the male patients of Androgenetic alopecia were included. The grading of male pattern Androgenetic alopecia was done according to modified Norwood-Hamilton classification. Norwood-Hamilton Stage I-III were taken mild to moderate and Stage IV and higher as severe. All the patient were interviewed regarding demographic characteristics and Body Mass Index (BMI) was calculated by weight in kilograms /Height in meters^2. Data was collected via study proforma and data was analyzed by using SPSS version 20.

Results: Total 150 patients were studied; their mean age was 39.08 ± 10.14 years. Family history was highly prevalent as 72.0%. Average BMIS was 27.22 ± 2.55 kg/m^2. Most of the cases 51.3% had stage II androgenetic alopecia, stage I androgenetic alopecia was found in 33.3% of the cases and 10.7% had stage III androgenetic alopecia, while only 4.7% presented with stage IV androgenetic alopecia. Severity of androgenetic alopecia was statistically significant according to age and over weight ($p-<0.05$), while statistically insignificant according to family history, socioeconomic status (SES) and family history ($p->0.05$).

Conclusion: There was a significant association of increased age and raised BMI with severity of androgenetic alopecia. Family history and poor SES were highly prevalent but non-significant as per androgenetic alopecia severity.

Keywords: Alopecia, severity, BMI, family history

INTRODUCTION

Androgenic alopecia (AGA) is a disease in which genetically predisposed males and females lose their hair. [1] It is thought that a combination of environmental and genetic factors (particularly circulating androgens) contributes to the etiopathogenesis of the disease. The incidence of disease, on the other hand, increases during the age of 20-40 years.[2] Its etiopathogenesis has been attributed to a number of causes, including endocrine and immunologic disorders, infections, genetic factors, and psychiatric/ psychological disturbances.[3,4] Androgenetic alopecia has been linked to hypertension, central obesity, metabolic syndrome, and further Cardiovascular (CVD) risk factors in several studies.[5-7] In male AGA patients, body mass index (BMI) has been demonstrated to be greater than the healthy controls, and greater BMI has been linked to decreased zinc levels in hair that might contribute to the pathogenesis of AGA.[5] Hair loss pattern in males, however, appears to be influenced by age and family history.[8] Hair loss in the father of male patient tends to have a role in raising a hair loss risk in the male patient, especially when combined with a history of maternal hair loss or maternal grandparents' hair loss.[8] According to a recent research, statistically no significant variance was reported in scalp severity based on education, gender, age, origin, duration, income, spontaneous regrowth history, previous treatment, and family and past history of alopecia areata.[3] Obesity remains the risk factor for a variety of health issues, although its link to AGA is debatable. Using the above disputed literature results, this study was undertaken in a tertiary care hospital to assess the relationship between androgenetic alopecia severity and sociodemographic factors.

PATIENTS AND METHODS

The present cross-sectional study was conducted carried out at Department of Dermatology, Liaquat University of Medical and Health Sciences Hospital, Jamshoro /Hyderabad after taking ethical approval. from December 2018 to November 2019. All the male patients diagnosed with Androgenetic alopecia irrespective of the staging/ grading, age 18- 60 years and those having alopecia duration more than 5 years were included. All the cases of other forms of alopecia such as scarring alopecia, alopecia areata, other skin conditions linked with metabolic syndrome including Psoriasis, having systemic disorders such as; the thyroid diseases, nephritic syndrome, familial hyperlipidemia, chronic renal failure; etc and drug therapy that might affect the body weight, blood glucose levels, blood lipids, and systemic blood pressure were excluded. Written information about the study was taken from each patient and they were also told that they may leave the research protocol at any stage if they felt uncomfortable, worried, or anxious. The modified Norwood- Hamilton

categorization was used to grade androgenetic alopecia pattern among males. Stages I-III of the Norwood-Hamilton scale were considered mild to moderate Androgenetic alopecia pattern among males, whereas Stages IV and above were considered severe. Before the age of 30, those with early onset of androgenetic alopecia (AGA) were diagnosed with Stage III male pattern AGA. BMI was determined by dividing weight in kg divided by height in meter.[2] All the study subjects were further interviewed regarding demographic characteristic like age, family history, residence, socioeconomic status, educational status and occupational status. All the data was collected via study proforma and data analysis was done by using the SPSS version 20.

RESULTS

Total 150 patients were studied; their mean age was 39.08±10.14 years. Most of the cases 060% were poor socioeconomically and mostly were married. Family history was highly prevalent as 72.0%. out of all 60% were from urban areas and 40% were from rural areas. Out of all 33.3% cases illiterate, followed by 40% had primary level education, secondary education was seen in 16% of the cases, intermediate level education was 4.7% and 6% cases were graduates. Average BMIS was 27.22±2.55 kg/m^{2}, while hypertensive cases were 31.3% and diabetics were 10.0%, results showed in table 1.

According to the androgenetic alopecia classification, most of the cases 51.3% had stage II androgenetic alopecia, stage I androgenetic alopecia was found in 33.3% of the cases and 10.7% had stage III androgenetic alopecia, while only 4.7% presented with stage IV androgenetic alopecia. Table.2

As per stratification, the elevated age and weight were significantly associated with the severity of androgenetic alopecia (p-<0.05), while SES, family history and residential status were insignificantly associated with severity of androgenetic alopecia (p->0.05). Table.3

Table.1. Descriptive statistics of the demographic characteristics n=150

Demographic characteristics		Statistics
Age (average)		39.08±10.14 years
Socioeconomic status	Poor	90(60.0%)
	Middle	45(30.0%)
	Upper	15(10.0%)
Marital status	Married	103(68.7)
	Unmarried	47(31.3)
Family history	Positive	108(72.0%)
	Negative	42(28.0%)
Residence	Urban	90(60.0%)
	Rural	60(40.0%)
Educational status	Illiterate	50(33.3)
	Primary	60(40.0)
	Secondary	24(16.0)
	Intermediate	07(04.7)
	Graduation	09(06.0)
Hypertensive	47(31.3)	
Diabetes	15(10.0%)	
BMI	27.22±2.55 kg/m^{2}	

Table.2. Patients' distribution as per classification of alopecia n=150

Classification	No. of patients	(%)
Stage I	50	33.3
Stage II	77	51.3
Stage III	16	10.7
Stage IV	07	04.7

Table 3: Severity of androgenetic alopecia as per sociodemographic characteristics and BMI n=100

Variables		Stages of androgenetic alopecia				p-value
		Stage I	Stage II	Stage III	Stage IV	
Age groups	18-30 years	30	20	00	00	0.001
	31-40 years	15	28	04	02	
	>40 years	05	29	12	05	
SES	Poor	31	48	09	02	0.103
	Middle	17	22	03	03	
	Upper	02	07	04	02	
Family history	Yes	33	64	14	5	0.102
	No	17	13	2	2	
Residence	Urban	33	42	10	5	0.546
	Rural	17	35	06	2	
BMI	Normal 18-<25	33	35	7	2	0.017
	Overweight 25- <30	12	36	7	2	
	Obesity ≥30	5	6	2	3	

DISCUSSION

Androgenetic alopecia (AGA), or male-design balding, is the genetical reformist interaction that may cause a continuous change in vellus hair of terminal hairs. Incidence raises with propelling age; in any case, the time of beginning and pace of movement are variable.[9] in this study average age of the cases was 39.08±10.14 years. On other hand in the study of Vora RV et al[10] reported that the average age of the cases was 27.08 year. In the study of Danesh-Shakiba M et al[5] also reported that the mean age of the cases was 38.40±8.59 years. In this study family history was positive among 72% of the cases and these finding were similar to the study of AlJasser MI et al[11] positive family history was among 80% of the cases. In our series the average BMI was 27.22±2.55 kg/m[2,] while AlJasser MI et al[11] reported that the among 28.6% cases BMI was normal, 40.0% were overweight and 31.4% were obese, while in this study obese cases were only 15 out of 100 cases.

In this study most of the cases 51.3% had stage II androgenetic alopecia, stage I androgenetic alopecia was found in 33.3% of the cases and 10.7% had stage III

androgenetic alopecia, while only 4.7% presented with stage IV androgenetic alopecia. Similarly Gan DC et al[12] reported that the frequency of the mid-frontal and the vertex scalp hair loss (stages 3–5) was 44.9% among males. In another study of AHMED SA et al[13] reported that the grade III Androgenetic alopecia was commonest as 50.0% and grade II was 25.0% followed by grade IVa and V (12.5%). In the study of Kamal A et al[1] stated that the majority of the males 45.10% had severe stage of alopecia and 43.09% males had moderate stage.

In this study the severity of androgenetic alopecia was significantly associated with elevated age and BMI (p-<0.05). On other hand Gan DC et al[12] also seen similar findings. In the study of Yang CC et al[14] concluded that elevated BMI was seen significantly linked with the severity of hair loss among male's male-pattern androgenetic alopecia, particularly among with androgenetic alopecia early-onset. Inconsistently Danesh-Shakiba M et al[5] observed that the lower BMI and lower waist to hip ratio were seen cases group, these values were normal and statistically were insignificant, while Kamal A et al[1] observed that the severity of androgenetic alopecia was significantly and strongly linked to the elevated BMI. There were several limitations in the current study. However more large-scale case control studies should be done on this subject.

CONCLUSION
There was a significant association of increased age and raised BMI with severity of androgenetic alopecia. Family history and poor socioeconomic status were highly prevalent but non-significant as per androgenetic alopecia severity. Further large scale studies are recommended on this subject.

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