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CLINICAL STUDY OF ANDROGENIC ALOPECIA AND ITS ASSOCIATION WITH METABOLIC SYNDROME

Dermatology

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ABSTRACT

BACKGROUND: Androgenic alopecia (AGA), is the most common nonscarring alopecia, is an androgen-induced disorder characterized by hair loss in genetically predisposed men. "Metabolic syndrome" (MetS) is a collection of clinical signs that focus on cardiovascular and diabetes related parameters. Despite the high burden of AGA and MetS in India, the relationship between the two is still poorly understood.
OBJECTIVES: To study the clinical association of androgenic alopecia in males with metabolic syndrome.
METHODS: One hundred patients with Androgenic Alopecia attending the Dermatology Department were screened for metabolic syndrome based on the criteria by International Diabetes Federation, 2006.
RESULTS: Androgenic alopecia was more common among professionals (34%) of age group >32 years (36%) out of which 48% were normal, 27% were overweight and 25% were obese. Majority of the patients were non-vegetarians and not doing any exercise. Fronto Temporal recession was the most common type of Androgenic Alopecia in 94% of patients with thinning of frontal, temporal and vertex areas. The common medical diseases associated with Androgenic alopecia were low HDL cholesterol, hypertriglyceridemia, high blood pressure≥(130/85mmHg) and impaired fasting glucose. Among Androgenic alopecia patients, the proportion of metabolic syndrome was 26% and it was more common among 32-35 years age with mean age of 29.654±5.129 years. Among Androgenic alopecia patients, metabolic syndrome was more common in professionals followed by skilled workers, businessmen and in the age group >32 years and those who were overweight and obese. Metabolic syndrome was significantly associated with duration, occupation, BMI and grade of androgenic alopecia.
CONCLUSION: The relationship between androgenic alopecia and metabolic syndrome is statistically significant therefore early screening for metabolic syndrome is beneficial in patients with early onset androgenic alopecia.

KEYWORDS

Androgenic alopecia; Metabolic syndrome; BMI;

INTRODUCTION

Androgenic alopecia (AGA), the most common nonscarring alopecia, is an androgen-induced disorder characterized by hair loss in genetically predisposed menand women. In AGA, androgens induce miniaturization of hair follicles, especially in the frontotemporal area and vertex of the scalp in men; over the crown in women.[1]

AGA in male developing before 30 year of age with at least Grade III of Hamilton–Norwood classification is termed as early-onset or premature AGA. Men with premature AGA are found to be susceptible to cardiovascular diseases, metabolic syndrome (MS), diabetes mellitus, hypertension, and also premature baldness can have a definite negative impact on the self-image and self-esteem in these patients.[2]

The metabolic syndrome (Syndrome X, Insulin resistance syndrome) consists of a constellation of metabolic abnormalities that confer increased risk of cardiovascular disease and diabetes mellitus. The major features of metabolic syndrome include central obesity, hypertriglyceridemia, low high-density lipoprotein cholesterol, hyperglycemia and hypertension. Insulin resistance is the primary metabolic disorder associated with obesity and appears to be the most likely underlying mechanism in metabolic syndrome.

"Metabolic syndrome" (MetS) is a combination of risk factors of cardiovascular and diabetes related parameters which are gaining more and more importance. Early detection and evaluation are important to minimize the untoward complication, and few of the studies[3-12] have reported the association between AGA, MetS, and coronary artery disease.

In spite of the emerging evidences for the association between premature AGA and MS, it is highly inconsistent, with very few studies being reported inIndian population. Since the pathophysiological link between MS, insulin resistance (IR), and premature AGA is not yet fully understood, we conducted the present study to evaluate their association.

Though late onset androgenic alopecia has been studied quite extensively there are very few studies determining the association of early onset androgenic alopecia. The present study has been undertaken as a clinico-epidemiological study to determine the prevalence of early onset of androgenic alopecia in the age groups of 18-35 years. We wish to determine if androgenic alopecia could be the precursor or cutaneous marker for systemic illness. If found positive, this might help in counseling patients to screen for underlying systemic illness.

Methodology

Study Design: Descriptive study (cross-sectional).

Study Setting: Outpatient and inpatient Department of Dermatology, Venereology and Leprosy, Navodaya Medical College, Hospital and Research Centre, Raichur.

Study Period And Duration: January 2020-July 2021 (18 months)

Inclusion Criteria:

1. All patients with Androgenic Alopecia diagnosed clinically attending Dermatology OPD, Navodaya Medical College, Hospital and Research Centre, Raichur.
2. Patients in the age group 18 to 35 years.

Exclusion Criteria:

1. Patients age below 18 years and above 35 years.
2. Patients not willing for study.

Data Collection Procedure:

All patients attending Dermatology OPD and satisfying inclusion and exclusion criteria were included in the study. Informed consent was taken from all patients. Data was collected using pre-structured proforma. Detailed history including that of diabetes mellitus, hypertension, cardiovascular disease and drug intake were taken. Dermatological examination was done to assess clinical type and extent of Androgenic Alopecia. Anthropometric measurements like height, weight, body mass index (BMI) were performed in all patients. BMI calculated as weight in Kg/ height in m^2. In adults overweight is defined as BMI between 25-29.9 and obese is defined as BMI> 30kg/m^2. Waist circumference and blood pressure were recorded in all

cases. Waist circumference was measured in a horizontal plane, midway between the inferior margin of the ribs and the superior border of the iliac crest. Screening for metabolic syndrome was done based on the criteria put forward by International Diabetes Federation, 2006.

Table 1. International Diabetes Federation Criteria For Metabolic Syndrome.

RISK FACTORS	DEFINING LEVEL
Central Obesity	Waist circumference Females ≥ 80 cm Males ≥ 90 cm
Raised triglycerides	≥ 150mg/dl (or specific medication)
Reduced HDL cholesterol	<40 mg/dl in males and <50mg/dl in Females (or specific medication)
Raised blood pressure	Systolic ≥ 130mmHg or Diastolic ≥85mmHg (or specific medication)
Raised fasting plasma glucose	≥ 100mg/dl or previously diagnosed type 2 DM

If body mass index > 30 kg/m^2, then central obesity can be assumed and waist circumference does not need to be measured.

Investigations

Blood sample was collected from all patients for necessary investigations like fasting plasma glucose, triglycerides and high density lipoprotein cholesterol (HDL). Triglycerides measured by enzymatic method using Lipoprotein lipase, Glycerol kinase, Glycerol phosphate oxidase and Peroxidase. HDL separated by precipitation method and then measured by using cholesterol oxidase peroxidase method. Fasting plasma glucose measured by glucose oxidase peroxidase method. (GOD POD).

Results And Discussion

One hundred patients with clinical diagnosis of Androgenic Alopecia attending the Department of Dermatology, Venereology and Leprosy, Navodaya Medical College, Hospital and Research Centre Raichur.

Age of the patients in our study ranged from 18 to 35 years. Mean age of the study population is 29.65 years with a standard deviation of 5.192. Out of 100 patients with Androgenic alopecia, 22% of the patients were in the age group 18-22 years, 18% were in the age group 23-27 years, 24% were in the age group 28-32 years and 36% above 32 years. Study done by Kumar et al. showed mean value of the age of the patients studied was 33.560 ± 8.533, and the mean value of the age of onset was 29.750 ± 7.736.[9] Where as, in a study by Bakry et al patient's age ranged from 25 to 60 years with a mean ± standard deviation age of 40.09 ± 10.57 years.[10] By comparision with these studies, we can state that slight early onset of androgenic alopecia was found in our study.

In present study, 24% of patients had grade-IV androgenic alopecia according to Norwood Hamilton grading. Both grade-II and III had 22% of patients each. 14% of patients were of grade-V, 7% of grade-I, 5% and 6% of patients were of grade-VI and grade-VII respectively. Where as, in a study by swaroop et al[8] 46% patients were classified as stage III, 24% as stage IV, 20% as stage V, and 10% as stage VI based on Hamilton–Norwood scale of hair loss.[8]

Out of 100 patients in our study, 26% with Androgenic Alopecia had metabolic syndrome, which when compared to study by Swaroop et al frequency of metabolic syndrome in Androgenic Alopecia were 30% which was found to be statistically significant (P=0.005), and in concordance with our study.[8]

Dharam Kumar et al, showed A higher prevalence of Metabolic Syndrome is seen in androgenic alopecia. A significant association was seen between the severity of AGA and MetS. MetS was seen in 53% of cases of androgenic alopecia.[9]

Behrangi E et al, in their study found that, there were 64.9% cases of androgenic alopecia with metabolic syndrome, showing statistically significant difference.[11]

Conclusions

Based on the observations and results in present study, the relationship between androgenic alopecia and metabolic syndrome is statistically significant therefore early screening for metabolic syndrome is beneficial in patients with early onset androgenic alopecia, which can be done by evaluating for lipid profile, anthropometric measurements, fasting blood sugar levels, and recording the BP in all the patients.

Declarations

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Conflict of interest: Nil.
Ethical approval: Approved

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