Association of Dyslipidemia and Androgenetic Alopecia: A Case Control Study

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ABSTRACT

Introduction: The association between androgenetic alopecia and metabolic sydrome has been studied in past with variable results. In the present study we evaluate the association of androgenetic alopecia with dyslipidemia.

Material and methods: A prospective hospital based case control study including 100 newly clinically diagnosed male patients of androgenetic alopecia and age and sex matched control group was conducted for a period of one year. Lipid profile including total cholesterol (TC), triglyceride (TG), high density lipoprotein (HDL), low density lipoproteins (LDL) were measured and compared in both the groups.

Results: Of the 100 male AGA patients (age range 21-50, mean 34.49), 36 had grade II AGA, 24 had grade III AGA, 20 had grade IV AGA, 15 had grade V AGA and 5 had grade VI AGA. Among AGA patients, 60 patients had mild-moderate AGA and 40 patients had severe AGA. Dyslipidemia was found to be statistically significantly more common in AGA patients as compared to the control group. The study also observed that deranged lipid profile was statistically significantly more common in patients with severe AGA as compared to patients with mild- moderate AGA.

Conclusion: In the present study, dyslipidemia was found to be more common in patients of androgenetic alopecia as compared to controls and more common in those with severe grades suggesting that androgenetic alopecia patients especially with severe grades are at higher risk of developing deranged serum lipids and should thus be evaluated for dyslipidemia and other cardiovascular co morbidities.

Keywords: Androgenetic Alopecia, Dyslipidemia, Metabolic Syndrome

INTRODUCTION

Androgenetic alopecia is a form of hair loss occurring in a distinctive pattern and is characterized by a progressive decline in the hair fibre production by scalp hair follicles and their eventual miniaturization. In men it is predominantly due to a combination of genetic factors and the effect of androgens. However, certain other risk factors have been associated with the disease due to lack of responsiveness to antiandrogen therapy in some cases.[1,2,3] Studies in the past have shown the association between androgenetic alopecia and metabolic syndrome or its associated diseases including cardiovascular diseases, hypertension and insulin resistance.[4] In the present study we assess the relationship between androgenetic alopecia and dyslipidemias.

MATERIAL AND METHODS

It was a prospective hospital based case control study conducted in department of dermatology in a tertiary care center in Jammu. The study was conducted over a period of one year from November 2014 to October 2015. Cases included clinically diagnosed male patients of Androgenetic alopecia with age more than 18 years.

Exclusion criteria

- Age less than 18 years.
- Patients with a history of smoking and alcohol intake.
- Female gender.
- Other types of alopecia like alopecia areata, scarring alopecia.
- Other skin diseases associated with dyslipidemias like Psoriasis.
- Patients with thyroid diseases, nephritic syndrome, chronic renal failure,familial hyperlipidemia.
- Patients on drugs that are known to cause dyslipidemias.

The control group comprised of male patients attending the department for skin diseases other than androgenetic alopecia and male attendants accompanying the patients matched by age and other risk factors.

A detailed history regarding name, age, occupation, age of onset and duration of disease, family history of alopecia, family history of cardiovascular disease, diabetes, hypertension, personal habits like smoking, alcohol intake and tobacco consumption was taken after signing a written informed consent that was approved by the Institutional Ethical Committee. General physical and systemic examination was also performed. Androgenetic Alopecia was diagnosed clinically on the basis of its characteristic pattern showing recession of the frontotemporal hair line and hair thinning over the frontal and/ or vertex areas. Modified Norwood- Hamilton classification was used for grading of male pattern androgenetic alopecia.Norwood - Hamilton grade I-III was taken mild to moderate male pattern androgenetic alopecia and grade IV and higher as severe. Early onset androgenetic alopecia was taken grade III or more male pattern androgenetic alopecia before 30 years of

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Lipid profile	Cases no(%)	Controls no(%)	P value	Relative Risk
Decreased HDL	15	3	0.0052	5
Increased LDL	15	3	0.0052	5
IncreasedTriglycerides	16	6	0.04	2.667
Increased cholestrol	16	6	0.04	2.667

Table-1: Association of dyslipidemia with androgenetic alopecia in cases and controls

Abnormal lipid profile	LDL No(%)	HDL No(%)	TG No(%)	TC No(%)
Mild-Moderate AGA	3/60(5%)	3/60(5%)	4/60(6.67%)	4/60(6.67%)
Severe AGA	12/40(30%)	12/60(30%)	12/40(30%)	12/40(30%)
P value	0.0011	0.0011	0.0041	0.0041
Relative Risk	6.2	6.2	4.5	4.5

Table-2: Association of dyslipidemia as per the severity of disease

age.[5]

Serum lipid profile was done which included serum total cholesterol levels, serum triglyceride levels, high density lipoproteins (HDL-C) and low density lipoproteins (LDL).

STATISTICAL ANALYSIS

Appropriate statistical techniques were used to find out prevalence and significance of any apparent association by using Fischer exact test based on the type of data available.

RESULTS

A total of 100 male patients of AGA patients (age range 21-50, mean 34.39) and 100 controls (age range 20-50, mean 34.14) were studied. Of the 100 AGA patients 36 (36%) had grade II AGA, 24 (24%) had grade III AGA, 20 (20%) had grade IV AGA, 15 (15%) had grade V AGA and 5 (5%) had grade VI AGA according to Hamilton-Norwood classification. According to severity 60 patients (60%) had mild - moderate AGA and 40 (40%) severe AGA.

Dyslipidemia was found to be statistically significantly more common in AGA patients as compared to the control group (Table 1). The study also observed that deranged lipid levels were statistically significantly more common in patients with severe AGA as compared to patients with mild- moderate AGA (Table 2).

DISCUSSION

Male Androgenetic alopecia is the commonest form of alopecia. Genetic factors and androgens are strongly associated with its etiopathogenes.[6] Studies in the past have shown the association between androgenetic alopecia and metabolic syndrome or its associated diseases including cardiovascular diseases, hypertension, dyslipidemia and insulin resistance.[4] In the present study we evaluated the association of dyslipidemia with androgenetic alopecia.It was a prospective case control study conducted in a tertiary care center.A total of 100 male patients of androgenetic alopecia and equal number of age matched male controls were studied during study period of one year. The age distribution of cases and controls was comparable.

Maximum number of patients in this study had grade II (36%) and grade III (24%) Hamilton and Narwood classification of androgenetic alopecia consistent with the previous studies.[7-9]

Dyslipedemia was found to be statistically significantly more common in AGA patients as compared to controls. The AGA patients were 5 times more likely to have increased LDL and decreased HDL and 2.6 times more likely to have increased triglyceride and total cholesterol as compared to controls (Table 1).

Among the patients of AGA these deranged serum lipids were statistically significantly more common in patients with severe AGA as compared to patients with mild- moderate AGA. Patients with severe AGA were 6.2 times more likely to have abnormal HDL and LDL and 4.5 times more likely to have abnormal triglyceride and total cholesterol as compared to patients with mild- moderate AGA (Table 2). The results of our study were consistent with many previous studies.[10,11]

S. Arias-Santiago et al showed deranged levels of total cholesterol, triglycerides and HDL levels in male and female patients of androgenetic alopecia as compared to the control population.[10]

Another study by Al Sadat Mosbeh et al in their study showed significant difference in serum LDL and lipoprotein-a levels in patients of androgenetic alopecia compared with the controls.[12]

Lotufo et al,[13] found a significant difference in serum total cholesterol, LDL and LP (a) between patients and controls. Nassiri et al,[14] showed a higher triglyceride and lower HDL levels in cases than the controls.

Hence the present study lays the importance of evaluating the patients of androgenetic alopecia for dyslipidemia so that the patients can be screened, counselled and managed accordingly. Androgenetic alopecia should thus be regarded as a multisystem disorder and patients should be warned accordingly about the possible risk factors of their disease and counselled for healthy life style in order to correct their modifiable risk factors.

CONCLUSION

In the present study, dyslipidemia was found more common in patients of androgenetic alopecia as compared to the control population. which was statistically significant with altered lipid profile being more common in those with severe androgenetic alopecia as compared to those with mild-moderate androgenetic alopecia. This lays emphasis to the fact that androgenetic alopecia should be taken as a potentially multisystem disorder and patients

should be warned accordingly about the possible negative consequences of their disease and counselled for healthy life style in order to correct their modifiable risk factors.

Limitations

The limitation of the study was small sample size.

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