

Frequency of deranged blood lipids in male patients with androgenetic alopecia

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Abstract

Objective To determine the frequency of deranged serum lipids in male patients with androgenetic alopecia.

Methods Cross-sectional study was conducted in the outpatients department of Dermatology, Fauji Foundation Hospital Rawalpindi over a period of six months i.e. January 2015 to June 2015. Male patients between 25-65 years with androgenetic alopecia were enrolled in the study. Blood samples for fasting serum lipids were taken during the same visit. All data were entered and analyzed.

Results Total 150 patients were included in the study according to the inclusion criteria. Mean age in high and low triglycerides patients was 46.87+10.58 years and 42.32+11.29 years, respectively. Similarly, mean age (years) in normal and low HDL was 42.17+10.87 years and 48.13+10.21 years, respectively. There were 131 (87.3%) patients who presented with high triglycerides levels whereas 19 (12.7%) patients had normal triglycerides. Similarly, there were 46 (30.7) patients who presented with normal HDL levels where as 104 (69.3) patients had low HDL levels.

Conclusion The study concluded that serum lipids were deranged in male patients of androgenetic alopecia.

Key words

Androgenetic alopecia, high-density lipoproteins, low-density lipoproteins, triglycerides.

Introduction

Androgenetic alopecia is a type of hair loss that is diffuse, symmetric and progressive affecting both sexes.¹ It is an androgen-dependent genetically mediated autosomal dominant disorder with polygenic inheritance.² It affects both genders but it is more common in men affecting 50%² as compared to females affecting only 30%.³ Hair thinning begins between the ages of 12-40 years but the frequency increases with age. DHT acts on hair follicles and

produces their miniaturization in genetically susceptible individuals producing patterned hair loss.⁴ It is essentially a cosmetic disorder. Other than affecting the patient psychologically, it allows ultraviolet light to reach the scalp increasing the amount of actinic damage and an increased incidence of cardiovascular diseases and prostate hyperplasia.^{5,6,7}

Noticeably raised serum lipids levels as compared to general population have been observed.^{8,9,10} Raised levels of serum triglycerides in 45.7% and decreased levels of high density lipoproteins (HDL) in 42.5% men has also been noticed.^{2,5} But a non-significant rise in total cholesterol and LDL cholesterol, and normal triglycerides with high HDL have also

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been observed in studies on the contrary.^{10,11}

Evaluation of high serum lipids in men with androgenetic alopecia may help to screen out those at increased risk of cardiovascular disease.⁷ No such study has been done in Pakistan previously.

Methods

This cross-sectional study was conducted in outpatients department of Dermatology, Fauji Foundation Hospital, Rawalpindi over a period of six months i.e. 1st January 2015 to 30th June 2015. Non-probability consecutive sampling was done. Sample size was calculated by WHO sample size calculator, with confidence interval of 95%, anticipated population proportion 42.5%,⁸ absolute precision as 8%, leading to a sample size of 150.

After approval from the hospital ethical committee, patients fulfilling the criteria were included in the study. Informed written consent was obtained from all participants. Male patients between 25-65 years with androgenetic alopecia were enrolled in the study. Patients with history of systemic steroids, testosterone, lipid lowering agents and known diabetics were excluded. Physical examination to determine androgenetic alopecia and exclude other causes of hair loss was done. Duration of androgenetic alopecia was noted. Blood samples for fasting serum lipids were taken during the same visit. All investigations were done in hospital laboratory free of cost and were reported by the same pathologist who was not aware of the purpose of study in order to avoid observer bias.

Serum triglycerides were determined by enzymatic splitting with lipoprotein lipase using Innoline[®] diagnostic kit. Cut off value - > 2.19mmol/L was taken as increased. HDL cholesterol were measured by enzymatic

colorimetric-Accelerator selective detergent end point using Ecoline[®] diagnostic kit. Cut off value <1.02mmol/L was taken as decreased

All data were entered and analyzed by using proforma and SPSS (Version 16). Mean and standard deviation were calculated for age values of serum lipids. Frequency and percentages with lipids were calculated for high triglycerides and low high density lipoproteins. Descriptive statistics of age (years) was calculated in terms of mean and standard deviation.

Results

Total 150 patients were included in the study. Mean age in high triglycerides (> 2.19 mmol/L) was 46.87±10.58 years, whereas mean age in normal triglycerides (< 2.19 mmol/L) was 42.32±11.29 years. Mean age in normal HDL (>1.02 mmol/L) patients was 42.17±10.87 years, whereas mean age in low HDL (<1.02 mmol/L) cases was 48.13±10.21 years. There were 131 (87.3%) patients who presented with high triglycerides levels (>2.19 mmol/L) whereas 19 (12.7%) patients had normal triglycerides. There were 46 (30.7%) patients who presented with normal HDL level (>1.02 mmol/L) whereas 104 (69.3%) patients had low HDL (<1.02 mmol/L).

There were 42 (32.3%) patients having raised triglycerides in the age group 46 to 55 years, whereas in the age group 56 to 65 years, the raised triglycerides levels (mmol/L) were seen in 31 (23.8%) patients. Raised levels in other age groups are shown in **Table 1**.

There were 15 (32.6%) patients having normal HDL levels in the age group 36 to 45 years, whereas in the age group 46 to 55 years normal HDL level (mmol/L) was seen in 12 (26.1%) patients. Normal HDL levels in other age groups was also seen as shown in **Table 2**.

Table 1 Age stratification with Triglycerides level (mmol/L)

Age groups	Triglycerides level		Total
	>2.19 mmol/L (increased Tg)	<2.19 mmol/L (normal Tg)	
25 to 35 years	16 (12.3%)	6 (31.6%)	22 (14.8%)
36 to 45 years	39 (30.0%)	5 (26.3%)	44 (29.5%)
46 to 55 years	42 (32.3%)	7 (36.8%)	49 (32.9%)
56 to 65 years	31 (23.8%)	2 (5.3%)	33 (21.5%)
above 65 years	2 (1.5%)	0 (0.0%)	2 (1.3%)
Total	130 (100%)	20 (100%)	150(100%)

Table 2 Age stratification with HDL level (mmol/L)

Age groups	HDL level		Total
	> 1.02 mmol/L (normal)	< 1.02 mmol/L (decreased)	
25 to 35 years	14 (30.4%)	8 (7.8%)	22 (14.8%)
36 to 45 years	15 (32.6%)	29 (28.2%)	44 (29.5%)
46 to 55 years	12 (26.1%)	37 (35.9%)	49 (32.9%)
56 to 65 years	5 (10.9%)	27 (26.2%)	32 (21.5%)
above 65 years	0 (0.0%)	3 (1.9%)	3 (1.3%)
Total	46 (100%)	104 (100%)	150 (100%)

Discussion

Hair plays an important role in determining self-image, social perceptions and psychosocial functioning. Male pattern hair loss (MPHL) can have a serious psychological impact as seen in many studies.⁵

Androgenetic alopecia is the commonest cause of hair loss in males. Following two criteria are necessary for diagnosis of androgenetic alopecia: A) Hair loss in one of the described patterns e.g. Ludwig, Hamilton etc. and B) Family history of hair loss. Pattern hair loss in women is different from that in men.^{1,4}

Male pattern baldness (MPB) may be associated with increased risk for cardiovascular disease was first suggested in 1972.⁹ No clear mechanistic relation between these could be discovered though. High androgen levels have been postulated to lead to both AGA and, atherosclerosis and thrombosis. A study showed that men with higher grades of AGA (vertex), have a higher risk of developing ischemic heart disease, especially among men having high cholesterol level and hypertension. However,

there are discrepancies in regards to the nature of this relationship.^{7,11}

In our study, there were 131 (87.3%) patients who had high triglycerides levels whereas 19 (12.7%) patients had low triglycerides. Nabaie *et al.*¹¹ conducted a study in 2009 and found similar results. They found low HDL levels in 13 (13.4%) patients. Similarly, in our study there were 46 (30.7%) patients who had normal HDL levels whereas 104 (69.3%) patients had low HDL.

In our study, the results showed that patients from 36-65 years had increased levels of triglycerides. HDL levels in this age group were remarkably decreased. The reason for such observation must be studied. Low HDL level is a risk factor for cardiovascular disease.

Conclusion

The study concludes that there were raised serum lipids in male patients of androgenetic alopecia which may help the dermatologists to screen those patients with early onset cardiovascular disease.

Moreover such patients can be referred to the cardiologists and physicians for early prevention and treatment of cardiovascular diseases.

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