

Association of the Androgenetic Alopecia with Coronary Artery Disease: A Case Control Study

Divya Sharma¹, Rahul Kumar Sharma^{*2}

Department of Dermatology, Venereology and Leprosy GMCH Udaipur

Department of Dermatology, Geetanjali Medical College, Udaipur, Hiran magri Extn. Udaipur- 313002



Abstract:

Skin is the largest vital protective organ of the body which acts as a mirror of systemic diseases. Androgenetic alopecia (AGA) is a genetically determined patterned alopecia which is linked to coronary artery disease (CAD) or coronary heart disease. A hospital based, observational case control study was carried out on patients attending cardiology outpatient clinic and medicine outpatient clinic during the study period of 6 months. Case group consisted of hundred males who were known cases of coronary artery disease (on the basis of coronary angiogram) and fulfilled the inclusion and exclusion criteria. Age matched controls were taken from patients who visited general medicine OPD for some acute short lasting illness (patients without any renal dysfunction, diabetes or any other associated systemic disease as per history). AGA was found in 78% of cases and 52% of controls. There was statistically significant association between AGA and CAD ($P < 0.001$, diagnostic odds ratio was 3.273, 95% Confidence interval [CI], 1.77-6.05). The grades of AGA with involvement of vertex are more important than just the mere presence of androgenetic alopecia in predicting the risk of CAD.

Keywords: Androgenetic alopecia, Coronary artery disease, Heart disease, Hair loss, AGA.

Introduction

Skin is the largest protective organ of the body which acts as a mirror and a potential window to reflect the health of internal organs and the presence of systemic diseases. Androgenetic alopecia (AGA) is a genetically determined patterned alopecia which may be linked to coronary artery disease (CAD) by mechanisms such as increased peripheral sensitivity to androgens, hyperinsulinaemia and chronic inflammation.¹⁻⁵ We conducted a case control study to find the strength of the association between androgenetic alopecia with coronary artery disease.

Aim

To study the association of the androgenetic alopecia with coronary artery disease

Objective

To determine the strength of the association of the androgenetic alopecia with coronary artery disease

Study period - 6 months, August 2016 to January 2017

Inclusion criteria for cases -

- 1) Male patients of age more than 35 years
- 2) Who are known cases of coronary artery disease on the basis of coronary angiogram

Exclusion criteria for cases -

- 1) Females
- 2) Males < 35 years
- 3) Patients who did not wish to be included in the study
- 4) Patients who were acutely ill and could not give consent

Methodology

A hospital based, observational case control study was carried out on patients attending cardiology outpatient clinic and medicine outpatient clinic during the study period of 6 months. Case group consisted of hundred males who were known cases of coronary artery disease (on the basis of coronary angiogram) and fulfilled the inclusion and exclusion criteria. Age matched controls were taken from patients who visited general medicine outpatient clinic for some acute short lasting illness (patients without any renal dysfunction, diabetes or any other associated systemic disease as per history). Detailed and accurate history about duration of disease, occupation and associated symptoms were taken. Photographs were taken for documentation and all this information was recorded in the specific performa. Patients were examined for the presence of AGA and record of onset and grading by Norwood Hamilton classification⁶ was done.

Results

The baseline characteristics such as mean, age, gender and mean body mass index (BMI) were similar in both the groups. AGA was found in 78% of cases and 52% of controls. There was statistically significant association between AGA and CAD ($P < 0.001$, diagnostic odds ratio was 3.273, 95% Confidence interval [CI], 1.77-6.05). The mean age of cases was 45.32 year and mean age in controls was 45.14. The evaluation of overall prevalence of various grades of AGA according to Norwood - Hamilton classification and its distribution among cases and controls was performed which revealed that the grades III Vertex and above were more prevalent in cases as compared to controls who had a higher prevalence of grades III and below.

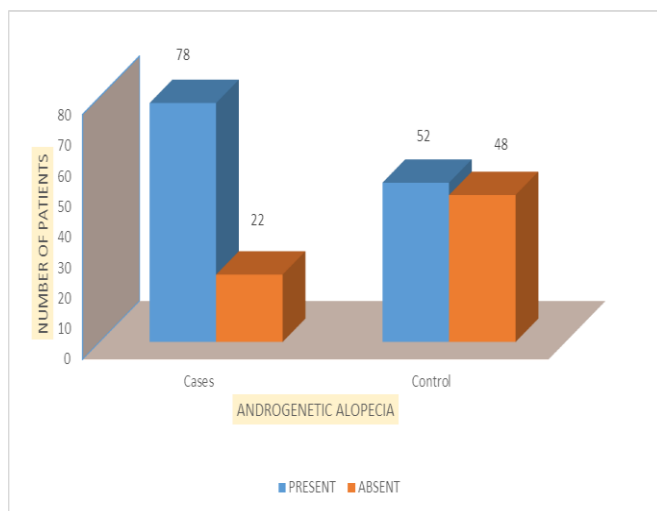


Figure 1 Prevalence of Androgenetic Alopecia in cases and control

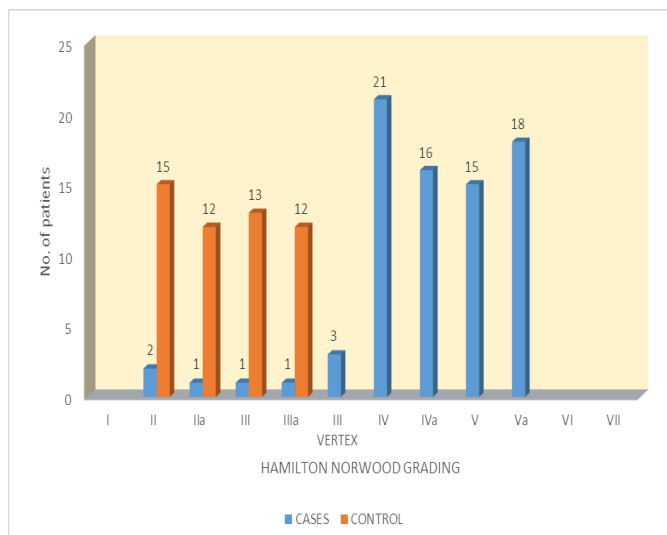


Figure 2 depicts the overall prevalence of various grades of androgenetic alopecia according to Norwood – Hamilton classification and its distribution among cases and controls. The controls had a higher prevalence of grades III and below as compared to the cases

Discussion

The prevalence of AGA was high in our study (78% of cases and 52% of controls) as compared to the study done by Miot et al (prevalence of 62.5% in cases).¹ Our study revealed a statistically significant association between AGA and CAD ($P < 0.001$, diagnostic odds ratio 3.273, 95% Confidence interval 1.77-6.05). In earlier similar studies AGA was not graded according to Norwood Hamilton classification and the earlier grades of AGA may not have been included.^{1,5} It was further demonstrated in our study that the prevalence of AGA was highest in cases with triple vessel disease and lowest in minor CAD. Our study was different from earlier studies because we compared the grades of AGA according to Norwood Hamilton classification.⁶ We also found that the grades of AGA with involvement of vertex are more important than just the mere presence of androgenetic alopecia in predicting the risk of CAD.

Recommendation

We recommend that in all the patients with androgenetic alopecia (grades III Vertex and above) should be evaluated for the presence of risk factors for coronary artery disease.

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