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Comparison of the Prevalence of Acute Coronary Syndrome in Male Patients with or Without Vertex Baldness

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Abstract

Background: The relation between the extent and progression of baldness and coronary heart disease is not totally clarified yet. Some study reveals that male patients with male pattern baldness are at higher risk of CVD than those without male pattern baldness. The aim of this study was to find the prevalence of Acute Coronary Syndrome in male patients with or without vertex baldness. **Material & Methods:** This cross-sectional observational study was conducted in the Department of cardiology, Mymensingh Medical College Hospital, Mymensingh from October 2014 to September 2015. A total 100 male patients with or without vertex baldness were included in this study from male patients with a first lack of acute coronary syndrome admitted in the coronary care unit (CCL) of MMCH within 24 hours of onset of symptoms. **Results:** Mean age was found 45.3±7.2 years in group A and 44.5±6.7 years in group B. The mean age difference was not significant (>0.05). STEMI and NSTEMI were higher in group A than group B on contrast UA was higher in group B than group A. The total mean BMI was observed 22.8±3.0 kg/m2. The mean difference was statistically insignificant in both groups (p=0.31). The mean waist circumference was observed 89.4±8.7 vas 84.5±8.4 cm in group A and group B respectively. The mean was higher in group A than group B with statistically significantly difference (p=0.005). Biochemical status of the study that the mean FBS, total cholesterol, triglyceride and HDL cholesterol level were statistically significant between two groups (p=0.01), but the mean difference of LDL cholesterol was not statistically significant between the two groups (p=0.20). **Conclusion:** The patients with vertex baldness or male pattern baldness are associated with more risk of CVD than without vertex baldness. Vertex baldness may be a marker for Acute Coronary Syndrome.

Keywords:- Acute Coronary Syndrome and vertex baldness.

INTRODUCTION

Male pattern baldness, also known as androgenetic alopecia (AGA) or male pattern baldness (MBP), is a condition that affects men starting in their third decade.[1,2] It has a major negative impact on one's quality of life, and its incidence in Asian males is likely larger than often assumed.[3,4] Because each follicle is at a different phase of the hair cycle, the thin

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remaining hairs in males with AGA tend to be of diverse lengths and diameters, therefore the existence of differences in hair length and texture is a distinctive aspect of this thinning condition.[5] Coronary artery disease (CAD) and prostatic hypertrophy have both been linked to AGA.[6,7] Cotton et al.[8] originally hypothesized that male pattern baldness may be a risk factor for cardiovascular disease in 1972, when they found a link between cardiovascular disease and hair loss. This polygenic syndrome manifests itself as various degrees of hair loss in the second or third decade. Some research has found a link between baldness and an increased risk of coronary artery disease (CAD) and associated risk factors.[9,10] Even the Framingham Heart Study, which is a famous worldwide cohort on cardiovascular problems, might provide evidence of a link between the degree of hair loss in adulthood and the risk of coronary artery disease.[11] This causality's pathophysiology is still unknown. High androgen levels in patients with baldness are now thought to predispose the vascular bed to atherosclerotic and thrombotic events.[12] More intriguingly, the type of baldness (vertex or frontal baldness) and its severity have been linked to the risk of coronary artery disease.[13] Alopecia has been linked to the development of coronary artery disease (CAD) in males in the past.[9,10,14] Lesko et al.[15] discovered that males with baldness near the top of the head had the highest risk of CHD in a recent case-control study. Subject self-report was used to adjust for risk variables in their analysis. Three other case-control studies that did not take CHD risk variables into account found no link.[16,17,18] Overall, these studies suggest that, at most, a small risk of CHD may be associated with baldness.[19] The prevalence of Acute Coronary Syndrome in male patients with vertex baldness is yet to study more. Thus, this current study is done to find the prevalence of Acute Coronary Syndrome in male patients with or without vertex baldness.

Objectives

To find the prevalence of Acute Coronary Syndrome in male patients with or without vertex baldness.

MATERIAL AND METHODS

This cross-sectional observational study was conducted in Department of cardiology, Mymensingh Medical College Hospital, Mymensingh from October 2014 to September 2015. A total 100 male patients with or without vertex baldness were taken from male patients with first lack of acute coronary syndrome admitted in coronary care unit (CCL) of MMCH within 24 hours of onset of symptoms who full fill the inclusion and exclusion criteria. All patients were divided into two groups which include Group A: 50 with male with vertex baldness and Group B : 50 without baldness. All patients were diagnosed by the Cardiology department of MMCH. Diagnosis of vertex baldness was based on clinical findings, such as early onset baldness, reduced diameter and density of air in the frontal area of vertex with greater density in the occipital area, and the presence of miniaturized hairs of different diameters. Diagnosis of ACS were done by history taking, clinical examination, ECG and by serum Troponin level. The findings were compared between two groups. The Fisher exact test was applied when the conditions for the Pearson X2 were not met.

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The means of quantitative variables were compared using the test. AP value ≤.05 was considered statistically significant. Statistical analyzes were performed using SPSS version 20.0

Inclusion Criteria:

- Male patients with age between 25 to 55 years and with or without vertex baldness with first attack of acute coronary syndrome admitted in CCU of MMCH within 24 hours of onset of symptoms.

Exclusion Criteria:

- Age < 25 years and > 55 years.
- Previous history of ACS.
- Hypothyroidism.
- Nephrotic syndrome.
- Chronic kidney disease.
- Receiving drugs for dyslipidemia.
- History of previous treatment for Baldness.
- Alopecia other than androgenic cause : Patients suffering from telogen effluvium, cicatrical alopecia, traction alopecia, seborrhic dermatitis etc.
- Patient on chemotherapy.

RESULTS

This cross-section observational study was done into eh CCU of MMCH from October 2014 to September 2015. A total 100 male patient with age between 25 to 55 years with first attack of ACS were divided in two groups ('Group A" 50 cases with vertex baldness and 'Group B' 50 cases without vertex baldness). Table I shows that mean age was found 45.3±7.2 years in group A and 44.5±6.7 years in group B. The mean age difference was not significant (>0.05). The table II depicts that STEMI and NSTEMI were higher in group A than group B on contrast UA was higher in group B than group A. STEMI patients were significantly higher in group A than group B (p=0.04). UA patients were also significantly higher in group B than group A (p=0.001). But in SNTEMI patients no statistical significant association were observed between the groups (p=0.52). Table III shows the antropometric measurement of the study patients. The total mean BMI was observed 22.8±3.0 kg/m2. The mean difference was statistically insignificant in both groups (p=0.31). The mean waist circumference was observed 89.4±8.7 vas 84.5±8.4 cm in group A and group B respectively. The mean was higher in group A than group B with statistically significantly difference (p=0.005). Table IV shows biochemical status of the study that the mean FBS, total cholesterol, triglyceride and HDL cholesterol level were statistically significant between two groups (p=0.01), but the mean difference of LDL cholesterol was not statistically significant between the two groups (p=0.20).

Table 1: Age distribution of the study population (=100)

Age in years	Group A(n=50) Number (%)	Group B (n=50) Number (%)	Total (n=100) Number (%)	P value
≤ 40	14 (28)	14 (28.0)	28 (28.0)	
41-45	16(32.0)	9(18.0)	25(25.0)	
46-50	12(24.0)	15(30.0)	27(27.0)	

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51-55	8(16.0)	12(24.0)	20(20.0)	
Mean± SD (Range)	45.3±7.2 (28-55)	44.5±6.7 (28-54)	44.9±6.9 (28-55)	0.54ns

Group A = ACS patients with vertex baldness
Group B = ACS patients without vertex baldness
ns = not significant (n>0.05)
P value reached from unpaired t-test

Table 2: Distribution of Study population by ACS type (n=100)

ACS types	**Group A (n=50)**		**Group B (n=50)**		**Total (n=100)**		**p value**
	Number	**%**	**Number**	**%**	**Number**	**%**	
STEMI	32	64.0	20	40.0	52	52.0	0.04s
UA	6	12.0	20	40.0	26	26.0	0.001s
NSTEMI	12	24.0	10	20.0	22	22.0	0.52ns

Group A = ACS patients with vertex baldness
Group B = ACS patients without vertex baldness
p value reached from Pearson's Chi Square test.
NS = Not significant (p>0.05)
s=Significant

Table 3: Antropometric measurement of the study patients (n=100)

Body Mass Index (kg/m2)	**Group A(n=50)**	**Group B (n=50)**	**P value**
	Number (%)	**Number (%)**	
Underweight (<118.5)	2 (4)	1 (2)	
Normal weight (18.5-24.9)	34 (68)	44 (88)	
Over weight (25-29.9)	12 (24)	3 (6)	
Obese (≥30)	2 (4)	2 (4)	
Mean ± SD	23.1±3.2	22.4±2.7	0.31ns
Waist circumference in cm	89.4±8.7	84.5±8.4	0.005s

Group A = ACS patients with vertex baldness
Group B = ACS patients without vertex baldness
ns = Not significant
p value reached from unpaired t-test.

Table 4: Biochemical status of the study patients (n=100)

Biochemical parameters	**Group A(n=50)**	**Group B (n=50)**	**p value**
	Mean ± SD	**Mean ± SD**	
FBS (mmol/L)	8.9±4.6	5.6±2.1	0.001s
Total Cholesterol (mg/dl)	192.5±42.7	169.2±24.0	0.001s
Triglyceride (mg/dl)	234.6±91.9	166.7±43.4	0.001s
LDL cholesterol (mg/dl)	100.6±36.0	92.9±22.6	0.20ns
HDL cholesterol (mg/dl)	34±3.4	39.8±5.8	0.01ns

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Group A = ACS patients with vertex baldness
Group B = ACS patients without vertex baldness
P= Value reached from unpaired t-test
S= Significant (p<0.05), NS = Not Significant (p>0.05)

DISCUSSION

This cross sectional study was conducted in the Department of Cardiology, Mymenisngh Medical College Hospital, Mymensingh for a period from October 2014 to September 2015. Male patients of 25 to 55 years of age with and without vertex baldness with first attack of acute coronary syndrome admitted in coronary care unit (CCU) of MMCH within 24 hours of onset of symptoms were studied. A total of 100 patients were included as study population. Then the study population was divided into two groups, each group consisted of 50 patients. ACS in patients with vertex baldness as group A and ACS in patients without vertex baldness as Group B. Regarding age distribution of the study population the mean age was found 45.3±7.2 years in group A and 44.5±6.4 years in group B patients. The mean age difference was not significant (p=0.54) between group A and group B patients. The mean age of the total study patients was observed 44.9±6.9 years. In study of Ellis et al.[20] showed mean age was 54.0±10.0 years in Vertex group. Similar age group was found another Arias-Santiago et al.[21] study they showed the mean (SD) age for both groups was 43(±8.8) years in the controls and 45.71(±10.6) years. In present study showed ACS types demonstrate that 64% of patients in group A was STEMI, 12% of patients were UA and 24% of patients NSTEMI respectively. In group B, 40% of the patients were STEMI and UA and 20% NSTEMI. STEMI and NSTEMI were higher in group A than group B on contrast UA was higher in group B than group A. STEMI patients were significantly higher in group A than group B (p=0.001). In current study, showed BMI was found that 34 patients (68%) in group –A and 44 patients (88%) in group – B being normal weight respectively. Overweight had 12 (24%) and 3 (6%) in group A and group B patients respectively. Obese were found almost identical (4%) in group A and group B respectively. The total mean BMI was observed 22.8±3.0 kg/m2. The mean difference was statistically insignificant in both groups (p=0.31). The mean waist circumference was observed 89.4±8.7 vs 84.5±8.4 Cardiomyopathy in group A and group B respectively. The mean was higher in group A than group B with statistically significantly difference (p=0.005). In study of Sharma et al.[22] showed the differences in BMI and WHR, in cases and controls, were found to be statistically insignificant. In present study showed the mean FBS level was 8.9±4.6 mmol/L in group A and 5.6±2.1 mmol/L in group B and the mean difference was statistically significant between the two groups (p=0.001). The mean total cholesterol level was 192.5±42.7 mg/dl in group A and 169.2±24.1 mg/dl in group B. The mean difference of total cholesterol between the two groups was statistically significant (p=0.001). The mean triglyceride was 234.6±91.9 mg/dl in group A and 166.7±43.4 mg/dl in group B. Mean difference of triglyceride level was statistically significant among the two groups (p=0.001).

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The mean LDL cholesterol level was 100.6±36.0 mg/dl in group A and 92.9±22.6 mg/dl in group B and the mean difference was not statistically significant between the two groups in terms of LDL cholesterol (p=0.20). The mean HDL cholesterol level was 34±3.4 mg/dl in group A and 39.8±5.8 mg/dl in group B and the mean difference of HDL cholesterol between the two groups was statistically significant (p=0.01). There was a statistically significant difference in LDL, HDL, VLDL, and TG of cases and controls which have also been reported previously.[23] Elevated levels of LDL are thought to be a key determinant of CAD risk and that level of HDL is inversely related to risk. The protective effect of HDL is at least as strong as the atherogenic effect of LDL and is independent of lipids and other risk factors. Every change of 10 mg/dl in the HDL is associated with a 50% change in risk.[24] Sasmaz et al.[23] reported that men with vertex-type androgenetic alopecia (n = 41) had higher levels of serum lipoprotein (a) and triglyceride when compared with the group with normal hair status (n=36). In Sari et al.[25] study, the lipid parameters were comparable between bald and non-bald subjects regardless of the severity of baldness. Interestingly. Of the lipid parameters only triglyceride level was higher in subjects. In the study of Lotufo PA et al.[14] and Herrera CR et al,[11] vertex baldness or rapid hair loss is proved to be a marker for coronary heart disease.

Limitations of the study

Although the results of this study support the hypothesis, yet it has got some limitations. The sample size was small. hsCRP, marker of inflammation and other emerging risk factors of ACS were not measured. Serum androgen level was not measured.

CONCLUSIONS

The patients with vertex baldness or male pattern baldness are associated with more risk of CVD than without vertex baldness. Vertex baldness may be a marker for Acute Coronary Syndrome.

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