General Medicine

A STUDY ON ASSOCIATION OF MICROALBUMINURIA WITH ISCHAEMIC HEART DISEASE IN NON-DIABETIC SUBJECTS

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ABSTRACT
BACKGROUND: Ischemic heart disease (IHD) has multiple risk factors and diabetes is one among them. Microalbuminuria is a well accepted marker for micro and macrovascular damage in patients with diabetes mellitus. There is growing evidence that microalbuminuria is an important indicator for development of IHD and its association has been established in diabetic subjects. This study was conducted to establish association between microalbuminuria and ischemic heart disease in NON-diabetic subjects. **AIMS AND OBJECTIVES:**1. To estimate the presence of microalbuminuria in non-diabetic patients with Ischemic Heart Disease. 2. To determine whether an association exists between microalbuminuria and Ischemic heart disease in non diabetic subjects. **METHODS:** It is a cross-sectional case-control study done in Katuri Medical College & Hospital over a period of 13 months between june 2018 to june 2019.Non-diabetic patients undergoing evaluation for IHD were divided into cases and controls based on presence or absence of IHD, respectively. Fifty cases and fifty controls were included and matched by age, sex, smoking habit, hypertension and body-mass index. Fasting blood glucose, fasting lipid profile and urine albumin was recorded for all patients. Prevalence of microalbuminuria in cases is compared to that of controls using chi-square test. **RESULTS:**Prevalence of microalbuminuria is significantly higher in cases (76%) compared to controls (18%) (p<0.00001). **CONCLUSION:**There is a significant association between microalbuminuria and IHD. This association is independent of presence of diabetes.

KEYWORDS : Microalbuminuria, Ischemic Heart Disease, Non Diabetics.

INTRODUCTION

Cardiovascular disease accounts for approximately 12 million deaths annually and is commonest cause of death gIobally. In the past three decades there is decline in the incidence and prevalence of ischemic Heart Disease (IHD) in the western world, however this is becoming epidemic in developing world including India.[1]

Framingham study, other clinical studies have identified independent risk factors for IHD among which age, male gender, family history, smoking, diabetes, hypertension, hypercholesterolemia, hypertriglyceridemia and low HDL cholesterol are considered as classical risk factors.

The interest in improving cardiovascular risk assessment, resulting from a better understanding of the pathogenesis of atherosclerosis and identification of new targets for anti-atherosclerotic drug therapy has stimulated the search for novel risk factors. One such novel risk factor is microalbuminuria.

Microalbuminuria is a well-accepted marker for micro and macrovascular damage in patients with diabetes mellitus .However more and more evidence is accumulating that microalbuminuria is an important cardiovascular risk factor even in the general population.

The inclusion of microalbuminuria which is an easy to obtain indicator along with the classical risk factors may improve risk stratification. The present study was conducted to define the prevalence of microalbuminuria in non-diabetic Ischemic Heart Disease patients.

AIMS AND OBJECTIVES

1. To estimate the presence of microalbuminuria in non-diabetic patients with Ischemic Heart Disease.
2. To determine whether an association exists between microalbuminuria and Ischemic heart disease in non diabetic subjects.

STUDY DESIGN: It is a case control study done over a period of 13 months.

STUDY SIZE: Non diabetic individuals undergoing evaluation for IHD were divided into cases and controls based on presence or absence of IHD respectively. 50 cases and 50 controls presenting to katuri medical college and hospital were studied .Cases and controls were matched by age, gender, smoking habit, hypertension, and body mass index.

STATISTICAL ANALYSIS: People with microalbuminuria among cases and controls is calculated using chi-square test.

INCLUSION CRITERIA: The diagnosis of Ischemic Heart Disease was based on the 12 lead ECG and exercise stress testing, cardiac enzyme estimation .

EXCLUSION CRITERIA:
1. Diabetic patients.
2. Congestive cardiac failure patients.
3. Urine showing- macroalbuminuria (dipstick positive albuminuria) 10 RBCs or 10 leukocytes per high power field.
4. Female patients with vaginal discharge.

METHOD OF COLLECTION OF DATA: This was a hospital based retrospective study. Data collection was by clinical history, examination and routine investigations like hemoglobin, blood count, urine examination, blood sugar, blood urea, serum creatinine, serum electrolytes, fasting lipid profile, cardiac enzymes, echocardiography. The patients were given a container for collection of urine over 24 hours which was then sent for estimation of microalbuminuria level by immunoturbidimetry method. The result was reported as x mg/day of albumin.

RESULTS
Table 1: cases and controls were matched for age, gender, BMI, hypertension, smoking habit

Characteristics	Cases(N=50)	Controls(N=50)	p value
Age(years)	54.08	53.96	0.95
Gender(M:F)	27:23	26:24	0.84
Smoking history	7	7	1
Hypertension	23	22	0.84
BMI(kg/m2)	24	23.96	0.36
Mean fasting blood glucose(mg/dl)	90	87	0.15

Table 2: Comparision of presence of microalbuminuria among cases &controls

	IHD present	IHD absent	total	p value
Microalbuminuria present	38(76%)	9(18%)	47	<0.001
Microalbuminuria Absent	12(24%)	41(82%)	53	
	50	50	100	

Out of 50 cases of IHD patients, 38(76%) were found to have microalbuminuria. Out of 50 controls, 9 (18%) people were found to have microalbuminuria. Percentage of people with microalbuminuria is significantly higher in cases compared to that of contols(p value <0.001)

DISCUSSION

Ischemic Heart Disease

IHD is a condition in which there is an inadequate supply of blood and oxygen to a portion of myocardium, which occurs due to an imbalance between oxygen supply and demand. The most common cause of myocardial ischemia is obstructive atherosclerotic disease of epicardial coronary arteries.

Microalbuminuria has been traditionally defined as a urinary albumin excretion rate greater than 30 - 300mg/day or 20-200µg/min or a urine albumin creatinine ratio greater than 30 mg/g in an early morning sample.[2,3] The close association between microalbuminuria and coronary artery disease is readily explained by the shared pathogenetic mechanisms of endothelial dysfunction, systemic inflammation and vascular injury.[4]

Agrawal et.al reported a significantly higher prevalence of coronary artery disease (CAD), stroke, and peripheral arterial disease among people with microalbuminuria.[5] de Bruyne MC et.al have shown that ECG can be used to determine the presence of IHD in a population at large. [6]

The PREVEND study showed that in a multivariate model adjusted for established cardiovascular risk factors, microalbuminuria was independently associated with infarct pattern (7.1%) [7] Micro albuminuria was detected in 14.8% of those without Diabetes mellitus at baseline in a cohort of HOPE Study.[8]

F Aziz et al in their study on micro albuminuria as predictor of severity of coronary artery disease in non-diabetic patients found the prevalence of micro albuminuria to be 56.5% in CAD patients.[9] Rao BS et al in their study found the prevalence of micro albuminuria among CAD patients without diabetes to be 88.3% and mean micro albumin level was 56.9 ± 30.4.[10] Tab sum N et al in their study on micro albuminuria in non-diabetic CAD found the prevalence of micro albuminuria to be 60%.[11]

CONCLUSION

The occurrence of Microalbuminuria in patients with IHD is significantly higher than that in people without IHD among non-diabetic subjects. Microalbuminuria is thus positively associated with ischemic heart disease in non diabetic patients. It may be considered as additional risk factor for ischemic heart disease.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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