URINE ALBUMIN EXCRETION IN NON-DIABETIC MYOCARDIAL INFARCTION PATIENTS

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Abstract- Unfavorable prognosis associated with myocardial infarction shows emphasized the importance of evaluation of risk factors in patients with acute myocardial infarction; despite recorded treatment successes in the last decade. It is reported in population studies that an increased risk of cardiac morbidity is associated with Microalbuminuria. The objective of the study was to determine the association of urine albumin excretion rate values in non-diabetic Myocardial Infarction patients. This observational study was conducted in the Department of General Medicine and Cardiology at the National Institute of Medical Sciences and Research, Jaipur between 1st May 2023 to 28th February 2023. All non-diabetic Myocardial infarction patients of age more than 18 years were included after written consent.Among 50 patients, males were 40 (80%) and females were 10 (20%), and the mean age+/- S.D. was 64+/- 16.16. 84% had a smoking history. Prevalence of microalbuminuria was 60%. Findings revealed that there is a positive correlation between urine microalbumin and IHD and the changes in urine microalbumin can be better explained**.** Urine albumin excretion values had a strong association with myocardial infarction patients and in general it could be applied as a risk factor for cardiovascular diseases in non-diabetic patients.

Keywords: urine albumin excretion, non-diabetic patients, myocardial infarction

INTRODUCTION:
Unfavorable prognosis associated with myocardial infarction shows emphasized the importance of evaluation of risk factors in patients with acute myocardial infarction; despite recorded treatment successes in the last decade.
Microalbuminuria is the early predictor of death and morbidity in patients suffering from diabetes and hypertension which confirms the involvement of albuminuria as a risk factor for deaths due to heart diseases in the future, which is independent of hypertension and diabetes mellitus. [1]
Microalbuminuria is defined as the excretion of albumin in urine; 30-300mg/day. [2].
It is reported in population studies that an increased risk of cardiac morbidity is associated with Microalbuminuria. Studies by previous researchers concluded the independent role of

microalbuminuria and its association with cardiovascular morbidity and mortality in patients with diabetes and hypertension. (3-7)

It is perhaps proper to remark that few studies have been conducted to evaluate microalbuminuria in the non-diabetic, non-hypertensive patients, especially in India.

With this background, this study was conducted to find if microalbuminuria is associated with acute myocardial infarction even in non-diabetic patients. The objective of the study was to determine the association of urine albumin excretion rate values in non-diabetic Myocardial Infarction patients.

MATERIALS & METHODS:

Study design & setting: This observational study was conducted in the Cardiology unit and Department of General Medicine at the National Institute of Medical Sciences and Research, Jaipur between 1st May 2023 to 28th February 2023.

Study population: All non-diabetic myocardial infarction patients of age more than 18 years admitted to the cardiology unit were included after written consent.

Exclusion criteria:

Patients with Myocardial infarction following surgery, major trauma, diabetes mellitus, hypertension (BP>140/90 mm Hg) any systemic infection, urinary tract infection, inflammatory conditions like rheumatoid arthritis and nephropathy (serum creatinine >1 .6mg/dl) were excluded from the study.

Methodology:

Microalbuminurea was determined by lab tests. The random mid stream urine samples (10 ml), were collected in sterile containers without preservatives and assayed for microalbumin. Random UACR samples of patients along with ECG ,2DECHO and Coronary Angiography findings were involved in study wherever possible and was performed.

Data analysis:

Data analysis was performed using SPSS Statistics version 22.0 (Chicago IL, USA). Continuous variables were expressed as mean ± standard deviation (SD) if normally distributed and as median with interquartile range if not. Independent samples t-test or Mann-Whitney U-test were employed to compare means or medians of variables with (former) or without (latter) a normal distribution. Binomial logistic regression was performed to determine the independent association of variables with the presence of IHD. P values less than 0.05 were considered to indicate statistical significance. Confidence intervals were set to 95%.

RESULTS:

A total of 50 patients were included in the study and baseline characteristics included age, sex, prior history of hypertension, smoking habit, and mean blood pressure.

Males were 40 (80%) and females were 10 (20%), and most participants were in the age group of 61-70 years, 20 (40%) ,followed by 51-60 years 16(32%). The mean age of the study population was mean age+/- S.D. was 64+/- 16.16. 42(84%) had a smoking history. [Table1, Table2]

The present study has estimated biochemical parameters like Mean fasting blood glucose or random blood glucose, Urine microalbumin, and Serum Creatinine as well. [Table 3]

Table 1: Distribution of study subjects according to Age

Age group (in years)	Frequency (n=50)	Percent (%)
30-40	1	2%
41-50	12	24%
51-60	17	34%
61-70	20	40%

Table 2: Distribution of study subjects according to Gender

Gender	Frequency (n = 50)	Percent (%)
Male	40	80%
Female	10	20%

Table 3: Distribution of biochemical parameters

Biochemical parameters	(Mean +/- SD)
Mean fasting blood glucose (mg/dl)	107.3±13.8
Urine microalbumin	15.95±8.70
Serum Creatinine	1.07±0.45

The prevalence of microalbuminuria was 60% (value 30-300mg/day) and (P = 0.015).Out of 50 patients included in study, 26 were anterior wall myocardial infarction, 4 non ST elevation myocardial infarction, and rest were 20 patients were inferior wall myocardial infarction.

DISCUSSION:
In our study, urine microalbumin was found a strong association with IHD, even within the non-diabetic population. A brief comparison of our results with those of other available studies lends further support to this contention.

For instance, a cross-sectional study conducted in Pakistan involving 100 non-diabetic individuals with IHD found a prevalence of 37% for microalbuminuria utilizing the conventional cut-off value of 30 mg/g. [8]

Yet another study from Pakistan in non-diabetic individuals with angiographically proven coronary artery disease found significantly higher values of urine microalbumin in patients with IHD as compared to age- and sex-matched controls.[9] Interestingly, this study yielded a mean urine microalbumin value of 36.58 mg/g in cases with IHD, extremely close to the conventional cut-off value of 30 mg/g.

This finding is congruent with our own study that a lower cut-off value might be more appropriate for non-diabetic patients relative to diabetics, possibly due to the contributory impact of diabetic nephropathy on microalbuminuria. Arnlov et al. also questioned the validity of the conventional cut-off value and also demonstrated the robustness of urine microalbumin as a biomarker for cardiovascular risk regardless of pretest probability.[10]

CONCLUSIONS:
Urine albumin excretion values had a strong association with myocardial infarction patients and in general it could be applied as a risk factor for cardiovascular diseases in non-diabetic patients. It can be done at a low-cost setting which can be used as a non-invasive technique to assess the cardiovascular disease risk factor.

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