VOLUME-8, ISSUE-11, NOVEMBER-2019 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

General Medicine

STUDY OF THE PREVALENCE OF MICROALBUMINURIA IN PATIENTS OF ESSENTIAL HYPERTENSION AND ITS CORRELATION WITH THE SEVERITY OF HYPERTENSION AND LEFT VENTRICULAR HYPERTROPHY

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ABSTRACT

Objective: To detect the prevalence of microalbuminuria in 100 hypertensive patients and the its association with LVH(left ventricular hypertrophy) and lipid profile

Methods: we performed a prospective analysis study of 100 patients visiting Balaji medical college and hospital, Chennai.Inclusion criteria :Hypertensive patients with BP>140/90 mmhg and age more than 30 years.Exclusion criteria:Patients with renal disease,T2DM,Ischemic heart disease,CVA,pregnancy.microalbuminuria was measured using the dip stick test ,defined as having UAE in the range of 30-300mg/24h

Results:100 patients were involved in the study fulfilling the criteria.30 out of 100 patients had microalbuminuria. 21 males out of 45 were found to have microalbuminuria and 9 out of 25 females were found to have Microalbuminuria.Serum levels of cholesterol,Triglycerides,and uric acid in patients with microalbuminuria were higher than the levels in those with normal UAE(urine albumin excretion),and HDL(high density lipid) levels in patients with MA(microalbuminuria)were lower than levels in patient with normal UAE.On performing ECHO in the study patients ,LVH is noted to be seen in 29 out of 100 patients ,out of which 22 (73.3%) of the patients had microalbuminuria,and in 71 patients without LVH ,8 had microalbuminuria.Study shows a high statistical significant correlation between Microalbuminuria and Left ventricular hypertrophy(p value <0.01).

Conclusion: Hypertension is one of the most common global diseases causing significant mortality and morbidity.Therefore proper screening and assessment is required to identify patients at risk. Microalbuminuria is a cause for generalized atherosclerosis and increased renal endothelial dysfuntion,it positively correlates with the end organ damage such as left ventricular hypertrophy .Hence it serves as a marker of cardiovascular risk along with other parameters such as BP,lipid profile and smoking. So, screening for microalbuminuria must be considered to be part of initial work up in every hypertensive patient.

KEYWORDS :

INTRODUCTION

Hypertension is a disorder of circulatory regulation.Sustained hypertension causes accelerated atherosclerosis with coronary artery disease,heart failure,stroke and renal failure.If untreated,approximately 50 % of patients develop heart disease,33% develop stroke ,10-15 % develop renal failure.

Microalbuminuria(MA) is defined as urine albumin excretion(UAE) in the range of 30-300 mg/24h,is seen in patients with established hypertension and is a predictor of higher risk of cardiovasculars and renal dysfuntion.In 1976,Parving et al highlighted the relation between microalbuminuria and severity of hypertension.Leoncini G,studied association of microalbuminuria in 345 patients of asymptomatic hypertension and presence of subclinical organ damage.Detection of UAE could be the best index of an increased global cardiovascular risk in a given patient

Hypertension affects the heart by increasing afterload causing the LVH (left ventricular hypertrophy)and stiffening of the left ventricle ultimately leading to increase in the left ventricular mass.LVH is the most common abnormality in patients with hypertension and significant marker of subclinical cardiovascular disease.Positive correlation between MA and LVH has been documented in few studies,one such by Hitha et al in south india studied relationship between MA and target organ damage in hypertension.Hypertension accelerates atherosclerosis and also independently causes vascular damage affecting large and small vessels.This study was undertaken to determine the prevalence of MA in hypertension and to examine its correlation with severity of hypertension,LVH.

Materials and methods

Study population

This study is conducted among 100 Hypertensive(essential hypertension)patients Attending general medicine department outpatient clinic and ward at Sree Balaji Medical College and Hospital,Chennai

Collabarative Deparments:

Department of Cardiology,Radiology

Study period

July 2018 to August 2019

Ethical concern

The project was approved by the ethical comitee

Study type

Prospective analysis study

Sample size

100 cases

Inclusion Criteria

1. Hypertensive patients(Both male and female) with BP>140/90mmhg
2. Age more than 30 years

Exclusion Criteria

1. Patients with renal disease
2. Diabetes mellitus
3. Chronic heart failure
4. Ischemic Heart Disease
5. Cerbero vascular disease
6. Patients with urinary tract infections
7. Pregnancy
8. Patients with obstructive uropathy

Conflict of Interest :NIL
Financial support :NIL

METHODOLOGY

Patients who were admitted and attending the general medicine department who fulfilled the inclusion criteria were included in the study.Patients fulfilling the exclusion criteria were excluded from the study.Investigations were sent and Corellations were made accordingly

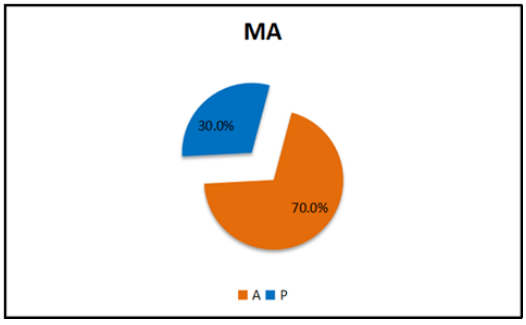
Labaratory investigations

1. Clinial blood pressure was recorded using sphygmoma nometer with standard size cuff on 2 to 3 occasions atleast to 10 min apart.
2. Microalbuminuria estimation was done using Immuno turbidemetric two point assay When a urine specimen is mixed with the reagents,albumin in the specimen combines with the anti human albumin antibody in the reagent to yield an insoluble aggregate that causes increased turbidity in the solution.The absorbance of the reaction turbidity is proportional to the concentration of albumin in the specimen ,and can be measured optically using spectrophotometer.
3. Echocardiography-Transthoracic echocardiogram was done to detect the presence of left ventricular Hypertrophy
4. ECG
5. Fasting lipid profile

RESULTS

Microalbuminuria	Frequency	Percent
A	70	70.0
P	30	30
TOTAL	100	100

FREQUENCY OF MA IN 100 ESSENTIAL HYPERTENSIVE PATIENTS IS FOUND TO BE 30%

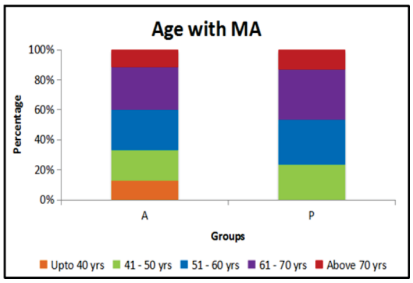


FREQUENCY OF MICROALBUMINURIA IN 100 HYPERTENSIVE PATIENTS-30%

RELATION OF MICROALBUMINURIA WITH AGE

AGE	COUNT %	MA		TOTAL
		A	P	
UPTO 40 YEARS	COUNT %	9 12.9%	0 0.0%	9 9.0%
41-50 YEARS	COUNT %	14 20.0%	7 23.3%	21 21%
51-60 YEARS	COUNT %	19 27.1%	9 30.0%	28 28.0%
61-70 YEARS	COUNT %	20 28.6%	10 33.3%	30 30.0%
ABOVE 70 YEARS	COUNT %	8 11.4%	4 13.3%	12 12%
TOTAL	COUNT %	70 100.0%	30 100.0%	100 100.0%

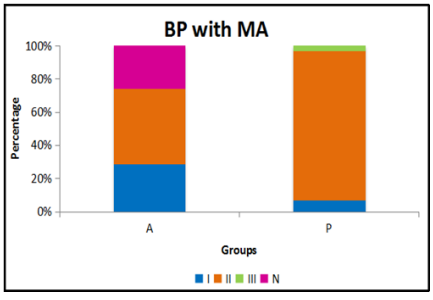
Mean age of the patients is around 60 with MA and without MA is around 45.Thus,age showed a significant positive correlation with MA in the study.patients with higher age group 60 and above patients have increased prevalence of miccroalbuminuria.Studies support this characteristic that MA prevalence increases with age.In our study we found MA to be present in 66% of the males and some support more prevalence in males but some studies do not support this correlation.As such,therefore sex of the patient doesn't correlate with increased prevalence of MA(microalb uminuria).



BP	COUNT %	MA		TOTAL
		A	P	
I	COUNT %	20 28.6%	2 6.7%	22 22.0%
II	COUNT %	32 45.7%	27 90.0%	59 59.0%
III	COUNT %	0 0.0%	1 3.3%	1 1.0%
N	COUNT %	18 25.7%	0 0.0%	18 18.0%
TOTAL	COUNT %	70 100.0%	30 100.0%	100 100.0%

Correlation between MA and severity of Hypertension

COMPARISION BETWEEN MICROALBUMINURIA AND HYPERTENSIVE PATIENTS

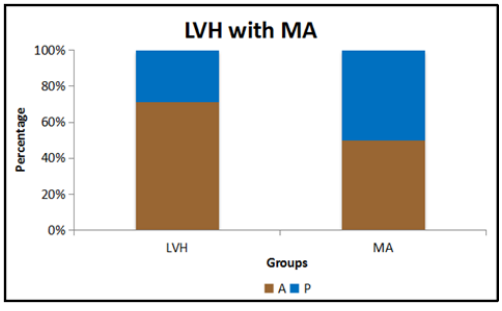


27 out of 59 patients with stage II hypertension have microalbuminuria and 2 out of 22 patients with stage 1 hypertension have microalbuminuria .p value is highly significant at <0.01 level

Correlation between MA and LVH

LVH	COUNT %	MA		TOTAL
		A	P	
A	COUNT %	63 90.0%	8 26.7%	71 71.0%
P	COUNT %	7 10.0%	22 73.3%	29 29.0%
TOTAL	COUNT %	70 100.0%	30 100.0%	100 100.0%

P VALUE <0.01 LEVEL ,HIGHLY SIGNIFICANT



LVH IS NOTED TO BE SEEN IN 29 OUT OF THE 100 PATIENTS 22 OF THE 29 PATIENTS I.E 73.3% OF THE PATIENTS HAD MICROALBUMINURIA

DISCUSSION

Hypertension is one of the most global diseases causing burden worldwide and is one of the most common cause of morbidity and mortality.Along with diabetes,it is the most common disease affecting the end organs of the body.hypertension affects almost every organ in the body.In order to detect the end organ damage,patients usually will not present with symptoms unless severely affected.Mostly they remain asymptomatic .so to know how can we detect the damage early.so that we can prevent the complications of hypertension.100 patients with essential hypertension presenting to our hospital were looked for age,sex,duration of hypertension ,ecg lipid profile and were screened for the end organ damages mainly LVH correlating with the respective department.Patients were included based on the inclusive and exclusion criteria as described above In present study,it was observed that out of 100 cases with hypertension,LVH was noted in 29 patients ,and absent in 71 cases (8 had microalbuminuria-26.7%).Out of the 29 cases,22 patients (73.3.%) had MA with a p value of <0.01 which is highly statistically significant.

Hence this study shows a positive correlation between the microalbuminuria and prevalence of LVH(p value <0.01). Hypertensive patients with MA were 11 times more likely to develop LVH than patients with normal UAE.

Several studies showed the similar findings. Tsiousfus et al in 2002 in their study observed that 21 % of the 250 had LVH.Monofred et al in 2003 (Life study) observed a higher prevalence of MA 30% vs 9 % in patients with LVH with p <0.001.Pontremouli in 2002 observed that patients with MA were 20 times more likely to have both LVH with p <0.01 in a study conducted in 280 patients .Stefanadis made a similar observation that LVH was higher in MA patients compared with normoalbuminuria subjects. Vishwanath and Manohar S et al conducted a study and observed the frequency of MA is higher in hypertensive patients with LVH(72%) with p <0.01.Stalin Bj, conducted a study and found hypertensives with MA were having higher prevalence of hypertensive LVH with p <0.003. Brantsma et al observed MA to be a sensitive marker for detecting onset of cardiovascular risk Factors such as hypertension and type II diabetes.The LIFE study showed that more the angiotensin-II antagonist losartan lowers albuminuria the more the patient was cardio protected. In this regard, monitoring of UAE and LVH rate has ultimately been useful as surrogate for efficiency of blood pressure control and cardiovascular risk reduction.

CONCLUSIONS

Our study demonstrated the presence of MA(microalbu minuria) in a significant number of newly detected and untreated patients of essential hypertension. Furthermore, MA had a statistically significant relationship with LVHthese findings imply an underlying vascular relationship between MA and LVH. Therefore,screening of all recently diagnosed patients of essential hypertension for MA may be a reasonable strategy to predict the presence of ongoing vascular damage, and future risk for cardiovascular events

Financial support:NIL
Conflicts of intrest:There are no conflicts of intrest

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