



STUDY OF THE CORRELATION BETWEEN MICROALBUMINURIA AND RETINOPATHY ,LIPID PROFILE IN PATIENTS OF ESSENTIAL HYPERTENSION

Dr.Papaiah Nirmal Pudota

M.B.B.S,(M.D)

ABSTRACT

Objective: To detect the Correlation of microalbuminuria in 100 hypertensive patients with Retinopathy 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 Fundus examination in the study patients ,13 out of 22 patients with grade II retinopathy had microalbuminuria and 8 out of 13 with stage III retinopathy had microalbuminuria ,5 out of 9 with stage IV had MA,and only 2 out of 43 patients with normal fundus had MA.So,Stage II,III,IVof retinopathy patients had more frequency of microalbuminuria compared to patients with normal fundus. Therefore screening of fundus is a must for patients having MA,so if we could detect MA early,end organ damage could be prevented by appropriate clinical management

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.Patients with Microalbuminuria have increased chances of developing retinopathy compared to those without.So, screening for microalbuminuria must be considered to be part of initial work up in every hypertensive patient and those with MA must be screened regularly for fundus along with appropriate clinical management.

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 cardiovascular and renal dysfunction.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

Laboratory investigations

1. Clinical blood pressure was recorded using sphygmo manometer with standard size cuff on 2 to 3 occasions atleast to 10 min apart.
2. Microalbuminuria estimation was done using Immuno turbidimetric two point assay

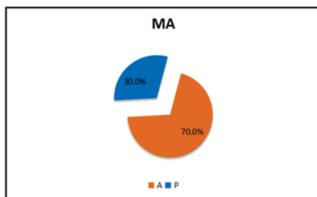
When a urine specimen is mixed with the reagents,albumin in the specimen combines with the anti human albumin antibody in the reagent to yield an insoluble aggregate that causes increased turbidity in the solution.The absorbance of the reaction turbidity is proportional to the concentration of albumin in the specimen ,and can be measured optically using spectrophotometer.

3. Fasting lipid profile
4. Fundus examination by ophthalmoscope

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%

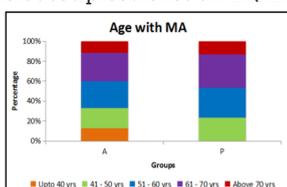


FREQUENCY OF MICROALBUMINURIA IN 100 HYPERTENSIVE PATIENTS-30%

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% | |

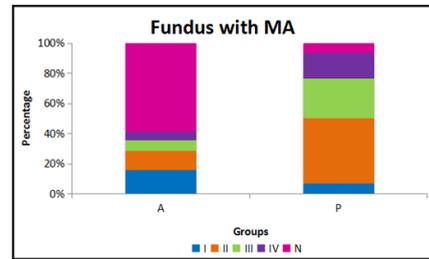
Mean age of the patients is around 60 with MA and without MA is around 45.Thus,age showed a significant positive correlation with MA in the study.patients with higher age group 60 and above patients have increased prevalence of microalbuminuria.Studies support this characteristic that MA prevalence increases 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(microalbuminuria)



FUNDUS CHANGES AND MICROALBUMINURIA

| FUNDUS | COUNT % | MA | | TOTAL |
|--------|----------------------------|--------------|---------------|-------|
| | | A | P | |
| I | COUNT % 11 15.7% | 2 6.7% | 13 13.0% | |
| II | COUNT % 9 12.9% | 13 43.3% | 22 22.0% | |
| III | COUNT % 5 7.1% | 8 26.7% | 13 13.0% | |
| IV | COUNT % 4 5.7% | 5 16.7% | 9 9.0% | |
| N | COUNT % 41 58.6% | 2 6.7% | 43 43.0% | |
| TOTAL | COUNT % 70 100.0% | 30 100.0% | 100 100.0% | |

P VALUE AT 0.0005 .HIGHLY SIGNIFICANT



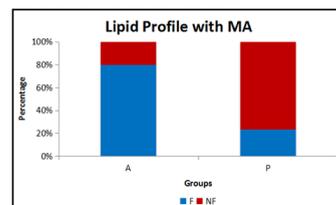
TOTALLY OUT OF THE 30 PATIENTS WITH MICROALBUMINURIA 13 BELONG TO STAGE II RETINOPATHY AND 8 BELONG TO STAGE III RETINOPATHY AND 5 TO STAGE IV RETINOPATHY.ONLY 4,2 FROM STAGE I(OUT OF 13) AND 2 FROM NORMAL FUNDUS (OUT OF 43) HAVE MICROALBUMINURIA

Correlation between MA and lipid profile

COMPARISION BETWEEN LIPID PROFILE AND MA

| LIPID POFILE | COUNT % | MA | | TOTAL |
|--------------|----------------------------|--------------|---------------|-------|
| | | A | P | |
| F | COUNT % 56 80.0% | 7 23.3% | 63 63.0% | |
| NF | COUNT % 14 20.0% | 7 26.7% | 37 37.0% | |
| TOTAL | COUNT % 70 100.0% | 30 100.0% | 100 100.0% | |

P VALUE 0.0005 HIGHLY SIGNIFICANT



F-Favourable lipid profile
NF-Not favourable lipid profile

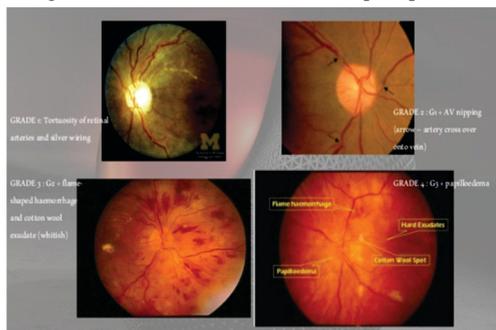
DISCUSSION

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 damage and this study focused on fundus examination, 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, Retinopathy noted in 57 patients, and normal in 43 patients. 13 patients had stage I retinopathy, 22 with stage II, 13 with stage III, 9 with stage IV. 13 of 22 patients with stage II had MA, 5 of 9 with stage IV had MA, 8 of 13 with stage III had MA, 2 of 43 patients with normal fundus had MA. p value is <0.01 which is highly significant.

Hence this study shows a positive correlation between the microalbuminuria and prevalence of RETINOPATHY (p value <0.01). Hypertensive patients with MA were 10 times more likely to develop RETINOPATHY than patients with normal UAE.

Keith wegner baker classification of retinopathy



Severe retinopathy can cause visual field defects and blindness

CONCLUSIONS

Our study demonstrated the presence of MA (microalbuminuria) in a significant number of newly detected and untreated patients of essential hypertension. Furthermore, MA had a statistically significant relationship with Retinopathy. These findings imply an underlying vascular relationship between MA and Retinopathy. 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 retinal damage.

Financial support: NIL

Conflicts of interest: There are no conflicts of interest

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