



Importance of Microalbuminuria in Essential Hypertension

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Abstract

Background: Today, hypertension is the most critical public health problem. If left untreated, it increases coronary stroke events, heart failure, and renal failure¹. Microalbuminuria in cases with established essential hypertension is a predictor of a higher risk of cardiovascular and renal dysfunction². Early detection of microalbuminuria will help us to control the development of complications of hypertension with specific therapy for microalbuminuria.

Aims & Objectives: To determine the prevalence of microalbuminuria in patients with primary hypertension and to study the correlation of microalbuminuria with clinical profile and complications of primary hypertension.

Materials and Methods: The study was conducted in Maharajah's institute of Medical sciences (MIMS) Nellimarla, from March 2019 to February 2020, included 100 patients.

Conclusion: Microalbuminuria in essential hypertension does not show any correlation with the sex of the patient. As the severity of hypertension increases, the degree of microalbuminuria also increases. An increase in systolic blood pressure has a better correlation with microalbuminuria than diastolic blood pressure. All patients with essential hypertension and microalbuminuria had retinopathy which showed as higher is the microalbuminuria, severe is the grade of retinopathy.

Keywords: Hypertension, Microalbuminuria, Joint National Committee VIII, Left ventricular hypertrophy, Retinopathy.

Introduction

- Today hypertension is the most critical public health problem. If left untreated, it increases coronary stroke events, heart failure, and renal failure.¹
- There are variations in the prevalence of microalbuminuria between 10% to 40% reported in different studies.

- Microalbuminuria in cases with established essential hypertension is a predictor of a higher risk of cardiovascular and renal dysfunction.²
- Early detection of microalbuminuria will help us control the development of complications of hypertension with specific therapy for microalbuminuria.

- The study was conducted to know the prevalence of microalbuminuria in patients with essential hypertension and to study the correlation of microalbuminuria with clinical profile and complications of primary hypertension

Objectives

- 1) To determine the prevalence of microalbuminuria in patients with primary hypertension.
- 2) To study the correlation of microalbuminuria with clinical profile and complications of primary hypertension.

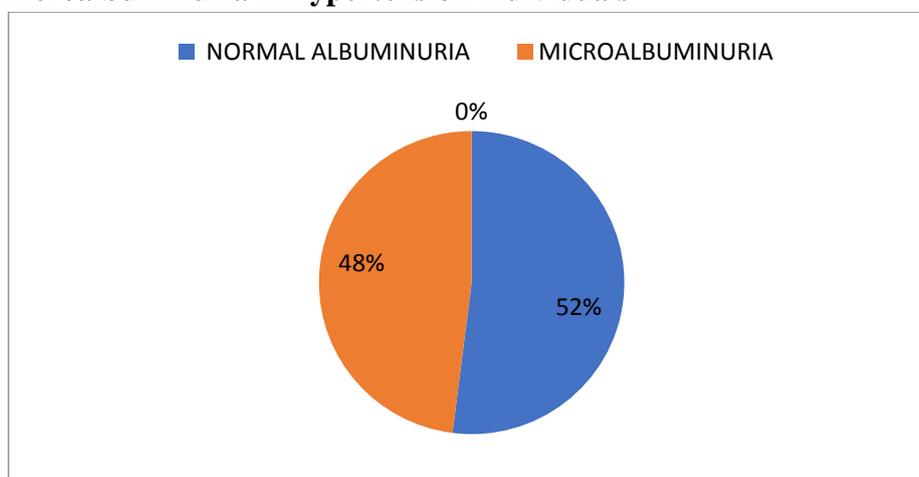
Material and Methods

- The study was conducted in Maharajah's institute of Medical sciences (MIMS) Nellimarla, from March 2019 to February 2020, included 100 patients.
- Essential hypertension was diagnosed. The severity of hypertension has been classified as per the joint national committee (JNC) VIII.³
- In newly detected hypertensive patients, the diagnosis was based on the average of 2 or more BP readings taken at each of 2 or more visits after an initial screening.

Inclusion Criteria: Patient with essential hypertension admitted in medical wards of MIMS Hospital

Results

1) Prevalence of microalbuminuria in hypertension individuals



Exclusion Criteria

- Patients with diabetes mellitus.
- Patients with secondary hypertension.
- Pregnancy-induced hypertension
- Twenty-four hours of urine for microalbuminuria estimation was done by Immune Turbidimetric assay.
- Ischemia heart disease (IHD) was diagnosed based on history and ECG changes indicative of Ischemia, Infarction, Cardiacdysrhythmia (or arrhythmia) . The chest X-ray is done to see cardiomegaly.
- Left ventricular hypertrophy (LVH) was diagnosed using the Sokolow Lyon Voltage criteria on ECG and confirmed by echocardiographic screening.
- Fundus examination is done, and retinopathy was classified as per Keith-Wagener- Barker (KWB) classification.

Characteristics of the study:

PARAMETERS	STUDY GROUP
AGE(YEARS)	56.7±11.6
DURATION OF PRIMARY HYPERTENSION	7.5 ±5.2
SYSTOLIC BP(mmHg)	159 .2 ±24.7
DIASTOLIC BP(mmhg)	96.86 ±14.3
FBS(mg/dl)	99.68 ±8.5
SERUM CREATININE(mg/dl)	1.03 ±0.03
TOTAL CHOLESTEROL(mg/dl)	193.8 ±25.6

2) Albuminuria and Sex Distribution p=0.594 (Non-Significant)

SEX	MICRO-ALBUMINURIA	NORMOALBUMINURIA	TOTAL
MALE	32(50%)	32(50%)	64
FEMALE	16(44.4%)	20(55.6%)	36
TOTAL	48	52	100

3) Distribution of cases related to the severity of hypertension and Albuminuria (p=0.001)(significant)

SEVERITY OF HYPERTENSION	MICRO-ALBUMINURIA NO OF CASES (%) MEAN RANGE OF MICRO-ALBUMINURIA	NORMO-ALBUMINURIA NO OF CASES MEAN RANGE OF NORMO-ALBUMINURIA	TOTAL
STAGE 1	16 (29.62%) 72.19±36.48 mg/dl	38 (70.37%) 19.64± 6.15mg /dl	54
STAGE2	32(69.5%) 132.1±92.6	14(30.43%) 17.89±5.99	46
TOTAL	48	52	100

4) Distribution of cases related to the duration of hypertension and Albuminuria (p=0.001) (significant)

DURATION(YEARS)	MICRO-ALBUMINURIA	NORMO-ALBUMINURIA	TOTAL
Less than 10 yrs	25 (32.5%)	52 (67.5%)	77
More than 10 yrs	23 (100%)	0	23
TOTAL	48	52	100

5) Grades of Retinopathy related to Albuminuria- p=0.001(Significant)

GRADES OF RETINOPATHY	MOCRO-ALBUMINURIA	NORMO-ALBUMINURIA	TOTAL
NORMAL	0	34(100%)	34
I	15(46.88%)	17(53.12%)	32
II	24(96%)	1(4%)	25
III	7(100%)	0	7
IV	2(100%)	0	2
TOTAL	48	52	100

6) LV H on ECHO related to Albuminuria - p=0.001(Significant)

PARAMETERS	MICRO-ALBUMINURIA	NORMO-ALBUMINURIA	TOTAL
NO LVH	6(11.76%)	45(88.24%)	51
LVH +	42(85.7%)	7(14.3%)	49
TOTAL	48	52	100

7) Albuminuria related to ischemic heart disease(IHD) p=0.001(significant)

PARAMETERS	MICRO-ALBUMINURIA	NORMO-ALBUMINURIA	TOTAL
NO H/O IHD	33(42.86%)	44(57.14%)	77
WITH H/O IHD	15(65.22%)	8(34.78%)	23
TOTAL	48	52	100

8) Albuminuria related to the history of stroke / TIA- p=0.001(significant)

PARAMETERS	MICRO-ALBUMINURIA	NORMO-ALBUMINURIA	TOTAL
NO H/O STROKE	31(38.7%)	49(61.2%)	80
WITH H/O STROKE	17(85%)	3(15%)	20
TOTAL	48	52	100

Discussion

- Several retrospective and cross-sectional studies reported that cardiovascular disease prevalence is significantly higher among hypertensive patients with microalbuminuria than hypertensive cases without microalbuminuria.^{4,5,6}
- Microalbuminuria in the present study was slightly higher than the other studies.
- Therefore, microalbuminuria's finding should trigger a careful search for other cardiovascular risk factors and evidence of end-organ damage.⁵
- Whether microalbuminuria can predict the risk of progressive renal disease in patients with essential hypertension is not clear.⁶

Conclusion

- In the present study, the prevalence of microalbuminuria in primary hypertension was found to be 48%.
- Microalbuminuria in essential hypertension does not show any correlation with the sex of the patient.
- As the severity of hypertension increases, the degree of microalbuminuria also increases.
- An increase in systolic blood pressure has a better correlation with microalbuminuria than diastolic blood pressure.
- All patients with essential hypertension and microalbuminuria had retinopathy which showed as higher is the microalbuminuria, severe is the grade of retinopathy.
- In patients of essential hypertension with microalbuminuria, 85% had LVH, 65% had IHD, 85% had cerebrovascular disease.

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