

FREQUENCY OF MICROALBUMINURIA IN ESSENTIAL HYPERTENSION

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ABSTRACT

Objective: To determine the frequency of microalbuminuria in the patients of essential hypertension.

Methodology: We enrolled 273 consecutive patients with essential hypertension for this study. The patients were collected from the medical unit Hayatabad Medical Complex Peshawar. The working diagnosis of hypertension was made on the basis of history of hypertension or a blood pressure of 160/90 or above. Patients with any evidence of secondary hypertension on the basis of previous history or investigations, were excluded from the study. Diabetic patients and patients with reasons other than hypertension for albuminuria, were also excluded from the study. Patients having albuminuria of upto 300mg/24 hours urine specimen, were labeled as having microalbuminuria.

Results: This study was conducted in Medical Unit, Hayatabad Medical Complex, Peshawar. Two hundred and seventy three hypertensive patients were enrolled for the study. Duration of this study was 8 months from December 2014 to July 2015.

Out of 273 patients, 54.7% (n=150) were males while 45.3 % (n=123) were females. Mean age in years was 57.01 years. Microalbuminuria was found to be present in 24.5 % (n=67) patients.

Conclusion: The prevalence of microalbuminuria in essential hypertension is high and patient with microalbuminuria have high odd for developing target organ damage like stroke, left ventricular hypertrophy, hypertensive nephropathy and hypertensive retinopathy. Early screening of hypertensives for microalbuminuria and prompt treatment of positive cases might reduce the burden of mentioned complications in community.

Key words: Chronic kidney disease, essential hypertension, Microalbuminuria, Target organ damage.

INTRODUCTION

Hypertension affects about one billion people worldwide. It increases the risk of development of cerebral, cardiac and renal events¹. Renal injury has long been included in the varieties of possible end organ damage related to hypertension, especially in the presence of malignant hypertension². Essential hypertension can be defined as a rise in blood pressure of unknown cause. Despite the widely recognized danger related to uncontrolled hypertension, the disease remains inadequately treated in most of the patients. Due to its asymptomatic nature, hypertension is mostly a neglected disease by the patients with poor compliance to drugs even if it progressively damages multiple organ systems³.

The national health survey of Pakistan (NHSP) reported that about 18% of adult > 15 years and 33% of adult > 45 years of age suffered from hypertension⁴. A comprehensive strategy for reduction in complications

must include prevention strategies, increased awareness, early detection, adequate treatment and strict control of blood pressure⁵. Early screening of hypertensive for microalbuminuria and prompt treatment of positive cases might reduce the disease burden related to severe hypertensive kidney disease². Microalbuminuria is one of the earliest indications of kidney injury in patient with diabetes mellitus and hypertension associated with high incidence of cardiovascular morbidity⁶. An interest in microalbuminuria with essential hypertension produced when several studies pointed out the importance of microalbuminuria as a risk for renal and cardiovascular disease in patient with diabetes mellitus and hypertension⁷.

Microalbuminuria is now defined as a urine albumin excretion between 20 to 200 μ g/min or 30 to 300 mg in overnight or 24 hour urine collection⁸. The high BMI among hypertensive is an important and well known risk factor for the development of microalbuminuria⁹.

The prevalence of microalbuminuria was 24.2% in hypertensive patients with type 2 diabetes in Pakistan¹⁰. In the LIFE study the prevalence of microalbuminuria observed in hypertensive patients was 23%¹¹. The world wide prevalence of microalbuminuria in hypertension is 58.3%¹². Essential hypertension produces clinical proteinuria and significant reduction in renal function in 5-15% of patients¹³.

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Keeping in mind the clinical significance of microalbuminuria in patients with essential hypertension, the aim of this study is to find out the prevalence of this important indicator for complications of hypertension.

METHODOLOGY

This was a descriptive cross sectional study conducted on 273 consecutive patients presented to medical unit HMC Peshawar with essential hypertension. The minimum duration of hypertension was 2 years. The patients minimum age was 20 years or above. Patients with albuminuria due to other causes like diabetes mellitus, CKD, malignancy (renal, lung breast etc.), and inflammatory conditions like glomerulonephritis, pyelonephritis and cystitis based on history and medical records, were excluded from study. The diagnosis was made on 24 hour urine collection and testing by PYROGOLLOL RED method by same technician of Biochemistry section of Main laboratory HMC Peshawar. Patients with blood pressure of >160/90 mmHg on more than one occasion and a history of antihypertensive drugs, were enrolled for the study. Microalbuminuria was considered to be present with the values of 30-300mg in 24 hour urine specimen.

RESULTS

The data collected from 273 patients was analyzed for results. Mean age was 57.01 years +/- 13.376. One hundred and fifty were male while 123 were females. The male to female ratio was not much significant being 1.2: 1. The overall prevalence of microalbuminuria was 24.5% (n=67). The patients were categorized according to age in to different groups with prevalence of microalbuminuria in each age group (Table-1). This study shows poor correlation of microalbuminuria with age group as well as duration of hypertension (Table-2). Similarly the prevalence was almost equal in both the genders 24% (n=36) in male versus 25% (n=31) in females. The microalbuminuria correlated with control of blood pressure. This study showed raised blood pressure in 71% (n=194) in the initial examination. The prevalence of microalbuminuria was found to be higher in the group having raised blood pressure 28% (n=54) versus 16.45% (n=13) in the patients having normal initial blood pressure reading (Table-3).

Table 1: Frequency and percentage of different age group

Age	Frequency	Percentage	Cumulative percent
<= 30	5	1.8	1.8
31-50	96	35.0	37.0
51-70	131	47.8	85.0
71 +	41	15.0	100.0
Total	273	100	

Table 2: Microalbuminuria and Duration of hypertension (In months)

Duration (in months)	Microalbuminuria		Total
	No	Yes	
<= 5	44(69.8%)	19(30.2%)	63(100%)
6-15	122(77.2%)	36(22.8%)	158(100%)
16-25	39(78.0%)	11(22.0%)	50(100%)
26+	1(50.0%)	1(50.0%)	2(100%)
Total	206(75.5%)	67(24.5%)	273(100%)

Table 3: Correlation between microalbuminuria and gender

Gender of patient	Microalbuminuria		Total
	No	Yes	
Female	93(74.8%)	31(25.2%)	123(100%)
Male	114(76.0%)	36(24.0%)	150(100%)
Total	206(75.2%)	67(24.5%)	274(100%)

DISCUSSION

Microalbuminuria and vascular dysfunctions are known to occur early in the course of essential hypertension. Hypertensive nephropathy is a common cause of chronic kidney disease, in which chronic renal ischemia results due to small and large vessel renovascular disease. Progressive nephrosclerosis from vasculo-endothelial disease is the renal correlate of same process that leads to coronary artery diseases, cerebrovascular diseases, hypertensive retinopathy, left ventricular dysfunctions etc.

The present study reports a 24.5% prevalence of microalbuminuria in essential hypertension. Other previously published reports shows, 20%¹⁴ and 40%¹⁵ prevalence rates. In this study it was found that duration of hypertension has no effect on the frequency of microalbuminuria. Likewise age and gender has no convincing effect on the frequency of microalbuminuria. So early detection and screening of patient at the beginning of diagnosis of essential hypertension, might prevent complication like renal failure.

When these study parameters were compared to another study done by B Hithal et al, the prevalence of Microalbuminuria in essential hypertension was found to be 26.67%. Microalbuminuria was significantly higher in those with longer duration and greater severity of hypertension¹⁶.

CONCLUSION

Microalbuminuria in essential hypertension has high prevalence rate and will increase the risk of developing target organ damage. Early screening of patients with essential hypertension for microalbuminuria and

aggressive management of positive cases might reduce the burden of chronic kidney diseases and cardiovascular diseases.

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