FREQUENCY OF MICROALBUMINURIA IN NEWLY DIAGNOSED ESSENTIAL HYPERTENSION PATIENTS : - AN EXPERIENCE IN TERTIARY CARE LADY READING HOSPITAL PESHAWAR.

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ABSTRACT

BACKGROUND: To Find out Frequency of microalbuminuria in newly diagnosed Essential Hypertension patients in tertiary care Lady Reading Hospital Peshawar.

MATERIAL AND METHODS

This cross sectional descriptive study was carried out in Medical unit, Lady Reading Hospital (LRH) Peshawar over 273 patients after approval from ethical committee. The diagnosis of Hypertension was confirmed on measuring blood pressure on two occasions, two weeks apart if patient blood pressure was more than 160/100 using appropriate cuff size mercury sphygmomanometer. After confirming hypertension; the diagnosis of Microalbuminuria was made on 24 hour collection of urine testing by PYROGOLLOL RED method by same technician of biochemistry section of Main Laboratory of LRH hospital.

RESULTS: Total no. of patients included in this study were 273. Out of 273 patients, 150 (54.7%) patients were male while 123 patients (45.3%) were female. Microalbuminuria was found in 67 (24.5%) patients. Mean age in years was $57.01 \pm 13.37SD$.

CONCLUSION: The frequency of microalbuminuria in essential hypertension is high and prompt treatment of positive cases will decrease the blood pressure induced damage that might reduce the burden of chronic kidney disease in community.

KEY WORDS: Chronic kidney disease, essential hypertension, Microalbuminuria ,Target organ damage.

INTRODUCTION

Hypertension is a disease that affects about one billion people worldwide. It increases the risk of development of cerebral, cardiac and renal events¹. However 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 patients; mainly due to its asymptomatic nature even 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, the mortality and morbidity due to hypertension, must include prevention strategies, increased awareness, early detection, adequate treatment and strict control of blood pressure⁵. Early screening of hypertensive patients for microalbuminuria and prompt treatment of positive cases might reduce the disease burden related to severe chronic 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 and essential hypertension occurred when several studies pointed out the importance of microalbuminuria as a risk for renal and cardiovascular disease in patient with diabetes mellitus and hypertension⁷. The term microalbuminuria is a relative misnomer. It implies small size but actually refer to presence of relatively small quantity of protein in the urine.

The high BMI among hypertensive is an important and well known risk factor for the development of microalbuminuria⁸. According to one study, prevalence of microalbuminuria is 24.2% in hypertensive patients with type 2 diabetes in Pakistan⁹. In the LIFE study the prevalence of microalbuminuria observed in hypertensive patients was 23%¹⁰. The world wide prevalence of microalbuminuria in hypertension is 58.3%¹¹. Essential hypertension produces clinical proteinuria and significant reduction in renal function in 5-15% of patients¹². The aim of study was to find out the frequency of microalbuminuria in our local hypertensive population, as early detection of microalbuminuria could help to prevent hypertensive complications later on.

MATERIAL AND METHODS

This cross sectional descriptive study was carried out in Medical unit Lading Reading Hospital Peshawar. total of 273 patients (using 23% microalbuminuria among essential hypertensive patients¹¹, with Confidence interval of 95% and Error of 5% under WHO software for sample size determination) after consent from ethical committee from 01.12.2012 To 30.06.2013. Patients enrolled in study through OPD. The diagnosis of Hypertension was confirmed on measuring blood pressure two or three time and atleast 2 min was allowed between readings with appropriate cuff size mercury sphygmomanometer. Informed consent is obtained for all patients. After confirming hypertension; the diagnosis of Microalbuminuria was made on 24 hour collection of urine testing by PYROGOLLOL RED method by same

technician of biochemistry section of Main Laboratory of hospital under supervision of pathologist.

History of Diabetic, chronic kidney disease, congested cardiac failure, Malignancy like Renal cell, lung, breast, colon/rectal carcinoma and Non Hodgkin lymphoma, Acute pancreatitis and Bacterial infection like glomerulonephritis, pyelonephritis and cystitis were excluded. Observation and collection of the data were made and strictly exclusion criteria were followed to avoid confounders and bias in study result. Analyses were done with help of Statistical Package for Social Sciences and SPSS version 16. Chi Square test was used to generate p-values.

RESULTS

Total of 273 patients presenting with essential hypertension were included in the study. Mean age was 57.01years $\pm$ 13.376SD. Age group divided in four categories, in which the majority of patients were age group of 51- 70 year which were 47.8%. Out of 273 patient, 150(54.7%) patient were male, while 123 (45.3%) were female. Male to female ratio was 1.2:1.

Microalbuminuria was found in 67 (24.5%) patient out of 273 patients with essential hypertension. While 206(75.5%) were free of microalbuminuria.

Microalbuminuria was found almost equally in male and female with p-value of 0.00.

Graph 1: Distribution of microalbuminuria with respect to gender

DISCUSSION

Microalbuminuria and vascular dysfunctions are known to occur in the course of essential hypertension. Hypertensive nephropathy is a common cause of chronic kidney disease, in which chronic renal ischemia as a result of small and large vessel renovascular disease can be recognized.¹³⁻¹⁶ Progressive nephrosclerosis from vasculo-endothelial disease is the renal correlate of same process that leads to coronary artery diseases, cerebrovascular diseases, hypertensive retinopathy and left ventricular dysfunctions.¹⁷⁻¹⁹

The present study reports a 24.5% prevalence of microalbuminuria in essential hypertension. This figure is almost similar to previously published reports. Patient with duration of 5 years or less has microalbuminuria of 30.2% (in 19 patient out of 63) and patient with duration of 16- 25 years has microalbuminuria of 22.0 % (in 11 patient out of 50). So early detection and screening of patient at the beginning of diagnosis of essential hypertension might prevent complication like renal failure.^{12,15,16}

The prevalence of microalbuminuria in female hypertensive population and male hypertensive population were 25.2% and 24.0%, respectively. The prevalence of microalbuminuria in female hypertensive population was higher than in male hypertensive population of our study whereas the reverse was found in some other populations²⁰.

It was found in our study that prevalence of microalbuminuria is higher in population of age 30 or less than older ages. The high prevalence in young population might be because of sedentary life style obesity and lack of exercise.

When these study parameter were compared to another study done by B Hithal et al. the prevalence of microalbuminuria in essential hypertension was found to be 26.67%, of whom 24 were males and 16 were females²¹. microalbuminuria was significantly higher in those with longer duration, greater severity of hypertension, also for older age group. Hypertensive retinopathy were significantly higher in those with microalbuminuria. They

concluded that the prevalence of MA in essential hypertension is high and patients with microalbuminuria have high odds for developing acute coronary syndrome and hypertensive retinopathy.

GS Sainani et al, reported that hypertension is associated with functional and morphological alterations of the endothelium, which disturbs delicate balance of endothelium derived factors resulting in endothelial dysfunction²². The endothelial dysfunction could then facilitate the maintenance of elevated peripheral resistance, which would favour the occurrence of atherosclerosis. One concept postulates that more albumin leaks through exaggeratedly permeable glomeruli that reflect the systemic damaging impact of subclinical atherogenesis, a process characterized by a diffuse involvement of the entire vascular endothelial system. This hypothesis, which was originally formulated to account for the higher cardiovascular morbidity rate in diabetic patients, may also apply to essential hypertensive patients²³. It is therefore very important to screen for microalbuminuria in early stages of essential hypertension, which if treated early can prevent atherosclerotic processes in the entire vascular system. The clinical markers of the generalized endothelial dysfunction becomes manifest in several forms. Microalbuminuria is one such marker, which marks the onset of endothelial dysfunction related to the kidney and whole vascular system.

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 renal diseases and cardiovascular diseases.

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