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Microalbuminuria in Type2 Diabetes Mellitus-A Cross Sectional Study

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ABSTRACT

Background and objectives: Diabetic nephropathy is the major cause of end stage renal disorder. Microalbuminuria is the earlier possible means to diagnose diabetic nephropathy which is also a predictor of cardiovascular disorder causing mortality in diabetic patients. Our aim was to find the distribution of microalbuminuria in diabetic individuals and also to find its relation to disease duration and disease control. Materials and **Methods:** About 200 diabetic patients of age group 35-55 years of both sexes were randomly selected. Microalbuminuria was estimated from early morning urine sample. Albumin excretion ≥ 25-200mg/l was labelled as microalbuminuria group and < 25mg/l as normoalbuminuria group. **Results:** The prevalence of microalbuminuria was 33% and was significantly found in patients with longer disease duration (>8 yrs) and in uncontrolled diabetes. **Conclusion:** To conclude, microalbuminuria serves as the best screening tool to detect cardiovascular complications at an earlier stage in Diabetic patients.

KEYWORDS	Diabetes Mellitus, microalbuminuria, disease duration, disease control

INTRODUCTION

According to WHO, Cardiovascular diseases are the leading cause of mortality in the world. In developing countries, cardiovascular disease has become a major health concern in middle age population than developed countries(WHO updated January 2015). Globally the prevalence of diabetes is expected to arise from 220 million in 2010 to 300 million in 2025 and each will spend about three times more on their health than a person without diabetes(British Journal of Diabetes & Vascular Disease August 2001). `Type 2 diabetes is a chronic progressive disease associated with long term devastating complications which can be fatal and becoming one of the world's most important public health problems (World Health Organization, 1999 (WHO/NCD/NCS/99.2)

Epidemiological determinants and risk factors of type 2 diabetes include genetic markers, family history, thrifty genes, demographical characters like sex, age, ethnicity, behaviour and life style related risk factors like obesity, physical inactivity, diet, stress, westernization, urbanization and modernization(Rose G et al 1981).This metabolic disorder results from insulin resistance resulting in various pathophysiological changes in body organs. As the prevalence of diabetes is increased, the age of onset has decreased(Paolo Pozzilli et al 2011).

Most of the morbidity and mortality of diabetes is due to chronic complications of the disease. Poor glycaemic control that results in long term complications contribute substantially to the morbidity, mortality and economic burden of the disease (Matthew R. Weir et al 2007). The mortality rate is increased in diabetic individuals than normal persons because of the complications (Williams's textbook of endocrinology 11th edition, page no1333). There is a continuous relationship between level of glycaemia and risk of development of these complications. Hyperglycaemia and insulin resistance appears to play an important role in the development of complications (De Bacquer D et al 2000). Therefore,

this study was done to detect microalbuminuria at an early stage among type 2 diabetes mellitus individuals to avoid complications and for better prognosis.

AIMS AND OBJECTIVES
- To detect microalbuminuria in type 2 diabetes.
- To find correlation between microalbuminuria and

disease duration.
- To find correlation between the disease control and uncontrolled.

MATERIALS & METHODS

The study was conducted at Tirunelveli medical college hospital, Tirunelveli after getting ethical committee approval. About 200 diabetic patients both men and women aged between 35-55 years were included in the study group.

Exclusion criteria:
- Type 1 diabetic individuals
- Urinary tract infection
- Advanced renal dysfunction(serum creatinine >2.0mg/dl)

The study was carried out after explaining the procedures in detail and getting written informed consent from all the subjects. Detailed history was taken. BMI was calculated using anthropometric measurements like height and weight of individuals. Microalbuminuria was estimated from early morning urine sample using Semi auto analyser (Model: chem5x from Erba Manheim). Albumin excretion ≥ 25-200mg/l was labelled as microalbuminuria group and albumin excretion < 25mg/l as normoalbuminuria group (Harrison's principles of internal medicine.18th edition volume 2 page no 2986). HbA1C was measured by photoelectric colorimeter-model XSYSOO54 to find the disease control. Normal value is< 6.5% (Turner RC et al1998) . So values ≥ 6.5% was considered as high for this study.
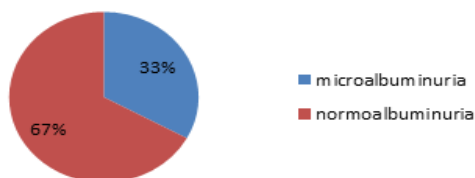
RESULTS

Distribution of microalbuminuria

TABLE 1: SEX DISTRIBUTION OF MICROALBUMINURIA

sex	Microalbuminuria Group(25-200 mg/l)n	%	Normoalbuminuria group(< 25 mg/l)n	%	Total n
Male	34	17	70	35	104
Female	32	16	64	32	96
Total	66	33	134	67	200

TABLE 2: association of microalbuminuria with duration of diabetes.

Duration (years)	Persons n=200	Microalbuminuria (25-200 mg/l) n=66	%	Normoalbuminuria(n) n=134	%
<8	181	53	29.3	128	70.7
>8	19	13	68.4	6	31.6

TABLE 3 PREVALANCE OF MICROALBUMINURIA AMONG CONROLLED AND UNCONTROLLED DIABETES MELLITUS

Group	No.of. persons	HbA1C > 6.5 % (n=78)	%	HbA1C < 6.5 % (n=122)	%
Normoalbuminuria (<20mg/l)	134	18	13.4	116	86.6
Microalbuminuria (20-200mg/l)	66	56	84.8	10	15.1

The prevalence of microalbuminuria in type 2 DM in our study was 33%, which was similar to the study (**Ahmedani et al** 2005) at Karachi which was about 34%. In another study done by **Nevi Pasko et al** 2013 in Tirana, the prevalence was 38%.The greater prevalence of microalbuminuria in the study done by Nevi Pasko et al may be due to greater duration of diabetes in patients selected. In our study there was no significant difference in the prevalence of microalbuminuria in both sexes. Our study showed microalbuminuria in the uncontrolled group than in the controlled group. Jafar et al 2013 studies associated microalbuminuria positive individuals had more ECG changes and therefore had higher cardiovascular risk.

CONCLUSION

To conclude, there exists a significant microalbuminuria in Type 2 diabetic patients. Hence, this can be used as a best screening tool to detect microvascular and macrovascular complications of diabetes at an early stage, thereby reducing the associated mortality and morbidity.

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