



A STUDY ON COMPARISON BETWEEN MICROALBUMINURIA AND MACROALBUMINURIA IN TYPE 2 DIABETICS ON SEVERITY OF DIABETIC RETINOPATHY

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ABSTRACT **Aim:** The Aim of study is to measure the prevalence of albuminuria (both microalbuminuria and macroalbuminuria) among type 2 diabetic patients and to estimate its role on severity of diabetic retinopathy in type 2 diabetics.

Materials and Methods: A cross sectional study conducted at ophthalmology department, Dr SN Medical College, Jodhpur, Rajasthan in 300 type 2 diabetic patients in one year of study period. All the patients had done ocular examination. The ETDRS scale used for grading Diabetic retinopathy. A morning urine sample used for detecting albuminuria. Urine albumin excretion values 30-300 mg in 24 hrs considered as microalbuminuria and values >300 mg in 24 hrs considered as macroalbuminuria. The analysis was done using SPSS 16.0.

Results: The prevalence of microalbuminuria is 31.80% and prevalence of macroalbuminuria is 20.60%. Patients with macroalbuminuria has a greater prevalence of diabetic retinopathy as compare to patients who has normo or microalbuminuria which is statistically significant, p value< 0.001.

Conclusion: In type 2 diabetics patients Microalbuminuria is a very useful in estimating the severity of diabetic retinopathy. Patients who have microalbuminuria is on higher risk for the development and progression of diabetic retinopathy.

KEYWORDS : Diabetic Retinopathy, Microalbuminuria, Macroalbuminuria, Risk factor, Type 2 Diabetes.

INTRODUCTION

Diabetes is world wide disease, when the diabetic patients increases many microvascular complication like retinopathy, neuropathy, nephropathy also increases^[1]. The estimation of retinopathy and neuropathy need to be screening caused by microvascular complication. The sensitive marker of diabetic nephropathy is urine albumin excretion and fundus changes in diabetic retinopathy in type 2 diabetic patients^[2,3].

Aim of the Study

The aim of the study is to measure the prevalence of albuminuria (micro and macroalbuminuria) in type 2 diabetic patients and to estimate its role on severity of diabetic retinopathy in type 2 diabetics.

MATERIALS AND METHODS

A cross sectional study conducted at Department of ophthalmology, Dr SN Medical college, Jodhpur, Rajasthan in 300 type 2 diabetic patients who came to OPD. All the patients had done detailed ocular examination. Patients more than 40 years was included in this study and below 40 years and emigrates are excluded from the study. A morning urine sample used for detect the urine albumin excretion level. Urine albumin excretion level >300 mg in 24 hrs was considered as macroalbuminuria and <300 mg in 24 hrs was considered as microalbuminuria. The ETDRS (Early Treatment Diabetic Retinopathy Study) scale used for diabetic retinopathy grading. The analysis was done using SPSS (Statistical Package for the Social Sciences) 16.0.

Table 1: Prevalence of various types of diabetic retinopathy

Types of Diabetic Retinopathy	Frequency (n=108)	Prevalence
Very Mild NPDR	15	13.88%
Mild NPDR	23	21.29%
Moderate NPDR	34	31.48%
Severe NPDR	13	12.03%
Very Severe	5	4%
PDR	18	16.66%

RESULTS

This study is conducted in 300 type 2 diabetic patients. The mean age of patients was 55.46 (SD+5.671) years. The minimum age of

participant patients was 40 and maximum was 75 years. The number of females was 195 and male 105. The duration of diabetes in mostly participants was 5-20 years.

36%64% Present Absent In 300 participants patients, 108 patients had diabetic retinopathy changes and rest 192 patients had no diabetic retinopathy changes. Among 108 patients who had diabetic retinopathy changes, prevalence of very mild NPDR in 15 patients (13.88%), mild NPDR in 23 patients (21.29%), moderate NPDR in 34 patients (31.48%), severe NPDR in 13 patients (12.03%), very severe NPDR in 5 patients (4%) and PDR in 18 patients (16.66%). Among 300 participants patients it was found that normoalbuminuric patients were 143(47.60%), microalbuminuric patients were 95 (31.80%), macroalbuminuric were 62 (20.60%).

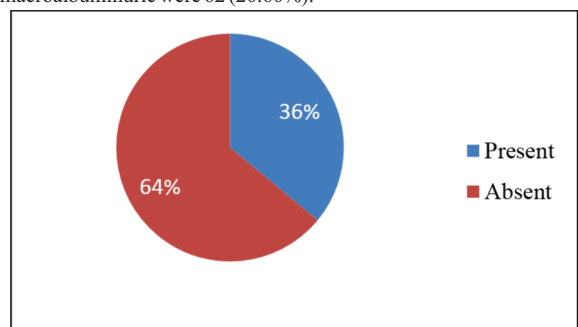


Fig 1. Prevalence of diabetic retinopathy

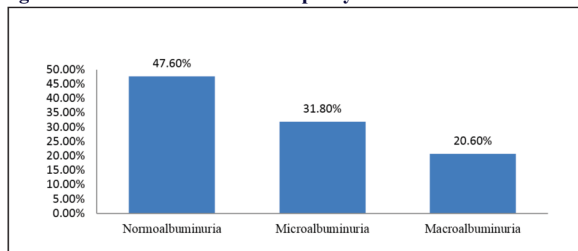


Fig 2. Prevalence of Proteinuria

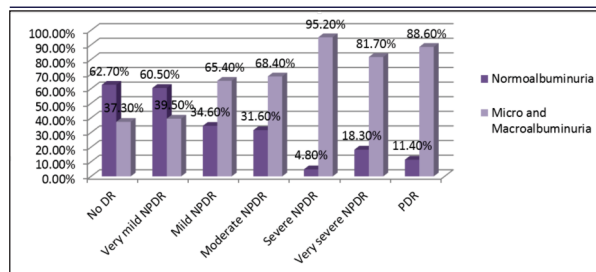


Fig.3: Showing the prevalence of various types of diabetic retinopathy among those with normoalbuminuria, microalbuminuria and macroalbuminuria

DISCUSSION

This study determine the prevalence of albuminuria (micro & macroalbuminuria) in type 2 diabetic patients and find out its role in severity of DR. In this study, in type2 diabetic patients prevalence of microalbuminuria was 31.80% and macroalbuminuria was 20.60%. Similar study with high prevalence of DR is also done^[4,5,6].

In 300 participants patients, 108 patients had diabetic retinopathy changes and rest 192 patients had no diabetic retinopathy changes. Among 108 patients who had diabetic retinopathy changes, prevalence of very mild NPDR in 15 patients (13.88%), mild NPDR in 23 patients (21.29%), moderate NPDR in 34 patients (31.48%), severe NPDR in 13 patients (12.03%), very severe NPDR in 5 patients (4%) and PDR in 18 patients (16.66%).

Among 300 participants patients it was found that normoalbuminuric patients were 143(47.60%), microalbuminuric patients were 95 (31.80%), macroalbuminuric were 62 (20.60%).

This study shows that patients with microalbuminuria has 2 times greater risk of having diabetic retinopathy and 6 times greater in macroalbuminuria patients. In a similar study it was found that presence of renal involvement in type 2 diabetic patients with proliferative DR. They shows that all patients with PDR should have an renal function test and urine albumin excretion test^[7]. In another study it was found that poor glycemic control also a risk factor for micro and macroalbuminuria^[6,7].

The duration of diabetes and blood pressure level are main risk factors for DR and diabetic nephropathy^[8,9]. Klein et al^[10,11] shows that microalbuminuria could be seen in 29.2% patients whose taking insulin and 22% of non insulin taking patients.

CONCLUSION

The presence of urine albumin in type 2 diabetic patients is major risk factor for developing diabetic retinopathy. So that type 2 diabetic patients with abnormal albumin level in urine should have a detailed ophthalmic examination.

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