

Nephropathy in Newly Diagnosed Type 2 Diabetics and the Impact of Hypertension

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ABSTRACT

Introduction: Diabetic kidney disease is a common complication in diabetes mellitus causes significant morbidity and mortality. The objective of this study was to know the incidence of Diabetic kidney disease in newly diagnosed Type 2 diabetics and its relationship with various risk factors associated with Diabetes mellitus like AGE, SEX, BMI, Blood Pressure, and HbA1c, Lipid profile.

Material and Method: We analyzed 600 newly diagnosed Type 2 Diabetics (diagnosed with in 6 months) between January 2014 to January 2015. Subjects were put to detailed clinical workup including urinary microalbuminuria B.M.I., hypertension labeled as per WHO/ADA Criteria.

Results: The Incidence of Diabetic kidney disease (nephropathy) in newly diagnosed Type-2 DM was 17.35% (105/600) it increased significantly with increase in age and BMI respectively 59.21% and 53.66%. It also shows male preponderance and liner correlation with increasing blood pressure with incidence of Nephropathy. The incidence also increased with increase in HbA1c level. Dyslipidemia also has significant effect on Diabetic kidney disease. Family history with Diabetic kidney disease has significant impact over the incidence of Nephropathy.

Conclusion: Incidence of Nephropathy in newly diagnosed Type 2 diabetics is as high as 17.35%, Hypertension is the most important associated factor contributing to development of Nephropathy in those patient with poor glycaemic control (High HbA1c). Family history of renal disease showed significant relationship over the incidence of Nephropathy.

Keywords: Nephropathy, Type 2 Diabetics

and enormous health cost for virtually every society. Diabetes Nephropathy is one of the dreaded complications of Diabetes. Presently there is a great focus on early detection of nephropathy to help in better patient outcome. This study aims at studying nephropathy in newly diagnosed Type 2 Diabetics and studying the relationship of development of nephropathy with various risk factors like Age Sex, BMI, BP, HbA1c and regional variations.

MATERIAL AND METHOD

This study was conducted on the subject attending OPD of Diabetes Education and care Clinic, wright town, Jabalpur, (M.P.) in and around Jabalpur. We have analyzed 600 newly diagnosed Type 2 Diabetics (diagnosed with in 6 months) between January 2014 - December 2015. Presence of urinary microalbuminuria in two samples in a period of six months taken as criteria for detecting Nephropathy.

Symptom of Diabetes plus RBS >200mg/dl.

Fasting plasma Glucose > 126mg/dl.

2 Hrs. Plasma Glucose > 200mg/dl after 75 gm glucose load. Patients having Diabetes for more than 6 months and newly diagnosed diabetics with a preexisting renal disease, due to some other pathology were not included in the study. The patients were subject to detailed history and examination. Laboratory tests included complete urinalysis, 24 hour urinary protein, urine microalbuminuria, HbA1c, lipid profile, ultra-sonography of abdomen and pelvis, percutaneous renal biopsy (when required). The patients were followed for the next 6 months. Urinary microalbuminuria positive on two occasions six months was taken as criteria for detecting nephropathy. The classification used for BMI was in agreement with that recommended by WHO.

RESULTS

600 patients of newly diagnosed type 2 Diabetes were studied from Jan 2014 to Dec 2015. Of the 600 patients studied, 408 were male and 192 were females. The Incidence of nephropathy in newly diagnosed Type 2 Diabetics was 17.35%. Incidence of nephropathy increased significantly with increase in blood pressure (Table 1). It was 0% in group < 120/80 mmHg. 4.76% in blood pressure 120/80 – 139/89, and 75% in blood pressure >160/100mmHg. P value was

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INTRODUCTION

Some 246 million people worldwide had diabetes in 2007. it is now estimated that the absolute number will surpass 400 million in coming 20 years. it is one of the most common non-communicable disease globally. Diabetes is the fourth or fifth leading cause of death in most developed countries and there is substantial evidence that it is epidemic in many developing and newly industrialized nations.

Diabetes in India is expected to rise to 102.2 million by 2013 when China will reach to 129.7 million thus being infamous for being the world leader in Diabetes. The emergence of T2DM in India coinciding with countries rapid economic development and characterized as modern epidemic resulting directly from westernization.

India has wide regional variation of caste, religion, socio-economic status, and life style, food habits. A better understanding of the regional variation in Diabetes and long term complications.

Complications from diabetes such as CAD, PVD, stroke, diabetic neuropathy, amputation, renal failure and blindness are resulting in increasing disability reduced life expectancy

<0.001, and hence highly significant.

There was a significant difference between incidences of diabetic kidney disease in both the sexes (Table. 2). It was 24.25% and 7.25% in male, females respectively. There was no correlation of family history of T2-DM with diabetic kidney disease (Table.2).

Incidence of nephropathy increased with age (Table 3). It was 6.6% in age group <20 yrs. and increased to 59.21% in age group > 60 yrs. P value was <0.05 and was significant. Incidence of nephropathy increased in BMI and HbA1c (Table 3). It was 7.14 at BMI<18.5, 30.30%, and 53.66% at BMI >30, suggestive of high significant. Similarly correlation was noted with HbA1c that was 0% at HbA1c <7, and 90% at HbA1c >9. P value was <0.001. Incidence of diabetes nephropathy also increased with dyslipidemia (Table 4).

DISCUSSION

Diabetic nephropathy is a serious complication of Type 2-Diabetes mellitus. Earlier, it has been found that Diabetic kidney disease was present in about 15-17% of patients of with newly diagnosed type 2 Diabetics.¹ our study also shows that 17.35%^{2,3} patients developed Diabetic nephropathy.

It was seen that nephropathy was more common in males (24.25%), as compared to females (7.25%).⁴ Also, most of the patients in >60 yrs. age group developed nephropathy. The incidence of nephropathy is seen to increase consistently with age⁵, suggesting the decremented effect of age development of nephropathy.

On considering BMI, 53.66% of the patients with BMI >30 developed nephropathy. These findings are consistent with a study in England, that Indians are at increased risk of T2-DM and its complication, at a relatively lower BMI, because Asians-Indians pheno-typically T2D even with low BMI.⁶ Nephropathy increased significantly with UKPDS study⁷ they found that small vessels diseases complications were benefited by better glycemic control.⁸⁻¹⁰ Also, in accordance with the fact that diabetic nephropathy and blood pressure have a strong correlation, in our study also incidence of nephropathy increased significantly with rise in blood pressure. And incidence of nephropathy increased significantly with increasing dyslipidemia. Family history of DM has a little effect on occurrence of nephropathy.¹¹⁻¹³

CONCLUSION

Incidence of Diabetic kidney disease in newly diagnosed Type 2DM is as high as 17.35%, Hypertension is the most significant risk factor contributing to development of Diabetic nephropathy in those patient with poor glycemic control. Higher BMI, dyslipidemia, increased age and male sex may be contributing factors.

Diabetic kidney disease is triggered by poor glycemic control. Good glycemic control delayed the onset of Diabetes Nephropathy but current evidence suggests it is less effective in later stage of Diabetes Nephropathy. Rapid progression of Diabetes Nephropathy is associated with ethnicity and socio-economic status in type 2 Diabetes mellitus.

In T2DM patients with hypertension and microalbuminuria, simultaneous intensive control of glycaemia, blood pressure

Blood Pressure (mmHg)	Total Pt. of T2-DM	Diabetic kidney disease	%
<120/80	20	0	0.00%
120/80-139/89	210	10	4.76%
140/90- 159/99	90	34	37.77%
>160/100	20	15	75%
Total	340	59	17.35

X²=51.23, P value <0.001 Highly Significant

Table-1: Relationship of Diabetic Nephropathy with Blood pressure

Sex	Patient %
Male	24.25%
Female	7.25%
Family H/O Diabetes	
Present	19.61%
Not Present	16.16%

(P<0.05)

Table-2: relationship of diabetic nephropathy with sex and family H/o DM

Age	Cases
< 20	6.6%
21-40	11.83%
41-60	22.36%
>60	59.21%

(p<0.05)

BMI	Cases
<18.5	7.14%
18.5 – 24.9	8.90%
25 – 29.9	30.30%
>30	53.66%

(p<0.001)

HbA1c	Cases
<7	0.00%
7 – 7.99	3.23%
8 – 9	18.24%
>9	90.00%

(P<0.01)

Table-3: Relationship of Diabetic Nephropathy with Age, BMI, And HbA1c

Total Cholesterol	Incidence of Nephropathy %
<200	5%
200- 239	17.16%
>240	27.28%

(p<0.05)

TG	Incidence of Nephropathy %
<150	7.5%
>150 - <199	21.15%
>200	41.6%

(p<0.01)

LDL	Incidence of Nephropathy %
<100	7.5%
100-190	21.15%
>190	41.67%

(p<0.01)

Table-4: Relationship of Diabetic Nephropathy with Total Cholesterol, Triglycerides and LDL cholesterol

and dyslipidemia decreases progression of Diabetic kidney disease and cardiovascular complications by 35-55% over 4-9 years.

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