



Correlation of Diabetic Nephropathy and Retinopathy in Patients With Diabetes Mellitus Type-II

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ABSTRACT Diabetes Mellitus is a common disorder affecting almost every organ in body causing many macro vascular and micro vascular complications. Nephropathy and retinopathy are commonly seen micro-vascular complications of diabetes mellitus. Aim is to study prevalence of retinopathy and nephropathy and comparison between two regarding its duration and various risk factors that affects development, progression and severity of nephropathy and retinopathy. 100 patients of diabetes mellitus type 2 were selected. Patients with cardiac failure and CNS abnormality affecting vision, Electro Cardio Graphic abnormalities, Systemic diseases like connective tissue disorder or any long standing illness which might affect the course of illness, any structural abnormality of kidney, ureter, bladder, prostate, Any drugs known to interfere with kidney function. Complications of diabetes mellitus can be prevented by its strict control and as it has legacy effect, early aggressive management can retard development and progression and eventual mortality caused by micro and macro vascular complications.

KEYWORDS

Introduction

Diabetes Mellitus is a common disorder affecting almost every organ in body causing many macro vascular and micro vascular complications. Nephropathy and retinopathy are commonly seen micro-vascular complications of diabetes mellitus. So, we need to address this problem. Approximately, **40 million persons in India in 2007, 69.2 million** in 2015 and this number is predicted to rise to almost **123.5 million people by 2040**. India is second after China in prevalence⁽¹⁾.

Aims and objectives

To study prevalence of retinopathy and nephropathy and comparison between two regarding its duration and various risk factors like duration, hypertension and coronary artery disease (CAD) that affects development, progression and severity of nephropathy and retinopathy.

Material and methods

The present study was conducted in our government medical college and attached tertiary care hospital and associated institutes. Total 100 patients with type-2 diabetes were selected. Detailed history were elicited with special emphasis on renal and ophthalmic symptoms. Investigations like FBS, PPBS, HbA_{1c}, Urine analysis [urine albumin/micro albuminuria], Serum creatinine, blood urea, Hemoglobin, Na⁺, K⁺, Ca²⁺, Po₄³⁻, Uric acid, S. protein, Albumin, USG-KUB + PROSTATE, Serum lipid profile, 2Dimensional-Echocardiogram (2D ECHO), Fundoscopy were carried out.

Inclusion criteria

Adult patients with known type 2 Diabetes Mellitus

Exclusion criteria

Patients with clinical signs of cardiac failure and CNS abnormality affecting vision, Electro Cardio Graphic abnormali-

ties suggestive of arrhythmia or block, Systemic diseases like connective tissue disorder or any long standing illness which might affect the course of illness, Ultra Sono Graphy (USG) Kidney Ureter Bladder (KUB) + Prostate report of any structural abnormality of kidney, ureter, bladder, prostate, Any drugs known to interfere with kidney function like antibiotics, chemotherapeutic, etc., Pregnant females

Results

Correlation with duration

Duration	Total patients	Diabetic nephropathy	%	Diabetic retinopathy	%
<OR=5	46	0	0	0	0
06-Oct	15	1	6.66	0	0
Nov-15	8	4	50	3	37.5
16-20	10	7	70	4	40
21-25	17	16	94.11	11	64.7
>OR=26	4	4	100	4	100
	100	32		22	

correlation with hypertension

Diabetic nephropathy	Hypertension		Total	Diabetic retinopathy	Hypertension		Total
	Present	Ab-			Present	Absent	
Present	30 (93.75%)	2 (6.25%)	32	Present	22 (100%)	0 (0%)	22
Absent	31 (45.58%)	37 (54.41%)	68	Absent	39 (50%)	39 (50%)	78
	61	39	100		61	39	100

correlation with coronary artery disease

Diabetic nephropathy	Coronary artery disease		Total
	Present	Absent	
Present	29 (90.62%)	3 (9.37%)	32
Absent	7 (10.29%)	61 (89.70%)	68
	36	64	100

Diabetic retinopathy	Coronary artery disease		Total
	Present	Absent	
Present	22 (100%)	0 (0%)	22
Absent	14 (17.94%)	64 (82.05%)	78
	36	64	100

Discussion and conclusion

Diabetes mellitus is a major cause of morbidity and mortality worldwide. Both diabetic nephropathy and retinopathy are increasingly seen now a days. Strict control of blood sugar can prevent such micro and macro vascular complications. With increasing duration of disease prevalence of complications also increases. Also history of hypertension is a significant risk factor. Infact it acts synergistically with diabetes mellitus. Major cause of death among diabetic patients is coronary artery disease. Among 100 patients 32 had diabetic nephropathy and 22 had retinopathy. At 5 years duration of diabetes, none of the patients had diabetic nephropathy, but after 15 and 25 years of diabetes, 6.66% and 94.11% had diabetic nephropathy respectively. Amanda I. Adler et al in UKPDS 64 trial, show that at 10 years of diagnosis, 0.8% of the patients developed nephropathy. There after nephropathy progresses at a faster rate⁽²⁾. At 10 years duration of diabetes, none of the patients had diabetic retinopathy, but after 15 and 25 years of diabetes 37.5% and 64.7% had diabetic retinopathy respectively. Study by Stratton et al, in UKPDS 50 show that by 6 years of diabetes 22% of patients developed retinopathy⁽³⁾. Among patients with diabetic nephropathy and retinopathy 93.75% and 100% had positive history of hypertension respectively. In UKPDS-36, Trial by Adler Amanda et al, show that in diabetic patients with elevated systolic blood pressure was significantly associated with diabetic complications. Any reduction in blood pressure was associated with decreased risk of complications with the lowest risk being in those with systolic blood pressure was less than 120 mm Hg⁽⁴⁾. Among patients with diabetic nephropathy and retinopathy 90.62% and 100% patients had positive history of coronary artery disease respectively. Trial by Scott M Grundy et al show that Coronary artery disease is listed as cause of death in 65% of diabetic patients⁽⁵⁾.

References

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