TO STUDY THE CORRELATION OF DIABETIC MICROVASCULATURE COMPLICATIONS IN CHRONIC KIDNEY DISEASE

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ABSTRACT

Background/objectives: To study the correlation of micro-vascular complications of chronic diabetes in chronic renal insufficiency patients.

Methodology: This is a cross sectional descriptive study conducted in Endocrinology unit of Hayatabad Medical Complex, Peshawar. The data was collected from 100 inpatients for 6 months, January to June,2014. The data was collected on a structured proforma. Descriptive analysis was done.

Results: Bilateral Non-Proliferative Diabetic Retinopathy (NPDR) was found one of the most common micro-vascular complications of diabetes among the study population. The second and third common reported complication was Bilateral Cataract (20%) and Bilateral Mild NPDR (10%) respectively.

Conclusion: Bilateral Non-Proliferative Diabetic Retinopathy was the most common micro-vascular complications of diabetes among the study population.

Keywords: Chronic renal insufficiency, chronic kidney disease, diabetic retinopathy.

INTRODUCTION

Chronic kidney insufficiency (CKD) is an irreversible decline in renal function which develops slowly over many years.[1,2] In South Asian population, the incidence of chronic renal disease is higher than in Europeans[3-5].

Chronic renal failure (CRF) has been recognized as overwhelming medical, social, and economic problem for both patients and their families in Indo Pakistan[4-6]. Microvascular complications are very common in diabetic population.

METHODOLOGY

A cross sectional study conducted in Hayatabad medical complex, Peshawar. The data was collected for 6 months. The demographic, anthropometric measurements, clinical examination and biochemical profile were taken on a structured proforma. Fundoscopy was done. Creatinine clearance is calculated by

1. Clearance of creatinine in ml per min per 1.73m2 = U x V x 1.73 / P x1440 x BSA

U is for creatinine level in urine in milligram per deciliter

V is for volume of urine in 24 Hours in milliliter

P is serum creatinine levels in mg/dl

BSA is body surface area. BSA = weight (kg) 0.425 x height (cm) 0.725 × 7.1 x 10

2. Cockcroft- Gault estimated creatinine clearance in ml/min = (140-age) × BW (Body weight in Kg) / plasma serum creatinine (Pcr) in mg/dl × 72 x 0.85 if female (5,6)

RESULTS

Bilateral Non-Proliferative Diabetic Retinopathy (NPDR) was found one of the most common micro-vascular complications of diabetes among the study population. The second and third common reported complication was Bilateral Cataract (20%) and Bilateral Mild NPDR (10%) respectively.

Among 100 patients, 82 were in stage 2 renal disease and 12 were in stage 1. Out of 20 Bilateral Cat-

Micro-vascular complications of chronic diabetes

Findings based on Fundi	Frequency	Percentages
Bilateral Cataract	20	20.0
Bilateral Mild NPDR	10.0	10.0
Bilateral Severe NPDR	28	28.0
Lt Mild NPDR	2	2.0
No diabetic Changes	30	30.0
Normal	4	4.0
RT cataract & Lt enucleated	2	2.0

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Table 2: Comparison of Fundi and stages of Renal Diseases

	Stage of Renal Disease based on 24 houres creatinine clearance				Total
	Stage 1 (>90 mL/min/1.37m2)	Stage 2 (60-89 mL/min/1.37m2)	Stage 3A (30-44 mL/min/1.37m2)	Stage 3B (45-59mL/ min/1.37m2)	
Bilateral Cataract	2(10.0%)	14(70.0%)	2(10.0%)	2(10.0%)	20(100.0%)
Bilateral Mild NPDR	0(0%)	10(100.0%)	0(0.0%)	0(0.0%)	10(100.0%)
Bilateral Severe NPDR	4(13.3%)	22(78.6%)	0(0.0%)	2(7.1%)	28(100.0%)
Lt Mild NPDR	0(0.0%)	2(100.0%)	0(0.0%)	0(0.0%)	2(100.0%)
No diabetic Change	4(13.3%)	26(86.7%)	0(0.0%)	0(0.0%)	30(100.0%)
Normal	2(50.0%)	2(50.0%)	0(0.0%)	0(0.0%)	04(100.0%)
RT Cataract & Lt enucleated	0(0.0%)	2(100.0%)	0(0.0%)	0(0.0%)	02(100.0%)
Normal and Lt cataract	0(0.0%)	4(100.0%)	0(0.0%)	0(0.0%)	04(100.0%)
Total	12(12.0%)	82(82.0%)	02(2.0%)	04(4.0%)	100(100.0%)

aract cases 14(70%) were in stage 2 renal disease and 2(10%) in stage 1, stage 3B and stages 3A respectively. All of patients with bilateral mild NPDR, Lt Mild NPDR, RT cataract & Lt enucleated, RT eye Normal and Lt Cataract were found in stage 2 renal diseases. While among 28 bilateral severe NPDR cases 22(78%) were in stage 2 renal disease and 4(14%) were in stage 1. Similarly, most 26(86.7%) of the patients with normal fundi finding also suffered from stage 2, as shown in table.

DISCUSSION

Chronic renal disease is a global health problem. The prevalence of the disease has remarkably increased during the last few years. The retinal micro-vascular changes thus act as marker of decline in kidney function with known cases of diabetic nephropathy[7]. Similarly it was noticed that moderate and severe changes in the vessels of retina or qualitative changes in the vessel architecture were strongly linked with renal insufficiency and were aggravated by diabetes mellitus[8,9]. Therefore retinopathy may be a useful indicator of micro-vascular damage from hypertension, diabetes mellitus and renal impairment[10-12].

CONCLUSION

Diabetic retinopathy, apart from diabetic nephropathy, accounts for the micro vascular changes in fundi which further deteriorate the quality of life of patients suffering from kidney diseases. Further studies are needed to get reliable predictive equation for CrCl in patients with diabetes and renal disease.

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