ORIGINAL RESEARCH

Clinical Profile of Diabetic Nephropathy and Diabetic Retinopathy in a Tertiary Care Hospital

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ABSTRACT
Introduction- Diabetes mellitus (DM) is a group of metabolic disorders characterized by high blood sugar over a prolonged time. The microvascular problems of neuropathy, nephropathy, and retinopathy are frequently linked to diabetes. The aim of present study is to study the clinical profile of diabetic nephropathy and diabetic retinopathy in a tertiary care hospital. **Material and methods-** Study was conducted in a tertiary care hospital on patients with type 2 diabetes mellitus and total of 100 patients were included. Patients were divided in to two groups based on their UAC ratio, group A with normoalbuminuria patients and group b with microalbuminuria patients. Statistical analysis were conducted and results were drawn. **Results-** In Group A and B the maximum subjects were in the age group of 51 to 60 years and least were in the age group of below 50 years. The mean duration of diabetes mellitus in group A is 5.63±2.17 where as in group B it was 6.38±1.85. There was no significant difference between the two groups. The mean Hba1C value in group A was 7.27±0.18 in the present study where as in group B was 7.36±0.23. There was significant difference between the two groups. **Conclusion–** It was concluded that people with diabetic nephropathy will more frequently have diabetic retinopathy as well.
Keywords– diabetes mellitus, metabolic disorder, duration, nephropathy, retinopathy

INTRODUCTION

A series of metabolic disorder known as diabetes mellitus (DM) are characterised by persistently elevated blood sugar levels. Asians are more likely to develop diabetes because of the "Asian Indian phenotype," which is linked to increased insulin resistance, greater abdominal adiposity despite lower body mass index, lower adiponectin levels, and higher high sensitivity C-reactive protein levels. Due to the earlier age of onset and longer duration of the disease, Indians are more susceptible to all of the problems associated with diabetes. [1,2]

The microvascular problems of neuropathy, nephropathy, and retinopathy are frequently linked to diabetes. Frequent changes in refractive error, accelerated cataract development, glaucoma, dry eyes, ocular nerve palsies, and diabetic retinopathy are all indications of how diabetes affects the eyes. A significant microvascular consequence of diabetes is diabetic retinopathy. [3] Depending on the stage of DR, each patient has a different presentation and profile. Early identification of DR has the potential to improve the visual outcome in patients with advanced illness, who typically have a bad prognosis in terms of their vision.

One of the main causes of chronic renal failure in India, accounting for approximately 30% of cases, is diabetic nephropathy.[4] The most widely utilised serum indicators of renal function are now blood urea and serum creatinine. Diet, liver function, and a variety of illness states can all affect the blood's urea levels. Additionally, food, age, ethnicity, and gender all have an impact on the blood concentration of serum creatinine. The rate at which it appears in the blood stream is connected to muscle mass. The tubular secretion of serum creatinine rises as plasma concentrations do, which causes an overestimation of GFR. Due to the nonlinear relationship between plasma concentration and GFR, serum creatinine is also ineffective at detecting slight drops in GFR. GFR gradually decreases as a result, arterial blood pressure is increased, and cardiovascular morbidity and mortality are increased.[5]

Considering the above facts, the study was undertaken to study the clinical profile of Diabetic Nephropathy and Diabetic Retinopathy in a Tertiary Care Hospital.

MATERIAL & METHODS

The present prospective observational study was conducted at department of medicine among patients suffering with type 2 diabetes mellitus. Ethical permission was taken from institutional ethical committee before the commencement of study. Written informed consent was taken from participants before initiation of work.

A total of 100 subjects with Type 2 Diabetes Mellitus were included in the study The inclusion criteria for cases: All Type 2 Diabetes Mellitus cases aged above 18 years admitted to Department of General Medicine. The exclusion criteria were patients who were already diagnosedwith nephropathy, retinopathy patients with either serum creatinine levels are elevated or macroalbuminuria present and patients who did not give consent for the study. Purposive sampling technique was done and patients fulfilling the inclusion criteria were included in the study.Patients were divided in to two groups. Group A will be patients with normoalbuminuric that is UACR less than <=30mg/g and Group B with micro albuminuria i.e. UACR >30 mg/g.

Data was collected by using a Pretested Structured questionnaire. All patients were subjected to detailed history& clinical examination.Laboratory investigations like RBS, Complete blood count (CBC), Glycosylated hemoglobin (HbA1c), Kidney function test (Urea, creatinine, uric acid), Urine routine for protein, Urine albumin, urine creatinine and urine albumin creatinine ratio (UACR) and Fundscopy.

Data was entered into Microsoft excel data sheet and was analyzed using SPSS 23 version software. Chi square test and independent t test was used to find out the mean difference and p value (Probability that the result is true) of less than 0.05 was considered as statistically significant.

RESULT

Mean age of subjects in Group A was 54.23 ± 6.9 years and in Group B was 53.67 ± 4.4 years. In Group A and Bthe maximum subjects were in the age group of 51 to 60 years and least were in the age group of below 50 years. There was no significant difference in age distribution between two groups. In group A (70%) and B (76%) maximum subjects were males as compared to females. There was no significant difference in sex distribution between two groups as shown in table 1.

Table 1 showing distribution of subjects on the basis age and gender

Variable		Group A N (%)	Group B N (%)	P value
Age	<50 years	2 (4)	7 (15)	0.512
	51 – 60 years	37 (75)	34 (67)	
	>60 years	11 (21)	9 (18)	
Gender	Male	35 (70)	38 (76)	0.623
	Female	15 (30)	12 (24)	

The mean duration of diabetes mellitus in group A is 5.63±2.17 where as in group B it was 6.38±1.85. There was no significant difference between the two groups as shown in Table 2.

Table 2 shows distribution of patients according to duration of diabetes.

Duration of diabetes	Group A (N)	Group (N)	P value
<5 years	26	27	0.04
5 to 10 years	17	19	
>10 years	7	4	
Mean ± SD	5.63±2.17	6.38±1.85	

The mean Hba1C value in group A was 7.27±0.18 in the present study where as in group B was 7.36±0.23. There was significant difference between the two groups. The mean RBS at the presentation to the hospital was 182.62 ±33.11 in group A whereas it was 203.21 ± 36.5 in group B. There was significant difference between the two groups as shown in table 3.

Table 3 shows mean Variation in Hba1C and RBS values in both the groups.

Duration of diabetes	Group A	Group B	P value
Hba1C	7.27±0.18	7.36±0.23	<0.01
RBS	182.62 ±33.11	203.21 ± 36.5	<0.01

In group A25 % patients had diabetic retinopathy where as in group B 60% of patients showed features of retinopathy. There was a significant difference between the two groups. It shows that, diabetic nephropathy most of the times it will be associated with diabetic retinopathy as shown in table 4.

Table 4 showing number of patients having retinopathy in both the groups

Diabetic retinopathy	Group A N (%)	Group B N (%)	P value
Yes	13 (25)	30 (60)	
No	37 (75)	20 (40)	<0.01

DISCUSSION

Both industrialised and developing nations are experiencing an increase in diabetes-related health issues. Diabetes is more common there than anywhere else in the globe. Due to its numerous microvascular and macrovascular problems, it has become very popular. Early identification of diabetes and associated consequences is crucial because it is a risk factor for cardiovascular and cerebrovascular disease on its own.[6,7]

Present study was done among 100 patients who were diagnosed with type II diabetes mellitus and visited the department during the study period were divided into two groups to study the clinical Profile of diabetic nephropathy and diabetic retinopathy in a tertiary care hospital.

Mean age of subjects in Group A was 54.23 ± 6.9 years and in Group B was 53.67 ± 4.4 years. In Group A and B the maximum subjects were in the age group of 51 to 60 years and least were in the age group of below 50 years. There was no significant difference in age distribution between two groups. Similar observations were made by Yun Kyung Jeon et al.[8] and VarunShetty et al.[9] were in majority of subjects were in the age range of above 55 years in both the groups.In group A (70%) and B (76%) maximum subjects were males as compared to females.Vashist P et al [10], found that out of 4522 KDs, the proportion of males and females was similar.

The mean duration of diabetes was more than 5 years in both groups in the present study. Raman Ret al [11] in year 2007 found that history-based variables that were significantly associated with increased risk of diabetic retinopathy included duration of diabetes (>15 years; OR, 6.43; 95% CI, 3.18-12.90); in their study stated that duration of diabetes is the strongest predictor for diabetic retinopathy. As duration increases prevalence of diabetic retinopathy also increases. It was 8.9% in <5 years of duration and 89.0% in 11- 15 years and 100% in cases with >15 years of diabetes.

In our study the mean Hba1C values in group A was 7.27±0.18in group A and 7.36±0.23in group B as shown in table 3. Similar findings were seen in studies conducted by Sheuly et al,[12]where the mean value was 7.53±1.72 in group A and 7.90 ± 1.69 in group B. In study conducted by Geetha.et al,[13] group A had mean Hba1c value of 8.63 ± 6.70 and in group B 9.25 ± 2.72. Hence can be concluded that patients with micro albuminuria had more uncontrolled sugar levels when compared with patients with normoalbuminuria. In the presence study, there was significant difference between two groups in association with diabetic nephropathy. Similarly in Eugene Sobngwi et al,[14]

study there was significant difference between the two groups with more retinopathy patients in group B, where 21 patients had retinopathy out of 34 patients compared to 3 patients out of 30 patients in group A. So it can be said that diabetic retinopathy can be found associated with diabetic nephropathy and can be used as an important risk factor for the development of nephropathy.

There were some limitations to the current study as this was done on a small number of sample size in a single institute therefore the results cannot be generalized to whole population and hence further research is needed comparing the different variables.

CONCLUSION

The chance of acquiring nephropathy increases along with the length of time that diabetes mellitus has been present. The study's findings suggest that people with diabetic nephropathy will more frequently have diabetic retinopathy as well.

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