Prevalence and clinical profile of various complications in type-2 Diabetes Mellitus patients

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Abstract: Background and Aim: Diabetes is a global endemic with rapidly increasing prevalence in both developing and developed countries. As the prevalence of diabetes mellitus is rising and at the same time it is now affecting rural as well as urban people both. Aim of the present study was to detect the prevalence and clinical profile of various complications in type-2 Diabetes Mellitus patients. Methods: The present study was conducted in the Department of Medicine, for the period of two years. Subjects were put to detailed clinical workup, Laboratory diagnosis of Diabetes Mellitus was confirmed by criteria laid by the American Diabetes Association. Presence of microablumin in two urine samples whin in a period of six months taken as criteria for detecting Diabetic Nephropathy. Blood glucose, glycosylated hemoglobin, Lipid profile and serum creatinine were determined in all patients. Results: The patients presenting with various diabetic complications, as CAD (n= 35), cerebrovascular accidents (n=9), PVD (n=11), Retinopathy (n=21), neuropathy (n=15) and nephropathy (n=4) was seen in the diabetic patients. Total 35 cases presented with symptoms classical for diabetes melltus like polyurea and polydipsia and increased appetite and were not associated with diabetic complications at the time of diagnosis. Conclusion: prevalence of complications is quite high even at the time of diagnosis of Type 2 diabetes. This is probably because of the insidious onset of diabetes and long duration of asymptomatic disease before symptoms develop. [Manisha P NJIRM 2017; 8(6):1-3]

Key Words: Diabetes, microablumin, Polyurea, Retinopathy

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Introduction: The term 'diabetes' was first coined by Araetaeus of Cappodocia. Mellitus (honey sweet) was added by Thomas Willis in 1675, when he detected sweetness in urine. It is said that it was first noticed by the ancient Indians; Shushrutha had named it as 'Madhumeha'.[1]

In the ancient Sanskrit Literature, diabetes mellitus was described as "honey-urine disease," associated with gross emaciation and wasting. Diabetes is a global endemic with rapidly increasing prevalence in both developing and developed countries.[2] Diabetes mellitus is a common metabolic disorder and is associated with development of chronic complications leading to significant morbidity and mortality. The onset of type 2 diabetes (T2DM) is often silent and insidious. Pathogenic processes causing T2DM range from autoimmune destruction of cells of pancreas with consequent insulin deficiency to abnormalities that result in resistance to insulin action. The asymptomatic phase of hyperglycemia accounts for the relatively high prevalence of complications at initial presentation.[3]

Majority of India's population is in the villages and the rural population is ignorant about the disease and its complications. It is therefore, essential to device cost-effective and simple screening tests to detect complications. According to Diabetes Atlas (5th edition) in 2011, the global prevalence of diabetes was estimated at 366 million; this figure is predicted to reach 552 million by 2030. Eighty percent people live in low and middle income countries. Diabetes caused 4.6 million Deaths in 2011. China leads the world with largest number of diabetic subjects followed by India. According to the Diabetes Atlas 2011 published by the International Diabetes Federation, the number of people with diabetes in India currently around 61.3 million is expected to rise to 101.2 million by 2030. Our aim was to detect the prevalence and clinical profile of various complications in type-2 Diabetes Mellitus patients.

Methods: The present study was conducted in the Department of Medicine for the period two years in patients selected by the random sampling and after taking informed consent. Subjects were put to detailed clinical workup, Laboratory diagnosis of Diabetes Mellitus was confirmed by criteria laid by the American Diabetes Association (ADA).[1] Peripheral Neuropathy was regarded as the bilateral loss of ankle jerks or gross sensory deficit in both feet as per standard criteria. Blood glucose was estimated by the ortho-toluidine, while glycosylated hemoglobin by the modified chemical method of Flickinger and Winterhalter. Lipid profile and serum creatinine were determined in all the patients. . The present study

consists of total 60 subjects between the age group 22-65 years.

Exclusion Criteria were:

- Type 1 Diabetes Mellitus
- Any other severe illness

A thorough neurological assessment of samples was done. Presence of sensory neuropathy was defined by symptoms of tingling and numbness over the extremities (bilaterally symmetrical) with or without impaired touch, vibration sense or joint position sense. Presence of motor neuropathy was noted. Autonomic dysfunction in the form of resting tachycardia, orthostatic hypotension, gastroparesis/ diarrhea or abnormal sweating was noted. Ten gram monofilament was used to note any reduced sensation due to neuropathy. Dilated pupil fundoscopy was carried out in all patients by an ophthalmologist and retinopathy was defined and graded.

Presence of microablumin in two urine samples whin in a period of six months taken as criteria for detecting Diabetic Nephropathy. Blood glucose, glycosylated hemoglobin, Lipid profile and serum creatinine were determined in all patients.

Statistical Analysis: Qualitative data will be expressed as percentages and proportions. Quantitative data will be expressed as mean and standard deviation. The differences between two groups with respect to continuous variables will be analysed using t-test while categorical variables will be analysed using chi-square test. All the statistical tests will be performed in SPSS version 15 software.P value <0.05will be considered as statistically significant while P value<0.01 will be considered as statistically highly significant.

Results and Discussion: In this present study, 55 were males and 40 were females. The mean age was 52.05 ± 3.01 years. The maximum incidence of diabetics was seen between 52-68 years. The patients presenting with various diabetic complications, as CAD (n= 35), cerebrovascular accidents (n=9), PVD (n=11), Retinopathy (n=21), neuropathy (n=15) and nephropathy (n=4) was seen in the diabetic patients .Classical symptoms of diabetes as polydipsia, polyphagia and increased hunger was seen (n=35) without diabetic complications.

The patients presenting with complaints correlated with diabetic complications of CAD, Cerebrovascular disease, peripheral artery disease, retinopathy, nephropathy and neuropathy was 36.8%, 9.5%, 11.6%, 22.1%,15.8% and 4.2% respectively. Table 1 describes Prevalence of Various Complications in Type-2 DM. The high incidence of various complications of DM occur in patients having >7 HbA1C.

Majority of the patients who were diagnosed in this study was already presented with symptomps and signs of diabetic complications at the time of diagnosis .Very few cases were presented with the minor symptoms or on routine examinations done before various surgical procedures. Total 35 cases presented with symptoms classical for diabetes melltus like polyurea and polydipsia and increased appetite and were not associated with diabetic complications at the time of diagnosis. These findings are similar to the study done by Drivsholm et al7 study. In our study we have found out CAD (n=35) 36.8%, Retinopathy (n =21) 22.1 %, Nephropathy (n=15) 15.8%. These findings are consistant with the study done by Weersurya et al6, they have found out CAD 26.9%, Diabetic nephropathy 25.2%, Neuropathy 29% in their study. In the study by Mohan et al4 results are not similar to our study. They have found out majority of cases of diabetic complication was Retinopathy 34.2%, cases of CAD was low 7.9%. In Hoorn study5 diabetic nephropathy was highest 48.3% and diabetic neuropathy was 26.7%.

These findings are also consistant with our study. The study done by Agrawal et al8 also shows the results approximate similar to our study, in which Retinopathy was highest 32.5%, Nephropathy 30.2%, Neuropathy 26.8%, CAD was found in 25.8%. The study done by Nafisa et al9 which was done on the rural population of Goa also shows results similar to our study. They found Neuropathy 60%, CAD 32.6%, Retinopathy 15.4%, Peripheral vascular disease 11.5%, and Cerebrovascular accidents 6.9% in their study.

Table 1: Prevalence of Various Complications in Type-2 Diabetes Mellitus

Complications	Number (Percentage %)	P value
CVD	9 (9.5)	0.005*
PVD	11 (11.6)	1.0
CAD	35 (36.8)	0.01*
DN	15 (15.8)	0.05*
DR	21 (22.1)	0.001*
DNE	4 (4.2)	0.04*

* Indicates Statistical Significance at p≤0.05

Conclusion: As the prevalence of diabetes mellitus is rising and at the same time it is now affecting rural as well as urban people both. Large proportion of T2DM patients presented with various complications because of insidious and silent onset of T2DM and hence this disease acts as a silent killer. In summary, prevalence of complications is quite high even at the time of diagnosis of Type 2 diabetes. This is probably because of the insidious onset of diabetes and long duration of asymptomatic disease before symptoms develop. Hence screening tests for complications are strongly recommended at the time of diagnosis not only for early detection, but also to prevent the progression to end-stage disease.

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