Diabetic dyslipidemia and microvascular complications lead to morbidity and mortality in diabetic patients. The present study was undertaken to see the prevalence and pattern of dyslipidemia and microvascular complications in newly diagnosed type 2 diabetes mellitus. The study was a cross sectional study carried out in a teaching hospital in north east India. A total of 100 newly diagnosed diabetics were included in this study. Clinical and laboratory investigations were performed as per requirement and analysed using SPSS software.

**Objectives:** To assess the prevalence of dyslipidemia and microvascular complications in newly diagnosed type 2 diabetes mellitus.

**Method:** Cross sectional study carried out in a teaching hospital in north east India. A total of 100 newly diagnosed diabetics were included in this study. Clinical and laboratory investigations were performed as per requirement and analysed using SPSS software.

**Result:** Microvascular complications were found in 39% of the patients; neuropathy being the most common followed by nephropathy and retinopathy. Nephropathy and retinopathy were significantly associated with hypertriglyceridaemia with low HDL being most common. Dyslipidemia was significantly associated with nephropathy and retinopathy (p<0.05).

**Conclusion:** Diabetes has taken an epidemic proportion in our country hence early diagnosis followed by strict hyperglycaemic control is needed to prevent and delay the microvascular complications.

Keywords: dyslipidemia, microvascular complications, newly diagnosed, type 2 diabetes mellitus

**INTRODUCTION**

**DIABETES MELLITUS** refers to a group of common metabolic disorders that share the phenotype of hyperglycemia. Diabetes is one of the commonest chronic non communicable disease affecting the society at large, both in developing and developed countries. India comes in the top three countries with high diabetic population in the world, second only after China, earning the dubious distinction of being termed the "Diabetes Capital of the World".

Type 2 diabetes mellitus (T2DM) is accompanied by a high prevalence of associated disorders like the various components of the metabolic syndrome, microvascular complications like retinopathy, nephropathy, neuropathy and macrovascular complications like coronary artery disease, peripheral vascular disease and cerebrovascular disease, resulting in significantly high morbidity and mortality. Due to its asymptomatic course, T2DM evades diagnosis for many years. Long standing diabetes mellitus is associated with an increased prevalence of microvascular and macrovascular complications. The first indication of the presence of T2DM may actually be detected at the time of diagnosis of a diabetic complication. T2DM is associated with the development of premature arteriosclerosis and a higher cardiovascular morbidity and mortality. Diabetic dyslipidemia is believed to play an important role in the pathogenesis of accelerated atherosclerosis in this condition. This study was undertaken to see the prevalence and pattern of dyslipidemia and microvascular complications in individuals with newly diagnosed T2DM.

**METHOD**

This study was a cross sectional study carried out in a teaching hospital over a period of six months. After approval from institutional ethics committee, consenting patients who satisfied inclusion criteria (newly diagnosed T2DM of less than 3 months duration) were enrolled. Type 1 diabetes mellitus, patients with previous history of any vascular disease, end stage renal disease, pre existing neurological disease including stroke or history of nephrotoxic, neurotoxic or oculotoxic drugs use were excluded. A detailed clinical examination was performed, ophthalmoscopic examination, both direct and indirect were done. Detailed neurological examination including test to rule out autonomic neuropathy like history of change in bowel or bladder habits, examination of skin to note change in colour, temperature, sweating, changes in heart rate and blood pressure with respiration or to carotid massage, valsalva test, deep breath test were conducted. After an eight hour fasting, venous blood samples were collected for measuring fasting blood glucose, HbA1C, serum cholesterol level, High Density Lipoprotein Cholesterol(HDL), triglyceride(TG), serum urea and creatinine. Post prandial plasma glucose as well as urinary albumin creatinine ratio(ACR) were measured. The data analysis was performed using SPSS software version 17.0 (IBM corporation, Chicago, USA).

**RESULTS**

There were 100 patients in the study. Majority were men, with most being in the age group of 46-55 (n=51). Microvascular complications were found in 39 patients(39%). The most common complication was neuropathy (24%) followed by retinopathy(19%) and nephropathy(7%). Retinopathy and nephropathy were found in 6 patients(6%) while all three were found in 2 patients(2%). The age group of 56-65 years had the most number of complications. Interestingly the age group of 46-55 years had the least number of complications.

**DISCUSSION**

In our study the mean age at diagnosis was found to be 53.7 years. This
Diabetic complications are strongly recommended at the time of diagnosis not of diagnosis of Type 2 diabetes. Hence screening tests for newly diagnosed type 2 diabetics, and the most common pattern of being neuropathy. There was a significant association between these two.

Dyslipidemia was found in 36% of the patients, similar to that seen in other studies. The classical diabetic dyslipidemia that is increased TG with reduced HDL was present in 12 patients (33.33%). Similarly isolated increased TG was also seen in 12 patients (33.33%), 5 patients (13.88%) had increased TG and LDL with decreased HDL, 7 (19.44%) had other mixed pattern of dyslipidemia. Among the dyslipidemias, 16 patients (44.44%) were having diabetic complication at the time of diagnosis. Of the dyslipidemic patients 13 (38.88%) were having nephropathy. The association was statistically significant (P value < 0.05). This finding is similar to many other studies which reported similar strong correlation between these two.

Positive correlation was found with LDL-C, TG, and total cholesterol, where as negative correlation was found between ACR and HDL-C. The finding agrees with the various studies which have shown that microalbuminuria is associated with lipid profile abnormalities.

Today, it is recognized that the presence of microalbuminuria, in addition to being a marker of incipient renal disease in diabetic patients, seems to be also a marker of large vessel disease, and is associated with an increased cardiovascular disease mortality, especially coronary heart disease.

**CONCLUSION**

On the basis of our study we conclude that Diabetic complications are fairly common in newly diagnosed type 2 DM patients, most common being neuropathy. There was a significant association between retinopathy and nephropathy. Dyslipidemia was present in 36% of newly diagnosed type 2 diabetes, and the most common pattern of dyslipidemia was increased TG with reduced HDL - C. Dyslipidemia was found to be significantly associated with nephropathy.

In summary, prevalence of complications is quite high even at the time of diagnosis of Type 2 diabetes. Hence screening tests for complications are strongly recommended at the time of diagnosis not only for early detection, but also to prevent the progression into end stage disease.