Incidence of macrovascular complications in newly diagnosed diabetics

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Abstract

Background: Diabetes is an 'iceberg" disease. The prevalence of DM is expected to rise more rapidly in future because of increasing obesity and reduced activity levels. The increasing prevalence of type 2 diabetes mellitus (Non-Insulin Dependent Diabetes - NIDDM) is a global problem; and it is unfortunately, a major one in developing countries such as India. Consequent to the rising prevalence of diabetes, the number suffering from the vascular complications of diabetes will also increase. In order to have a holistic view of the challenge, it is essential to have data on the incidence of diabetic complications.

Objective: To find the incidence of macrovascular complications in newly diagnosed (within last 6 months) type 2 diabetes mellitus patients and associated risk factors.

Material and Methods: From the total 496 newly diagnosed (within last 6 months) patients of Type 2 diabetes mellitus from OPDs, wards and ICU of Internal Medicine department, MLB Medical College and Hospital, Jhansi, 209 refused to participate in study so finally 287 patients were selected for study. Data was analyzed using Microsoft excel 2007.

Results: The incidence of macrovascular complications in Type 2 diabetes mellitus (newly diagnosed) were 58.2% in which incidence of cardiovascular, cerebrovascular and peripheral vascular was found to be 40.1%, 10.1% and 8.0% respectively.

Conclusions: Incidence of cardiovascular disease in newly diagnosed type-2 DM found to be 40% and incidence of macrovascular complications were more in those having risk factors like hypertension, dyslipidemia, obesity, smoking and family history of diabetes.

Keywords: Diabetes Mellitus, Macrovascular complications, Risk Factors

Introduction

Diabetes is an 'iceberg" disease. The prevalence of diabetes mellitus in adult is around 4% worldwide.[1] The prevalence of DM is expected to rise more rapidly in future because of increasing obesity and reduced activity levels.[2] The prevalence is similar in men and women throughout most age ranges but it is slightly greater in men more than 60 years. It is projected that disease prevalence will be 5.4% by year 2025 with global diabetic population reaching 300 million. Of the close to 77% of global burden of disease is projected to occur in developing countries.[3]

The increasing prevalence of type 2 diabetes mellitus (Non-Insulin Dependent Diabetes - NIDDM) is a global problem; and it is unfortunately, a major one in developing countries such as India.[4] The estimated prevalence of diabetes among urban Indians aged ≥ 20 years by the year 2000 AD is approximately 33 million.[5]

Diabetes mellitus is the most prevalent, chronic non communicating disorder and risk of complication increases with function of duration of hyperglycemia.[6] It involves various organs especially kidney, heart, blood vessels, eye and brain. Clinical manifestation of macrovascular disease is atherosclerosis.[7] 'The Deadly Triangle' of coronary artery disease (CAD), cerebrovascular disease and peripheral vascular disease is the major cause of mortality and morbidity in the diabetic population.[8]

Consequent to the rising prevalence of diabetes, the number suffering from the vascular complications of diabetes will also increase.[9] In order to have a holistic view of the challenge, it is essential to have data on the incidence of diabetic complications. Therefore we attempted to do a clinic based study in a large cohort of newly diagnosed type 2 diabetic patients with an aim to find the frequency of macrovascular complications in diabetes and the associated risk factors.

Material and Methods

Study Population: All patients from OPDs, wards and ICU of Internal Medicine department, MLB Medical College and Hospital, Jhansi.

Study Period: The study period was from 2008 to 2009 which was used for data collection, compilation and presentation of findings.

Sample size: All newly diagnosed patients of Type 2 diabetes mellitus in the first 6 months of year 2008 from OPDs, wards and ICU of Internal Medicine department, MLB Medical College and Hospital, Jhansi were selected for the study.

Study participants: From the total 496 newly diagnosed patients of Type 2 diabetes mellitus, 209 did not provided consent to participate in study therefore the total 287 patients were selected for study.

Data Collection: Data was collected using a pre designed questionnaire to derive necessary information, measurements and investigation reports for each participant.

Ethical Approval: Approval from the institutional ethical committee was obtained. Informed written

consent was obtained from each participant after explaining the purpose of the study.

Statistical Analysis: Data was analyzed using Microsoft excel 2007.

Results

A total of 287 patients were selected during the study period in which 250 (87.1%) were males and rest 37 (12.9%) were females (Table 1).

Table 1: Distribution of patients according to sex

	No. of patients (n=287)	Percentage
Male	250	87.1
Female	*37*	*12.9*

It was observed from Table 2 the three most common risk factors were found to be Dyslipidemia (49.8%), central obesity (40.1%) and smoking ≥1 pack/day (39.7%).

Table 2: Distribution of cases according to risk factors

Risk factors	No. of patients	Percentage
Hypertension ≥130/85	77	26.8
Dyslipidemia	143	49.8
Obesity (BMI)	77	26.8
Smoking ≥1 pack/day	114	39.7
Family history of DM (first degree relative)	43	15.0
Central obesity	*115*	*40.1*

Table 3: Macrovascular complications at the time of presentation

Complications	No. of patients	Percentage
Cardiovascular	115	40.1
Cerebrovascular	29	10.1
Peripheral vascular	23	8.0
Without complications	*120*	*41.8*

The incidence of macrovascular complications in Type 2 diabetes mellitus (newly diagnosed) were 58.2% in which incidence of cardiovascular, cerebrovascular and peripheral vascular was found to be 40.1%, 10.1% and 8.0% respectively (Table 3).

Discussion

The present study yielded almost similar results of south Indian study by Mohan et al[10] in 1996 in which incidence of macrovascular complications in newly diagnosed type 2 DM were found to be Cardiovascular (40%), Cerebrovascular (10%) and PVD to be 3%.

In our study out of 287 newly diagnosed type 2 DM patients – cerebrovascular complications were reported in 29 patients i.e. 10.1%, all are >45 yrs of age, smoker, with seven patient having family history of diabetes mellitus. Out of 29, 21 subjects suffered from ischemic stroke diagnosed on NCCT head and 7 cases suffered from haemorrhagic stroke. As we know that patients with diabetes have higher incidence of cerebral infarction. The incidence of haemorrhagic stroke and TIA are however not different in patients with or without diabetes.

In our study 23 patients suffered from peripheral vascular disease i.e. 8%. Out of 23 cases, 14 cases have history of claudication and 9 cases have frank diabetic foot with wet gangrene. On Doppler colour flow of lower limbs, blood flow was severely diminished to absent. It has been reported in some other studies from south India that peripheral vascular disease (PVD) occurs less commonly in India. In one study 3.9% have PVD in newly diagnosed type 2 DM.

Conclusions and Recommendations

The present study highlights incidence of cardiovascular disease in newly diagnosed type-2 DM found to be 40% and incidence of macrovascular complications were more in those having risk factors like hypertension, dyslipidemia, obesity, smoking and family history of diabetes. We suggest that there is a need for well-planned, systematic and large scale studies by using standardized methodologies to determine the incidence of macrovascular complications in newly diagnosed type-2 diabetic patients and risk factors also.

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