

PREVALENCE OF COMPLICATIONS IN TYPE 2 DIABETES MELLITUS IN A TERTIARY CARE HOSPITAL – A PROSPECTIVE STUDY

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ABSTRACT

Objective: Diabetes is a major lifestyle disorder which has become a global burden. It is a progressive disorder which results in complications. Complications of type-2 diabetes mellitus (DM) reduce quality of life of patients, become heavy burden to health-care systems, and increase diabetic mortality. This study highlights the major burden of complications among the patients.

Methods: A study was done to evaluate the comorbidities in patients with type 2 DM. Before the subjects enter into the study, the study was briefly explained to the subjects and an informed consent form was made to sign by the patient or the patient caretaker by their willingness to participate in the study. A total of 100 patients were enrolled into the study. The patient was then screened for the eligibility criteria to enter into the study. The subjects were followed (treated, monitored) according to the study design. The comorbidities were checked and treatment was given according to their condition.

Results: The patient's final data were analyzed and final reports were submitted. Hypertension was the main common comorbid condition found in patients, which was about 35%, retinopathy 8%, diabetic foot 8%, nephropathy 9%, cardiovascular disease 6%, and peripheral vascular disease 6% and others were found to be 28%.

Conclusion: This result shows a worldwide failure to reach glycemic targets. Earlier initiation of management and improving insulin regimens may reduce the prevalence of complications, improve the lives of diabetic patients, and reduce burden on healthcare systems.

Keywords: Type 2 diabetes mellitus, Retinopathy, Nephropathy, Cardiovascular disease, Peripheral vascular disease.

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INTRODUCTION

Type 2 diabetes is the most common type of diabetes. It is a disease that occurs when blood glucose (blood sugar) is increased. Insulin is a hormone which is made by the pancreas. It helps glucose get into the cells which is used for energy. In type 2 diabetes, body does not make enough insulin [1]. Complications in diabetes are common in patients with type 2 and 1 resulting in significantly decreased quality of life, morbidity, and mortality. Most chronic complications are divided into macrovascular and microvascular. Microvascular complications have higher prevalence than macrovascular complications [2]. Microvascular complications include retinopathy, neuropathy, and nephropathy, macrovascular complications including coronary heart disease, stroke, and peripheral vascular disease (PVD) [3]. Diabetes ketoacidosis and diabetic foot problems are also complications of type 2 diabetes mellitus (DM). Diabetic foot syndrome has been defined as the presence of foot ulcer associated with neuropathy, peripheral artery disease, and infection. It is a major cause of lower limb amputation. Finally, there are other complications of diabetes that cannot be included in the two above categories such as dental disease, reduced resistance to infections, and birth complications among women with gestational diabetes [4].

In type 2 DM, hypertension is frequently due to part of the metabolic syndrome of insulin resistance also including dyslipidemia and obesity. Hypertension is considered as increase in risk of both macro- and microvascular complications. Hypertension has approximately twice the risk of cardiovascular disease. Hypertensive-diabetic patient is also at increased risk for diabetic-specific complication which includes nephropathy and retinopathy [5].

METHODS

Study design

The study is an observational, prospective type of study.

Study approval

This study was approved by "Institutional Human Ethical Committee" of Geethanjali College of Pharmacy, Cheeryal, Keesara.

Study site

The study was conducted in RVM Institute of Medical Sciences and Research Centre, Laxmakkapally, Siddipet District, Telangana.

Study duration

The study was conducted for a period of 6 months.

Sample size

One hundred patients of Type 2 DM admitted in the IPD for treatment were enrolled in the study.

Study subjects

All the patients who were having type 2 DM admitted in the General Medicine IP Department of the RVM Hospital. Patients who met the eligibility criteria were enrolled in the study.

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Eligibility criteria

Inclusion criteria

The following criteria were included in the study:

- Patients with type 2 DM
- Patients of age ≥ 18 years of both the genders
- Patients willing to participate in the study
- Patients with comorbid conditions and complications
- Patients who signed informed consent form.

Table 1: Use of antidiabetic drugs in patients with diabetes having comorbidities

Co morbidity	Antidiabetic drug	Percentage of patients
Hypertension	Metformin + Glimepiride + Glipizide	35
Retino	Glimepiride + Metformin	8
Neuro	Insulin + Glimepiride + Metformin + Glipizide	4
Nephro	Insulin + Glimepiride + Metformin + Glipizide	9
Diabetic foot	Glimepiride + Metformin + Glipizide	8
Cardiovascular	Insulin + Glimepiride + Metformin + Glipizide	6
Peripheral vascular disease	Insulin + Glimepiride + Metformin + Glipizide	6
Others	Metformin + Glimepiride	24

Exclusion criteria

- Pediatric patient was excluded
- Patients <18 years of age were excluded
- Emergency care patient was excluded
- Pregnant women were excluded
- Mentally retarded patient was excluded
- Type 1 DM was excluded
- Subjects who were not willing to participate were excluded.

Source of data

- Patients prescription, patients case sheets, and medication charts
- Laboratory reports (diagnostic criteria to select patients).

Study procedure

A prospective study on 100 patients was done in the general medicine, IP department of the RVM Hospital for a period of 6 months. The details were entered in the structured patient profile form. All the above-mentioned data and the completed prescriptions were collected on predesigned case record form. Complete evaluation (medical history, physical evaluation, and laboratory evaluation) for DM must be done to ensure that the subjects are eligible to participate in the study before the enrolment.

Statistical analysis

The data were collected; analyzed and appropriate statistics (IBM SPSS ver. 20.) was applied to obtain meaningful information.

RESULTS

A total of 100 patients were enrolled into the study who met the eligibility criteria. The patients were then distributed according to the age groups during the study period.

DISCUSSION

Type 2 DM is one of the most common endocrine disorders. The aim of this study is to determine the comorbidities in type 2 DM. A total of 100 patients with type 2 diabetes were included in the study. The comorbidities among diabetic patients were hypertension. Hypertension was the most prevalent comorbid condition found

in patients was around 35%, others such as retinopathy was 8%, diabetic foot 8%, nephropathy 9%, cardiovascular disease 6%, and PVD 6%, and others were found to be 28%. The number of patients with hypertension was considered to be the highest among other comorbid conditions. A similar study was conducted in urban China hospital included 1524 subjects of type 2 DM in outpatients. Among 1524 subjects, 732 (48.0%) had no complications and 792 (52.0%) were having chronic complications. The prevalence of cardiovascular and cerebrovascular complication, neuropathy, nephropathy, ocular lesions, and diabetic foot disease was 30.1%, 6.8%, 17.8%, 10.7%, 14.8%, and 0.8%, respectively. Our study sample size is small. A large sample size is needed for better understanding [6].

CONCLUSION

Hypertension was the most prevalent comorbidity condition found in patients which was about 35%, retinopathy 8%, diabetic foot 8%, nephropathy 9%, cardiovascular disease 6%, and PVD 6% and others were found to be 28%. The study procedure was followed in compliance with the protocol and was approved by Institutional Ethical Committee. At the end of the study, the data were analyzed and final reports were submitted. From the clinical data, it is confirmed that the study objective of comorbidities of the type 2 DM patients has been achieved. Our study sample size is small. A large sample size is needed for better understanding.

CONFLICTS OF INTEREST

The authors declare they have no conflicts of interest.

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None.

AUTHORS' CONTRIBUTIONS

Sara Shreen: Conceptualization of study, proofreading, final approval of manuscript, and agreement to be accountable. Mohammed Baleeqh Uddin: Data collection, statistical analysis, proofreading, and manuscript writing. Mir Salman Ali: Data collection, statistical analysis, proofreading, and manuscript editing. Zoha Sultana: Data collection, manuscript writing, and proofreading.

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