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PREVALENCE OF VASCULAR COMPLICATIONS AMONG TYPE 2 DIABETES MELLITUS PATIENTS AND ASSESSMENT OF ITS RISK FACTORS

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ABSTRACT

This retrospective study was aimed to find out the prevalence of vascular complications among type 2 diabetes mellitus patients. The injurious effects of hyperglycemia are separated into macrovascular complications (coronary artery disease, peripheral arterial disease, and stroke) and microvascular complications (diabetic nephropathy, neuropathy, and retinopathy). Chances of development of vascular complications over a period of time among type 2 diabetes patients are many. Hence control of blood sugar level is very necessary. Some of the risk factors for the development of diabetes are obesity, lack of exercise, smoking, unhealthy diet, genetics etc.

INTRODUCTION

Diabetes mellitus type 2 (also known as type 2 diabetes) is a long-term metabolic disorder that is characterized by high blood sugar, insulin resistance, and relative lack of insulin. Common symptoms include increased thirst, frequent urination, and unexplained weight loss. Symptoms may also include increased hunger, feeling tired, and sores that do not heal. Often symptoms come on slowly. Long-term complications from high blood sugar include heart disease, strokes, diabetic retinopathy which can result in blindness, kidney failure, and poor blood flow in the limbs which may lead to amputations.

Hyperglycemia is the principal cause of microvasculopathy but also appears to play an important role in causation of macrovasculopathy. Macrovascular disease, that includes coronary heart disease (CHD), cerebrovascular disease, and peripheral vascular disease, is the leading cause of mortality in people with diabetes. Microvascular complications include effects on small vessels, including arterioles, capillaries and venules. The development of these complications starts early in the pathogenesis of Type 2 DM and accounts for morbidity in the form of retinopathy, neuropathy and nephropathy.

The prevalence of type 2 diabetes mellitus is increasing. Type 2 DM accounts for as much as 90% of all cases of DM, and overall the prevalence of type 2 DM in the United States is about 8.7% in persons age 20 or older. However, there is likely one person undiagnosed for every two persons currently diagnosed with the disease. Multiple risk factors for the development of type 2 DM have been identified, including family history (i.e., parents or siblings with diabetes); obesity (i.e., ≥20% over ideal body weight, or body mass index [BMI] ≥25 kg/m2); habitual physical inactivity; race or ethnicity (see listpreviously identified impaired glucose tolerance or impaired fasting glucose; hypertension (≥140/90 mm Hg in adults); high-density lipoprotein (HDL) cholesterol ≤35 mg/dL and/or a triglyceride level ≥250 mg/dL; history of gestational diabetes mellitus or delivery of a baby weighing >9 pounds; history of vascular disease; and polycystic ovary disease. The prevalence of type 2 DM increases with age, it is more common in women than in men in the United States, and varies widely among various racial and ethnic population.

T2DM is a growing cause of disability and premature death, mainly through cardiovascular disease and other chronic complications. It is estimated that the global number of adults suffering from any form of diabetes will reach 285 million in 2010 and further increase to 439 million in 2030, most of them T2DM cases.

Intensive glycemic control is paramount for reduction of microvascular complications (neuropathy, retinopathy, and nephropathy) as evidenced by the Diabetes Control and Complications Trial (DCCT) in type 1 DM and the UKPDS in type 2 DM. The UKPDS also reported that control of hypertension in patients with diabetes will not only reduce the risk of retinopathy and nephropathy but also reduce cardiovascular risk

Data from prospective and cross-sectional studies consistently point to the fact that diabetic patients are more likely to develop micro- as well as macro-vascular conditions. Permanent disability is a common outcome of diabetes, with late complications of diabetes being major determinants for disability. Diabetic eye disease, particularly retinopathy, has become a major cause of blindness throughout the world.

Hence this retrospective study aims to focus on the vascular complications that are developed due to type 2 diabetes mellitus.

MATERIALS AND METHODS

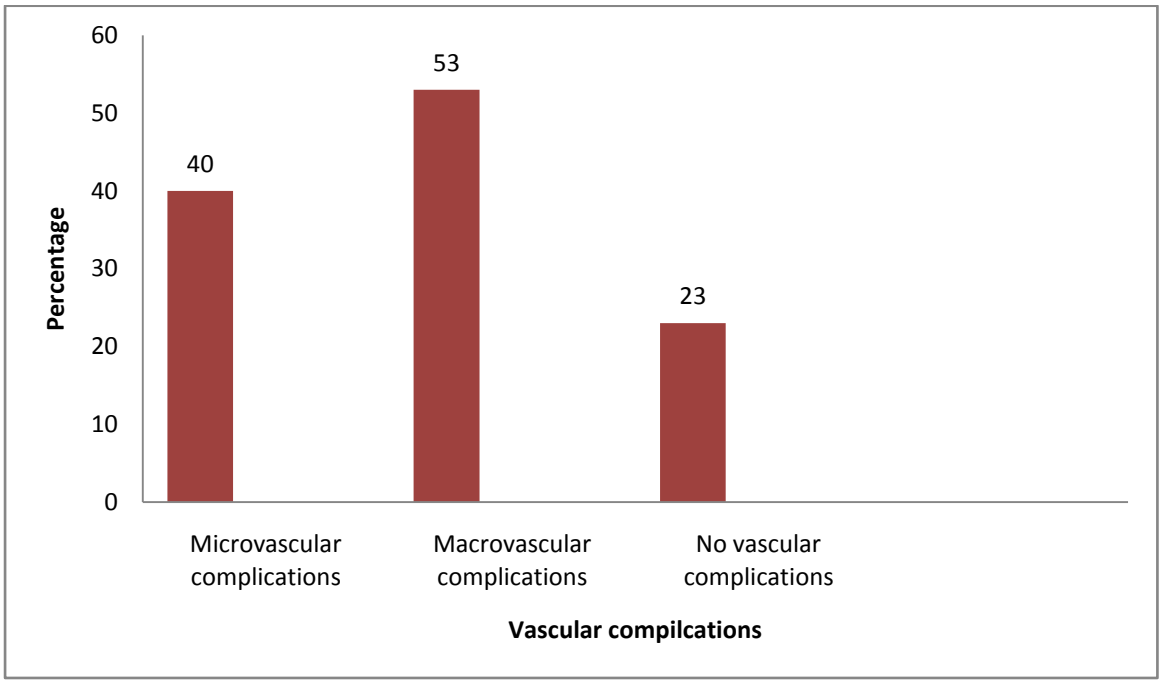
This retrospective study was took place in Pushpagiri Medical College, Thiruvalla among type 2 diabetes patients. Four month study was conducted. In this study both male and female were included. Case files of patients with type 2 diabetes mellitus were selected for the study. Then it was categorized as patients without any vascular complications, with microvascular complications, with macrovascular complications, with both microvascular and macrovascular complications.

The objectives of study were: to differentiate the prevalence of both macrovascular and microvascular complications among patients having type 2 diabetes mellitus and also to assess the risk factors involved.

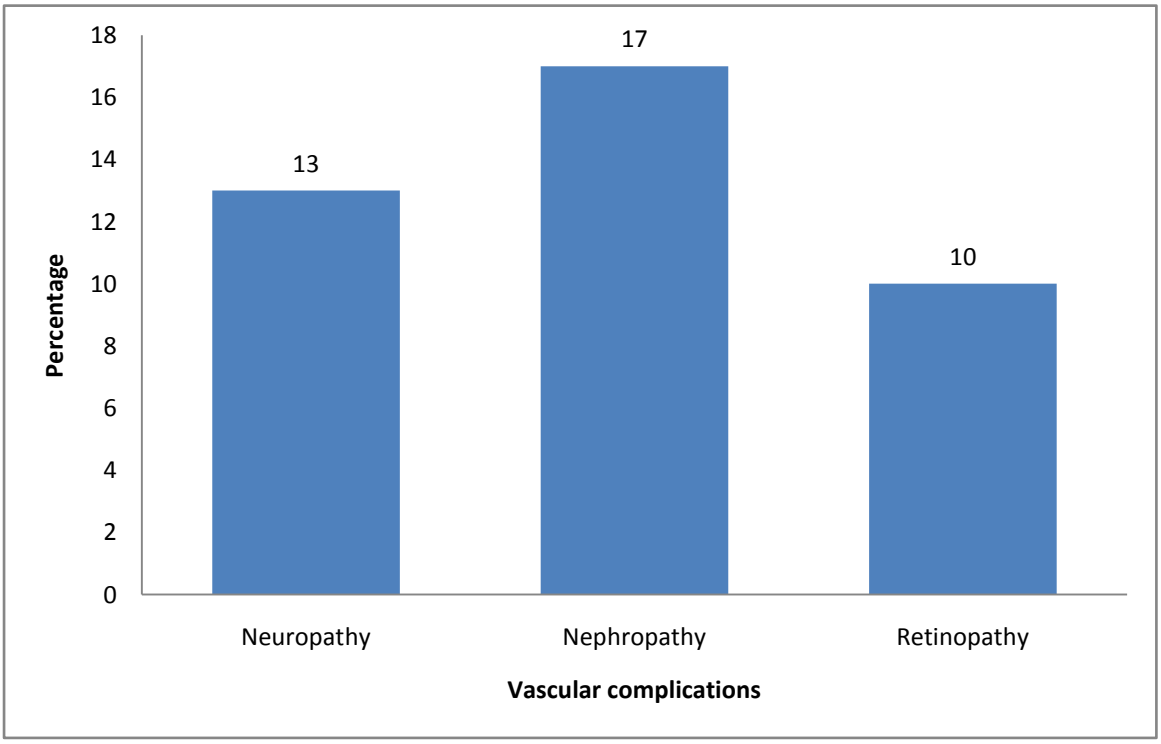
RESULTS AND DISCUSSION

In this retrospective study conducted among type 2 diabetes mellitus patients, 23% were having not any vascular complications, 40% were having microvascular complications and 53% were having macrovascular complications. Among microvascular complications, 13% were having neuropathy, 17% were having nephropathy and 10% were having retinopathy. Macrovascular complications were cardiac complications such as coronary artery disease. The patients without any complications were those to whom type 2 diabetes mellitus was developed within 5 years. Macrovascular complications were developed in patients to whom type 2 diabetes mellitus was developed within 10 years and microvascular complications was developed to patients to whom type 2 diabetes mellitus was developed over a period of about 10 years.

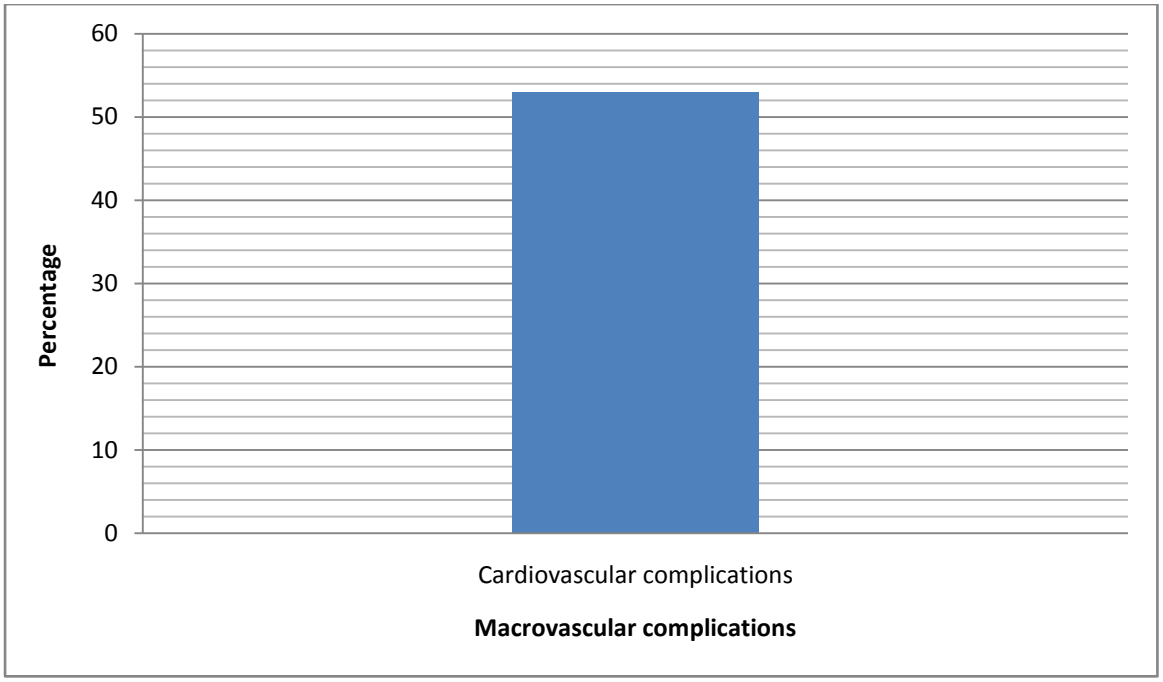
The risk factors for the development of type 2 diabetes were obesity, lack of exercise, smoking, unhealthy diet and genetics. Hence it is very important to rule out the possible risk factors before the development of type 2 diabetes mellitus among people.



Prevalence of vascular complications among type 2 diabetes mellitus patients



Prevalence of microvascular complications among type 2 diabetes mellitus patients



Prevalence of macrovascular complications among type 2 diabetes mellitus patients

CONCLUSION

From this study it was concluded that chance for development of macrovascular complications and microvascular complications over a period of time in patients having type 2 diabetes mellitus is very high. Hence measures to prevent type 2 diabetes is very important; those who are having possible risk factors for the development type 2 diabetes mellitus should be closely monitored; they should be made aware of the chance to develop type 2 diabetes and about the possible vascular complications. Patients who recently developed type 2 diabetes mellitus should be treated properly with oral hypoglycaemic agents or insulin based on their condition and blood sugar should be maintained within normal limits.

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