Section: General Medicine

Original Research Article

ANALYSIS OF PREVALENCE OF VASCULAR COMPLICATIONS IN TYPE 2 DIABETICS: AN INSTITUTIONAL BASED STUDY

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Received *: 15/02/2025*
Received in revised form *: 05/03/2025*
Accepted *: 28/03/2025*

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DOI: 10.70034/ijmedph.2025.2.144

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (2); 801-803

ABSTRACT

Background: Type 2 diabetes can lead to severe microvascular and macrovascular complications. Cardiovascular issues are common, affecting up to 80% of patients, and are responsible for about 65% of deaths among those with the condition. The present study was conducted to analyze the prevalence of vascular complications in type 2 diabetics.

Materials & Methods: The present hospital-based cross-sectional study was conducted among 200 diabetic patients. Demographic information was collected using a pretested structured questionnaire. By combining questionnaires, clinical examinations, and laboratory investigations, the prevalence of macrovascular and microvascular complications was assessed. The data was collected, and results were analysed.

Results: Out of 200 patients, 40% were females and 60% were males. Maximum patients (64.5%) belong to age group 50-70 years. Based on the HbA1c value, about 55% of the study population had their diabetes under control (HbA1c < 7%). The overall prevalence of macrovascular and microvascular complications in patients was 32% and 54%, respectively. About 21% of study subjects had both macro and microvascular complications.

Conclusion: The study concluded that the overall prevalence of macrovascular and microvascular complications in diabetic patients was 32% and 54%, respectively and 21% of study subjects had both types of complications.

Keywords: Macrovascular, Microvascular, Complications, Diabetes.

INTRODUCTION

Diabetes mellitus (DM) is a well-known metabolic disease characterized by organ dysfunction that arises directly or indirectly from the effects of chronic hyperglycaemia. It affects a significant proportion of the global population.[1] According to the International Diabetes Federation report in 2021, an estimated 537 million adults aged 20–79 years, representing 10.5% of the world's population, were living with diabetes mellitus, and this was predicted to increase to 643 million (11.3%) by 2030 and to 783 million (12.2%) by 2045.[2] Risk factors for developing type 2 DM include a family history of diabetes, ethnicity, older age, previous gestational diabetes, unhealthy diet, excess body fat, obesity, physical inactivity, and smoking.[3] Complications associated with DM are either macrovascular or microvascular. Macrovascular complications of DM include ischemic heart, cerebrovascular, and peripheral vascular diseases. Microvascular complications of DM include retinopathy, neuropathy, and nephropathy. These complications can lead to myocardial infarction, stroke, foot ulcers, amputations, blindness, sexual dysfunction, and renal failure.[4,5] The clinical management of the patient with diabetes includes not only addressing hyperglycaemia but also screening for the angiopathic complications and assessing the other risk factors.[6] The present study was conducted to analyze the prevalence of vascular complications in type 2 diabetics.

MATERIAL AND METHODS

The present hospital-based cross-sectional study was conducted among 200 diabetic patients. Before the commencement of the study, ethical approval was taken from the ethical committee of the institution and informed consent was taken from the patients after explaining the study. Demographic information was collected using a pretested structured questionnaire. Details of co-morbidities were obtained from their records as well as from history. Anthropometric assessment, blood pressure, and complete foot examination were done. Blood was examined for HbA1c. Urine was examined. A 12-lead electrocardiogram resting ECG was taken. Based on the patient's history, physical examination and laboratory findings, vascular complications of diabetes were diagnosed. The data was collected, and the results were analyzed using Statistical Package for Social Sciences (SPSS) version 16 (IBM Corporation, Somers, New York, USA). P value of <.05 was considered to be statistically significant.

RESULTS

Out of 200 patients, 40% were females and 60% were males. Maximum patients (64.5%) belongs to age group 50-70 years. Based on the HbA1c value about 55% of study population had their diabetes under control (HbA1c < 7%).

The overall prevalence of macrovascular and microvascular complications in patients was 32% and 54%, respectively. About 21% of study subjects had both macro and microvascular complications.

Table 1: Sociodemographic Characteristics of Patients

Variable	n (%)
Gender	
Male	120 (60%)
Female	80 (40%)
Age	
<50	52 (26%)
50-70	129 (64.5%)
>70	19 (9.5%)
HbA1c	
≤7	110 (55%)
7.1-9.5	70 (35%)
≥9.6	20 (10%)

Table 2: Prevalence vascular complications among type 2 diabetes patients

Vascular complications	n (%)
Microvascular complications	10 (54%)
Macrovascular complications	64 (32%)
Both	42 (21%)

DISCUSSION

The most common form, type 2 diabetes mellitus (T2DM) is associated with various micro and macrovascular complications that negatively impact the quality of life and increase morbidity and mortality and account for the majority of the social and economic disease burden.[7-11] T2DM remains underdiagnosed and is often detected incidentally. Therefore, the discovery of vascular complications is common at the time of diagnosis.[12]

Out of 200 patients, 40% were females and 60% were males. Maximum patients (64.5%) belong to age group 50-70 years. Based on the HbA1c value, about 55% of the study population had their diabetes under control (HbA1c < 7%). The overall prevalence of macrovascular and microvascular complications in patients was 32% and 54%, respectively. About 21% of study subjects had both macro and microvascular complications.

The IMPROVE study, conducted in eight countries and involving more than 50,000 patients receiving insulin therapy, also reported a high prevalence of both microvascular and macrovascular complications (45.0% and 28.0%, respectively).[13]

The International Diabetes Management Practice Study (IDMPS) was conducted in 18 developing countries across Asia, Eastern Europe, and Latin America. The prevalence estimates reported for microvascular and macrovascular complications were again high at 55.3% and 26.1%, respectively.[14]

Govindarajan Venguidesvarane A et al, found that the overall prevalence of macrovascular and microvascular complications in our study population was 29.7% and 52.1%, respectively. Among the macrovascular complications, both coronary artery disease (CAD) and peripheral vascular disease (PVD) had a prevalence rate of 15.1%. Among the microvascular complications, peripheral neuropathy (44.9%) had the highest prevalence followed by nephropathy (12.1%) and diabetic foot (7.2%).[15]

Kosiborod M, et al found that the crude prevalences of microvascular and macrovascular complications were 18.8% and 12.7%, respectively. Common microvascular complications were peripheral neuropathy (7.7%), chronic kidney disease (5.0%),

and albuminuria (4.3%). Common macrovascular complications were coronary artery disease (8.2%), heart failure (3.3%) and stroke (2.2%).[16]

CONCLUSION

The study concluded that the overall prevalence of macrovascular and microvascular complications in patients was 32% and 54%, respectively and 21% of study subjects had both types of complications.

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