Original Research Paper Medical Science

A CROSS-SECTIONAL STUDY IN ALIGARH MUSLIM UNIVERSITY EMPLOYEES TO KNOW "PREVALENCE OF CHRONIC COMPLICATIONS AMONG TYPE 2 DIABETIC PATIENTS".

Dr. Suyesh Shrivastava — Asst. Professor,Deptt. Of community Medicine, Late Shri Lakhi Ram Agarwaal Memorial Medical College,Raigarh(C.G.)

Dr. Najam Khalique — Professor & Head,Deptt. Of community Medicine, J.N. Medical College,Aligarh Muslim University(A.M.U.)

ABSTRACT

INTRODUCTION
Diabetes mellitus is associated with an increased risk for a number of serious and sometimes life-threatening macro and micro vascular complications.
OBJECTIVES: To assess the prevalence of certain complications among type 2 diabetic patients.
METHODS: This community based cross section study was conducted in field practice area of Department of Community Medicine of JN Medical College in Aligarh. 147 diagnosed patients under treatment of Medical Attendees Scheme (MAS) of the Aligarh Muslim University between ages 20-60 years were included in this study. Current socio demographic and disease related information was collected by interviewing the patients. The study period was from September 2012 to August 2013. Patients were examined clinically for certain complications. Data management and analysis was done in SPSS-20.0 version.
RESULTS: A total of 147 (109 male and 38 female) Type 2 diabetic patients were involved in this study. 71.42% patients had microvascular complications, while, 12.92% patients had macrovascular complications.
CONCLUSION: Prevalence of diabetic complications was high in the study subjects.

KEYWORDS DM-2, microvascular, macrovascular, Complication, MAS)

INTRODUCTION

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. 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 accounts for morbidity in the form of retinopathy, neuropathy and nephropathy.

OBJECTIVES:

The aim of this study was to assess the prevalence of certain complications among diagnosed type 2 diabetic patients.

MATERIALS AND METHODS:

This community based cross sectional study was conducted in 147 diagnosed patients under treatment at Medical Attendees Scheme (MAS) health centre of Aligarh Muslim University, Aligarh (U.P.). The study period was one year i.e. from September 2012 to August 2013. Detailed information/ baseline data of all the patients registered under MAS were collected from the records. Inclusion criteria for the study subjects were age >20 years, those type II diabetes patients who were taking treatment for diabetes, those giving written consent for study and employees of AMU, registered at MAS Health Centre.

The principal author along with his team of Medico Social Workers interviewed the patients in their households during the field visits. If a patient was not found in a household at first visit, the household was visited again on next field visit days. Initially, the number of patients of type II diabetes registered in MAS was 171. Out of them, 24 patients had not given consent / had missing records during study. Hence, these 24 patients were excluded from final analysis. Thus, the total number of participants in the present study was 147 (109 male and 38 female). These patients were interviewed and their current socio demographic and socio-economic information was recorded. They were interviewed in-depth regarding the disease, its treatment and it's complications through semi structured proforma and patients were examined clinically for certain complications. Some clinical findings (like HbA1c, history of Angina, PTCA, TIA and stroke) were taken from records in MAS health centre. Data management and analysis was done in SPSS-20.0 version.

The following operational definitions were used in the study.

1. Diagnosis of retinopathy was based on finding the diagnostic signs of retinopathy on eye exams by fundoscopy.

2. Neuropathy was diagnosed if symptoms of pain, anesthesia, paresthesia, muscular weakness, loss of tendon reflexes (Ankle and planter reflexes were tested), and impaired vibration sense (using 256 Hz tuning fork) were present in the patients.

3. Patients were considered to have nephropathy if they have microalbuminuria or proteinuria.

4. Coronary artery disease was diagnosed by documented angina symptoms and confirmed by an ECG, or from reports of percutaneous transcoronary angiography (PTCA) in patients record.

5. Cerebrovascular disease was defined by presence of transient ischemic attack or stroke in past medical history.

6. For peripheral vascular diseases- symptoms of claudication were asked and Dorsalis pedis and posterior tibial artery were palpated.

RESULTS AND DISCUSSION:

Clinical Profile

A total of 147 Type 2 diabetic patients were involved in this study. 74.14% were males and 25.85% were females, the mean age of the patient was 53.3±9.7 years, the mean (SD) duration of Type 2 DM was 12 (±5.11) years, ranging from less than one year to thirty two years. 24% patients had diabetes for more than ten years. The mean of HbA1c in diabetic patients with chronic complications was 8.2% ± 1.6% and 97(65.98%) of the subjects with type 2 diabetes related complications had a unsatisfactory glycemic

control with the HbA1c > 8%.

Complications

In this study, prevalence of macrovascular complications was 12.92% (19 patients) whereas that of microvascular complications was 71.42% (105 patients) among diabetics. 64.62% (95 patients) of patients had a combination of microvascular and macrovascular complications.

Prevalence of macrovascular complications in diabetics has shown a wide range as is evident from various studies. Higher prevalence than this study was reported by other researcher (Abougalambou, S.S.I., et al. 2011) who recorded a prevalence of macrovascular disease of 17.5% and in another study (Al-Maskari, F, et al. 2007) the prevalence of macrovascular disease was 29.5%. The differences in prevalence rates of macrovascular complications among Type 2 DM patients as compared with others could be attributed to differences in study design, and population characteristics of various studies.

However according to a scholar (Pittrow, D ., et al. 2006) only 49.5% (type 1) and 50.2% (type 2) of patients had micro- or macrovascular complications. Lower rate of complications as compared to this study might be due to the fact that their patient's had better glycemic control (60%) than the patients in this study (27%).

The results of this study showed that out of 147, 114 patients had complications (including both micro and macrovascular) the overall prevalence of retinopathy, nephropathy, neuropathy, coronary heart disease(CHD), stroke were 21%, 17%, 52%, 8% and 4% respectively alone or in combination with the other complications. Peripheral arterial disease is present in 7% and 1 patients had below knee amputations, 22.5% of patients had no chronic complications of diabetes. Neuropathy and IHD were the most common micro and macro vascular complications respectively.

Similar results were also recorded by other scholar (Roaeid, R. B., et al. 2011) where a total of 68.7% patients had complications. CHD was present in 14.9%, retinopathy in 30.6%, Peripheral neuropathy in 47.1%, Peripheral Arterial Disease in 15.2% and 1.1% percent of the patients had below knee amputations.

In another study (Vaz,N.C., et al 2011) done among rural diabetics in Goa (India), the prevalence of CHD, peripheral vascular disease, CVA, retinopathy, cataract and neuropathy were 32.3%, 11.5%, 6.9%, 15.4%, 20% and 60% respectively.

Similarly, in another study(Abougalambou, S.S.I., et al. 2011), majority of the patients (78%) had microvascular complications alone and 17.5% had macrovascular complications and out of those 12.8% had coronary heart disease, only 4.7% had cerebrovascular disease.

The results of this study also shows that the prevalence rate of retinopathy was 21.0%, However, other researcher (Abougalambou, S.S.I., et al. 2011). recorded a higher prevalence rate of retinopathy (39.3%) than this study. The prevalence of retinopathy demonstrates wide variations between countries; in Type 2 DM it ranges from 17% in Switzerland to 52% in the United Kingdom (Amos, A., et al 1997).

The results of this study also showed that the overall prevalence of neuropathy was 52.0%, alone or in combination with the other complications. Similar observation was also recorded by other scholar (Abougalambou, S.S.I., et al. 2011). Percentage of neuropathy in this study is higher than that of others (Tesfaye, S., et al 1996). The difference in prevalence of neuropathy (25-60%) might be due to difference in diagnostic criteria of neuropathy in various studies.

In our study overall prevalence of nephropathy was 17.0%, alone or in combination with the other complications. However, the results of a study (Abougalambou, S.S.I., et al. 2011) showed that the overall prevalence of nephropathy was 91.7%. It is considered a high percentage in comparison with other studies on diabetic nephropathy which occurs in 40% of diabetic patients and American Diabetes Association (2001) reported that diabetic nephropathy occurs in 20-40% of patients with diabetes and is the single leading cause of end-stage renal disease.

Summary and Conclusion: Chronic complications are highly prevalent among type 2 diabetic patients, Prevalence of micro vascular complication was higher than macro vascular complications. Neuropathy and CHD were the most common micro vascular and macro vascular complication respectively. Regular and frequent screening of diabetic patients for complications is recommended so that appropriate treatment may be timely initiated to halt the progression of complications.

ACKNOWLEDGEMENTS: Dr. Jamal Ahmad, Director, Rajivganndhi Diabetes and Endocrinology Research Centre, J.N.M.C., Aligarh

Table 1: Prevalence of micro and macro vascular complication among type 2 diabetes patients

Complications	Present N (%)	Absent N (%)	Total N (%)
Macrovascular complication	19 patients (12.9)	128(87.1)	147(100)
Microvascular complication	105 patients (71.4)	42(28.6)	147(100)
x2 = .024, d.f. = 1, p= 0.877			

References:

1. Abougalambou, S.S.I., Hassali, M. A., Sulaiman, S. A. S., Abougalambou, A. S., (2011). Prevalence of Vascular Complications among Type 2 Diabetes Mellitus Outpatients at Teaching Hospital in Malaysia. J Diabete Metab, 2(1), 1-4.
2. Al-Maskari, F., El-Sadig, M. (2007) Prevalence of diabetic retinopathy in the United Arab Emirates: A cross-sectional survey. BMC Ophthalmol, 16, 7- 11.
3. American Diabetes Association. (1998). Economic consequences of diabetes mellitus in the U.S. in 1997. Diabetes Care, 21, 296-309.
4. Amos, A., Mccarty, D., Zimmet, P. (1997). The rising global burden of diabetes and its complications: estimates and projections to the year, 2010, Diabet Med, 14, S1-85.
5. Fabian, W., Majkowska, L., Stefański, A., Moleda, P. (2005). Prevalence of diabetes, antidiabetic treatment and chronic diabetic complications reported by general practitioners. Przegl Lek.,62(4), 201-5.
6. Gautam, Y., Sharma, A. K., Agarwal, A. K., Bhatnagar, M. K., Trehan, R. R. (2009) A cross-sectional study of QOL of diabetic patients at tertiary care hospitals in Delhi. Indian journal of Community Medicine, 34(4), 346-350.
7. Pittrow, D., Stalla, G. K., Zeiher, A. M., Silber, S., März, W., Pieper, L., Klotsche, J., Glaesmer, H., Ruf, G., et al. (2006) Prevalence, drug treatment and metabolic control of diabetes mellitus in primary care. Med Klin (Munich), 101(8), 635-44.
8. Ragucci, E., Zonszein, J., Frishman, W. (2003) Pharmacotherapy of diabetes mellitus: implications for the prevention and treatment of cardiovascular disease. Heart Dis, 5, 18-33.
9. Roaeid, R. B., Kadiki, O. A. (2011). Prevalence of long-term complications among Type 2 diabetic patients in Benghazi, Libya. Journal of Diabetology, 3(5), 1-8.
10. Tesfaye, S., Stevens, L. K., Stephenson, J.M., Fuller, J.H., Plater, M., et al. (1996) Prevalence of diabetic peripheral neuropathy and its relation to glycaemic control and potential risk factors. The EURODIAB IDDM Complications Study. Diabetologia, 39, 1377-1384.
11. Vaz, N. C., Ferreira, A. M., Kulkarni, M. S., Vaz, F. S., Pinto, N. R. (Oct-Dec 2011) Prevalence of Diabetic Complication Among Rural Goa. Indian J Community Med, 36(4), 283–286.
12. Vijan, S., Hayward, R. (2004) Pharmacologic lipid lowering therapy in type 2 diabetes: background paper for the American College of Physicians. Ann Intern Med, 140, 650-658.
13. World Health Organization. (1985). Diabetes Mellitus. Report of a WHO Study Group. Geneva, World Health Org.,1985 Tech. Rep.Ser., (727)