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Research Article

**PERIPHERAL VASCULAR DISEASE IN PATIENTS WITH TYPE 2
DIABETES MELLITUS****Dr. Rafi Ahmed Ghori^{1*}, Khuda Bux Mangrio², Dr. Salma Kadir¹,
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Jamshoro² Jijal Maau College of Nursing, Hyderabad³ Zulekha Hospital Dubai United Arab Emirates⁴ Brandon Regional Hospital Brandon, Florida, U.S.A**Abstract:****Objective:** To determine the frequency of peripheral vascular disease in patients with type 2 diabetes mellitus.**Patients and Methods:** The present study was undertaken at tertiary care hospital Hyderabad. Total fifty patients with type 2 diabetes mellitus were studied which were admitted to medical wards and all these cases fulfilled our inclusion. while the data was collected on pre-designed proforma and analyzed in SPSS 16. The inclusion criteria of the study were diagnosed patients of type 2 diabetes mellitus of ≥ 35 years of age, either gender and ≥ 3 years duration of diabetes mellitus. The ankle brachial index (ABI) were measured for clinical evaluation of peripheral vascular disease and calculated by using non invasive colour Doppler study to measure ankle & brachial systolic blood pressure and ABI less than 0.9 was taken as a marker of peripheral vascular disease in present study. The frequency and percentages was calculated while the numerical statistics were used to compute mean \pm SD.**Results:** Total fifty patients with type diabetes mellitus were recruited and enrolled during six months study period, majority of the patients were males 32 (64%) and from rural population 35 (75%). The mean \pm SD for age and duration of disease for whole population was 54.83 ± 7.82 and 7.93 ± 3.52 . The peripheral vascular disease was identified in 36 (72%) patients as had low ABI while the other risk factors observed were hypertension (69.4%), dyslipidemia (61.1%), smoking (66.6%), previous history of CVA (75%), history of ischemic heart disease (69.9%) and sedentary life style (55.5%) respectively.**Conclusion:** the ABI is reliable, cheap and non invasive procedure to detect PVD in Type-2 DM and can be used as initial screening test for early detection of peripheral vascular diseases.**Keywords:** Diabetes mellitus, peripheral vascular disease, ankle brachial index, Hemoglobin A1c, Hypertension, Dyslipidemia and Smoking.**Corresponding author:****Dr. Rafi Ahmed Ghori**

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INTRODUCTION:

Diabetes mellitus (DM) is a public health concern and its prevalence is increasing as according to the World Health Organization (WHO), there are about 345 million individuals with diabetes around the world and has been found that diabetes mellitus become the 7th major cause of mortality worldwide by 2025 [1-3]. Among the mortalities caused by diabetes mellitus, more than 70% exists in middle and low income countries [4]. Therefore, diabetes mellitus can have a major impact on our health machinery and economic productivity by contributing to disability, absence from work, premature mortality and retirement from the services [5, 6].

The diabetes mellitus occupies major burden of all non traumatic amputations in Pakistan because of its complication as diabetic foot and the peripheral vascular disease is the major macrovascular complications of diabetes mellitus [7]. There is strong association observed between existence of peripheral vascular disease, ischemic heart diseases and cerebrovascular accidents [8]. The diabetes mellitus are five times more likely to acquire peripheral vascular disease than non diabetic population [9]. Early identification of arterial changes supports the effective handling of diabetes mellitus and its complications [10].

The objective of the study is to identify the peripheral vascular disease in type 2 diabetes mellitus by using ankle brachial index and its association with duration of diabetes mellitus. Globally and nationally the population is witnessing an epidemic of diabetes mellitus with its complications has become the most important challenging health issue.

PATIENTS AND METHODS:

The present study was undertaken at tertiary care hospital Hyderabad. Total fifty patients with type 2

diabetes mellitus were studied which were admitted to medical wards and all these cases fulfilled our inclusion. After informed consent each patient recruited for the study underwent a detailed clinical examination noted on proforma designed for the study included biodata, clinical history & examination of risk factors and detailed evaluation of peripheral vascular system. The inclusion criteria of the study were diagnosed patients of type 2 diabetes mellitus of ≥ 35 years of age, either gender and ≥ 3 years duration of diabetes mellitus. The exclusion criteria were patients with type 1 diabetes, coarctation of aorta & vasculitis syndromes. All the patients are subjected to following biochemical investigations blood complete picture, blood glucose level, urine examination, hemoglobin A1C, fasting lipid profile, blood urea and creatinine and electrolytes. The ankle brachial index (ABI) were measured for clinical evaluation of peripheral vascular disease and calculated by using non invasive colour Doppler study to measure ankle & brachial systolic blood pressure and ABI less than 0.9 was taken as a marker of peripheral vascular disease in present study.

The Statistical software namely SPSS 16.0 were used for the analysis and the results were presented in tables and means \pm SD.

RESULTS:

Total fifty patients with type diabetes mellitus were recruited and enrolled during six months study period, majority of the patients were males 32 (64%) and from rural population 35 (75%). The mean \pm SD for age and duration of disease for whole population was 54.83 \pm 7.82 and 7.93 \pm 3.52. The demographical, clinical profile and risk factor identified are presented in Table 01 and 02.

TABLE 1: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF THE PATIENTS

AGE (years)	FREQUENCY (N=50)	PERCENTAGE (%)
35-39	06	12
40-49	10	20
50-59	20	40
60+	14	28
GENDER		
Male	32	64
Female	18	36
RESIDENCE		
Urban	15	30
Rural	35	75
HBA1C		
Raised	38	76
Normal	12	24
ABI		
Low	36	72
Normal	14	28
DURATION OF DIABETES MELLITUS (years)		
3-4	08	16
4-5	15	30
> 5	27	54
PERIPHERAL VASCULAR DISEASE		
Yes	36	72
No	14	28

TABLE 2: THE RISK FACTORS IDENTIFIED IN STUDY POPULATION

RISK FACTORS	FREQUENCY (N=36)	PERCENTAGE (%)
DYSLIPIDEMIA		
Yes	22	61.1
No	14	38.8
HYPERTENSION		
Yes	25	69.4
No	11	30.5
SMOKING		
Yes	24	66.6
No	12	33.3
Previous history of cerebrovascular accident (CVA)		
Yes	27	75
No	09	25
HISTORY OF ISCHEMIC HEART DISEASE (IHD)		
Yes	25	69.9
No	11	30.5
SEDENTARY LIFE STYLE		
Yes	20	55.5
No	16	44.4

DISCUSSION:

In present study fifty patients with type 2 diabetes mellitus were registered to evaluate the peripheral vascular disease (PVD). The mean age \pm SD of the patients was 54.83 \pm 7.82 and it is comparable with studies of Ramachandran A, et al [11] and Premalatha G, et al. [12] There were 32 (64%) males and 18 (36%) female patients in current series with male predominance and it is consistent with the study by Oka RK, et al [13]. The mean duration of diabetes in our study was 4.93 \pm 1.82 and this is comparable with study of Deshpande AD, et al. In our study mean BMI was 30.92 \pm 2.96 and is higher when compared to other studies of Premalatha G, et al [15]. In present study prevalence of peripheral vascular disease was 36 (72%) and is consistent with study done by Premalatha G, et al [15].

The association of peripheral vascular disease with duration of diabetes was directly proportional and as the duration of diabetes increases the chances of developing peripheral vascular disease increases, the relationship also directly proportional to the age and as the age of the patient increases the prevalence of peripheral vascular diseases also increases and is consistent with the study by Rhee SY, et al [16]. In present study all the subjects with peripheral vascular diseases had poorly controlled diabetes mellitus and management compliance was very poor in these patients, the observations were also detected by Aronow WS, et al [17]. The association of peripheral vascular disease with ischemic heart disease had positive correlation and all subjects with peripheral vascular diseases had history of angina or ECG / echocardiographic evidence of ischemic heart diseases, the findings were also observed formerly by Shammas NW [18].

The association of peripheral vascular diseases with hypertension, dyslipidemia and cerebro-vascular diseases also had positive correlation and all individuals with peripheral vascular diseases had hypertension and are dyslipidemic. The findings are also consistent with the study by Ng EL, et al.

CONCLUSION:

The occurrence of PVD in type 2 Diabetes mellitus was observed as 72% with male gender predominance 64% and is directly proportional to duration and poor control of blood sugar level and associated with hypertension, smoking, ischemic heart disease, dyslipidemia, cerebrovascular accident (CVA) and sedentary life style. Thus the ABI is reliable, cheap and non invasive procedure to detect PVD in Type-2 DM and can be used as initial screening test for early detection of peripheral vascular diseases.

REFERENCES:

- 1.Olokoba A, Obateru OA, Olokoba LB. Type 2 Diabetes mellitus: a review of current trends. *Oman Med J*.2012;27(4):269-73.
- 2.Shera AS, Jawad F, Maqsood A. Prevalence of diabetes in Pakistan. *Diabetes Res Clin Pract*.2007;76(2):219-22
- 3.Alexiadou K, Doupis J. Management of diabetic foot ulcers. *Diabetes Ther*. 2012;3(1):4-9
4. Yazdanpanah L, Nasiri M, Adarvishi S. Literature review on the management of diabetic foot ulcer. *World J Diabetes*.2015;6(1):37-53.
- 5.Tecilazich F, Dinh T, Pradhan-Nabzdyk L, Leal E, Tellechea A, Kafanas A, et al. Role of endothelial progenitor cells and inflammatory cytokines in healing of diabetic foot ulcers. *PLoS One*.2013;8(12):e83314.
- 6.Michail M, Jude E, Liaskos C, Karamagiolis S, Makrilakis K, Dimitroulis D, et al. The performance of serum inflammatory markers for the diagnosis and follow-up of patients with osteomyelitis. *Int J Low Extrem Wounds*.2013;12(2):94-9.
- 7.Barrientos S, Brem H, Stojadinovic O, Tomic-Canic M. Clinical application of growth factors and cytokines in wound healing. *Wound Repair Regen*.2014;22(5):569-78.
- 8.Huysman E, Mathieu C. Diabetes and peripheral vascular disease. *Acta Chir Belg*. 2009 Oct;109(5):587-94.
- 9.Thiruvoipati T, Kielhorn CE, Armstrong EJ. Peripheral artery disease in patients with diabetes: Epidemiology, mechanisms, and outcomes. *World J Diabetes*. 2015 Jul 10; 6(7): 961–969.
- 10.Katwal AB, Dokun AO. Peripheral Arterial Disease in Diabetes: Is There a Role for Genetics?. *Curr Diab Rep*. 2011 Jun; 11(3): 218–225.
- 11.Ramachandran A, Snehalatha c, Satyavani K. Prevalence of vascular complications and their risk factors in type-2 diabetes. *JAPI* 1999; 47(12):1152-1157
- 12.Premalatha G, Shantirani S, Deepa R, Markovitz J, Mohan V. Prevalence and risk factors of peripheral vascular disease in a selected South Indian population. *Diabetes care* 2000; 23:1295-1300.
- 13.Oka RK, Sanders MG. The impact of type 2 diabetes and peripheral arterial disease on quality of life. *J Vasc Nurs*. 2005 Jun;23(2):61-6; quiz 67-8.
- 14.Deshpande AD, Harris-Hayes M, Schootman M. Epidemiology of Diabetes and Diabetes-Related Complications. *Phys Ther*. 2008 Nov; 88(11): 1254–1264.
- 15.Premalatha G, Ravikumar R, Sanjay R, Deepa R, Mohan V. Comparison of color Duplex ultrasound and ankle – brachial pressure index measurements in peripheral vascular disease in type-2 diabetic patients with foot infections. *JAPI* 2002; 50:1240-1245

16.Rhee SY, Kim YS. Peripheral Arterial Disease in Patients with Type 2 Diabetes Mellitus. *Diabetes Metab J*. 2015 Aug; 39(4): 283–290.

17.Aronow WS. Peripheral arterial disease in the elderly. *Clin Interv Aging*. 2007 Dec; 2(4): 645–654.

18.Shammas NW. Epidemiology, classification, and modifiable risk factors of peripheral arterial disease. *Vasc Health Risk Manag*. 2007 Apr; 3(2): 229–234.

19.Ng EL, Weiland TJ, Jelinek GA, Hadgkist E, Wilson A. Prevalence of and risk factors for peripheral arterial disease in older adults in an Australian emergency department. *Vascular*. 2014 Feb;22(1):1-12.