Study of Prevalence of Peripheral Arterial Disease among Attendances of Diabetes Clinic at Ain Shams Hospital

Thesis
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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَك لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا

إِنَّك أَنتَ العَلِيمُ الحَكِيمُ

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العظيم

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Dina Anwar

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List of Abbreviations

Abb.	Mean
A1C	Glycated hemoglobin
ABI	Ankle Brachial Index
ACCORD	Action to Control Cardiovascular Risk in Diabetes
ADA	American Diabetic Association
ADVANCE	Action in Diabetes and Vascular Disease: Preterax and Diamicron Modified Release Controlled Evaluation
AngII	Angiotensin II
CGM	Continous glucose monitoring
CLI	Critical limb ischemia
CRP	C reactive protein
CSIT	Continous subcutaneous insulin infusion
DAG	Diacyl glycerol
DCCT	Diabetes control and complications trial
DCCT	The Diabetes Control and Complications Trial
DM	Diabetes Mellitus
DPP4-I	Dipeptidyl peptidase-4 inhibitor
e NOS	Endothelial Nitric oxide synthase
EDIC	Epidemiology of Diabetes Interventions and Complications
ESRD	End Stage Renal Disease
FFA	Free fatty acid
FPS	Fasting blood sugar
GLP-1-RA	Glucagon Like Peptide-1 receptor agonist
HDL	High density lipoprotein

Abb.	Mean
IC	Intermittent claudication
IL-1 ß	Interleukin -1ß
IL-6	Interleukin -6
LDL	Low density lipoprotein
LP(a)	Lipoprotein(a)
MCP-1	Monocyte Chemoattractant protein-1
MI	Myocardial infarction
NF	Nuclear factor
NGSP	National glucose standardization program
NO	Nitric oxide
NOX	NAD(P)H Oxidase
OGTT	Oral glucose tolerance test
Ox LDL	Oxidized Low density lipoprotein
PAD	Peripheral Arterial Disease
PAI-1	Plasminogen activator inhibitor-1
PI	Phosphatidylinositol
PKC	Protein kinase C
PWV	Pulse Wave Velocity
RAAS	Renin Angiotensin Aldosterone System
RAGE	Receptor for advanced glycation end products
RANTES	Regulated on activation normal T cell Expressed and secreted
ROS	Reactive oxygen species
SMBG	Self monitoring of blood glucose
SMCs	Smooth muscle cells
SU	Sulfonylurea
TNF α	Tumour Necrosis Factor alpha

Abb.	Mean
TZD	Thiazolidinedione
UKPDS	United Kingdom Prospective Diabetes Study
USA	United States of America
VADT	Veterans Affairs Diabetes Trial
VCAM	Vascular cell adhesion molecule 1
VEGF	Vascular endothelial growth factor
VLDL	Very Low density lipoprotein
VSMCs	Vascular smooth muscle cells

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Introduction

Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels **(ADA, 2015).**

Peripheral arterial disease (PAD) is a disease characterised by narrowing and blockade of peripheral arteries, usually based on underlying obliterating atherosclerosis **(Maly and Chovanec, 2012).**

PAD is common in diabetes, but most of the cases are asymptomatic **(Pradhan and Ridker, 2002).** According to the results of large epidemiological studies, the risk of PAD in patients with diabetes mellitus (DM) is fourfold higher compared to non-diabetic population. Patients with DM and PAD have a high risk of cardiovascular morbidity and mortality. Diabetes worsens the prognosis of patients with PAD; the onset of PAD in diabetics occurs at an earlier age, the course is faster than in non-diabetic patients and the disease is often diagnosed at its advanced stages **(Leng et al., 1996).** A range of factors

(higher age, arterial hypertension, smoking, obesity, hyperfibrinogenaemia, insulin resistance etc.) contribute to the development of PAD in DM (**Maly and Chovanec, 2012**).

The presence of PVD, apart from its increased risk of claudication, ischemic ulcers, gangrene and possible amputation, is also a marker for generalized atherosclerosis and a strong predictor for cardiovascular ischemic events. However, despite the recognition that PVD is associated with increased ischemic event rates and death, particularly in diabetic patients, this specific manifestation of systemic atherosclerosis is largely underdiagnosed and undertreated (**Huysman and Mathieu, 2009**).

Measurement of the ankle-brachial index is a simple, reliable, and noninvasive test to diagnose PAD that can be used in a primary care setting. A low ABI of 0.9 or < 0.9 is a useful diagnostic tool for detecting PVD and it is also considered as a strong predictor of the cardiovascular morbidity and mortality (**Maly and Chovanec, 2012**).

Early diagnosis and treatment of PAD in patients with diabetes is critically important in order to reduce the risk of cardiovascular events, minimize the risk of long-term disability, and improve quality of life (**Marso and Hiatt, 2006**).

Aim of the Study

To assess the prevalence of peripheral arterial disease in Diabetic patients attending Diabetes clinic at Ain Shams hospital and to evaluate risk factors associated with PAD in these patients.