Correlation Between Severity Of Coronary Artery Disease And Glycosylated Hemoglobin levels In Patients Without History Of Diabetes Mellitus Sent For Elective Coronary Angiography

Thesis

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Dr. Ahmed Fawzy Abdel-Kawy

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
1, 5-AG	1, 5-Anhydroglucitol
2-h OGTT	2 hours oral glucose tolerance test
ACS	Acute coronary syndrome
ADA	American diabetic association
ADAG	A1C-Derived Average Glucose
AGE	Advanced glycation end products
ALL	Average length lesion
ARIC	Atherosclerosis Risk in Communities
AUC	Area under the curve
AVD	Average vessel diameter
BMI	Body Mass Index
BP	Blood pressure
CABG	Coronary artery bypass grafting
CAD	Coronary artery disease
CCC	Calculated creatinine clearance
CGM	Continuous glucose monitoring
CHD	Coronary heart disease
CI	Confidence interval
CKD	Chronic kidney disease
CrCl	Creatinine Clearance
CVD	Cardiovascular Disease
DBP	Diastolic blood pressure
DCCT	Diabetes Control and Complications Trial
DD	Discovered diabetic
DM	Diabetes mellitus
eAG	estimated average glucose
EASD	European association for the study of diabetes
ECG	Electrocardiogram
EDEG	European Diabetes Epidemiology Group
EEM	External elastic membrane
FBS	Fasting blood sugar

Abbreviation	Meaning
FDR	First degree relative
FPG	Fasting plasma glucose
GFR	Glomerular filtration rate
GS	Gensini score
HbA1c	Glycosylated hemoglobin
HbF	Fetal hemoglobin
HbS	Hemoglobin S
HDL	High-density lipoprotein
HS	Highly significant
hs-CRP	high sensitivity C-reactive protein
HTN	Hypertension
IDF	International diabetes federation
IDL	Intermediate-density lipoprotein
IFG	Impaired fasting glucose
IGT	Impaired glucose tolerance
IMT	Intima media thickness
JNC	Joint of National Committee
LAD	Left anterior descending artery
LCX	Left circumflex artery
LDL	Low-density lipoprotein
LV	Left ventricle
MDCT	Multidetector computed tomography
MI	Myocardial infarction
MRI	Magnetic resonance imaging
MVD	Multivessel disease
ND	Non-diabetic
NDDG	National Diabetes Data Group
NDR	National Diabetes Register
NGSP	National Glycohemoglobin Standardization Program
NHANES	National Health and Nutrition Examination Survey
NS	Non-significant
NWAHS	North West Adelaide Health Study
OGTT	Oral glucose tolerance test

Abbreviation	Meaning
OHAs	Oral hypoglycemic agents
OR	Odds ratio
P	Predictive value
PCI	Percutaneous coronary intervention
PD	Pre-diabetic
PWV	Pulse wave velocity
RCA	Right coronary artery
ROC	Receiver-operating characteristic
RR	Remodeling ratio
S	Significant
SBP	Systolic blood pressure
SD	Standard deviation
SDR	Second degree relative.
SPSS	Statistical Package for the Social Sciences
SYNTAX	SYNergy between PCI with TAXUS™ and Cardiac Surgery
TC	Total Cholesterol
TG	Triglycerides
UKPDS	UK Prospective Diabetes Study
VLDL	Vry-low-density lipoprotein
Vs	versus
WHO	World health Organization

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Introduction

INTRODUCTION

Diabetes mellitus (DM) is a risk factor for the development of coronary heart disease (CHD), and individuals with DM have more extensive atherosclerosis, more cardiac events, and higher prevalence of silent ischemia as compared with individuals without DM [1].

For decades, the diagnosis of diabetes was based on plasma glucose criteria, either fasting plasma glucose (FPG) or 2-hour value in the 75 g oral glucose tolerance (OGTT) [2], In 2009, an international expert committee that included representatives of American diabetic association (ADA), the international diabetes federation (IDF) and the European association for the study of diabetes (EASD) recommended the use of A1c test to diagnose diabetes, with threshold of ≥ 6.5 % [3] and the ADA adopted this criterion in 2010.

Glycated hemoglobin, assessed clinically by hemoglobin A1C, is a time integrated marker of average blood glucose concentration increasingly used in the screening and management of diabetes, and it is more closely related to the risk of complications than are single or episodic measures of glucose levels [4]. There is consistent evidence that HbA1c levels control results in lower incidence of microvascular and macrovascular complications in both type 1 and type 2 DM [5].

Currently, the degree to which mild elevations of HbA1c not in the diabetic range are associated with risk of coronary heart disease (CHD) is unclear. The association between dysglycemia and CAD may

start at levels that are only modestly elevated, well below the glucose threshold for diabetes [6].

In several studies, they attempted to extend the role of HbA1c as an indicator of cardiovascular risk assessment in people without diabetes. Some have shown HbA1c to be predictor of future cardiovascular events in the general population [7], while others have found no association [8] or association only in women [9]. In addition, few studies have examined the association between HbA1c and coronary artery lesion morphology.

Gensini suggested a scoring system, which allocates a numerical value for the degree of stenosis in a coronary artery, and this provides a detailed assessment of CAD and does not ignore even very trivial lesions in coronary arteries [10].

Aim of the work

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The aim of this work was to assess the correlation between coronary artery disease severity and complexity (as assessed by Gensini score) and the glycosylated hemoglobin level in patients not previously known to be diabetics and sent for elective coronary angiography.