Correlation between microalbuminuria & carotid intima media thickness in diabetic patients with acute coronary syndrome

Thesis

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Aim of the work

The aim of this study is to investigate the association between microalbuminuria & carotid intima-media thickness in diabetic patients presenting with acute coronary syndrome.

Table of contents

List of abbreviations

ACC	American Colleague of Cardiology
AHA	American Heart Association
AMI	Acute myocardial infarction
ATP	Adult Treatment Panel 111
AusDiab	Australian Diabetes, Obesity, and Lifestyle Study
CAD	Coronary artery disease
CCA	Common carotid artery
CCU	Cardiac care unite
CIMT	Carotid intima-media thickness
CRP	C-reactive protein
CVD	Cardio vascular disease
DM	Diabetes mellitus
DKA	Diabetic ketoacidosis
ECA	External carotid artery
ECG	Electrocardiogram
eNOS	Endothelial Nitric oxide synthase
EPIC	European Prospective Investigation into Cancer
FFA	Free fatty acids
HDL	high density lipoprotein
HOPE	Heart Outcomes Prevention Evaluation
HUNT	Nord-Trøndelag Health Study
ICA	Internal carotid artery
ICAM	Intercellular adhesion molecule

IDDM	Insulin dependent diabetes mellitus
IHD	Ischemic heart disease
IMT	Intima-media thickness
IRAS	Insulin Resistance Atherosclerosis Study
IRMA-2	Irbesartan in Patients with Type 2 Diabetes and Microalbuminuria study
IR	Insulin resistance
LDL	Low density lipoprotein
LVH	Left ventricular hypertrophy
LIFE	Losartan Intervention for Endpoint Reduction trial
MONICA	Monitoring of Trends and Determinants in Cardio- vascular Disease
NCEP	National Cholesterol Education Program
NIDDM	Non insulin dependent diabetes mellitus
Non STEMI	Non ST elevation myocardial infarction
NOS	Nitric oxide synthase
PAI-1	Tissue plasminogen activator inhibitor type 1
PREVEND-IT	PREVEND Prevention of Renal and Vascular Endstage Disease Intervention Trial
SI	Insulin sensitivity
STEMI	ST elevation myocardial infarction
tHcy	Total homocysteine
tPA	Tissue plasminogen activator
VCAM	Vascular cell adhesion molecule
VLDL	Very low density lipoprotein

List of tables

List of figures

Introduction

In view of the high morbidity and mortality associated with ischemic heart disease (IHD), the estimation of individual cardio-vascular risk over and above the assessment of classic risk factors such as age , hypercholesterolemia and hypertention is an important prerequisite for focusing preventive and therapeutic measures.(1)

Microalbuminuria (a slightly elevated albumin excretion in urine) is considered a novel athero- sclerotic risk factor,both in diabetic subjects and in general population.(2)

Microalbuminuria was originally defined among patients with diabetes mellitus as 20 - 200 microgram/minute and was associated with increased risk of chronic renal failure . later it was shown that microalbuminuria among patients with diabetes reflects systemic vascular damage and increased risk of coronary heart disease independently of renal function.(3)

Several studies have demonstrated an association between slightly increased urinary albumin excretion and cardio- vascular risk factors,even in the general population .

in the Copenhagen city heart study healthy individuals with urinary albumin excretion level >90th percentil (>7 microgram/minute) were characterized by higher blood pressures and lower plasma concentration of apo lipoprotein A-1 and HDL cholesterol .Furthermore, they had a generalised transvascular leakiness for albumin.These observations suggest that individuals with slightly increased urinary albumin excretion may be at increased risk for the subsequent development of IHD.(4)

The pathogenic mechanisms leading to increased risk are still unknown but microalbuminuria has been suggested as a marker of endothelial dysfunction and hyperpermeability to macromolecules which occurs early in atherogenesis.(4)

Carotid intima media thickness assessed non invasively by B- mode ultrasound has been recently shown to be an early marker for athero-sclerosis.(2)

Assessment of Carotid IMT is a simple non invasive and reproducible clinical tool to evaluate athero-sclerosis and predict CAD in humans.(5)

Previous studies have shown cross-sectional associations between common carotid artery intima-media thickness and cardio-vascular risk factors, the prevalence of cardio-vascular disease and the involvement of other arterial beds with athero-sclerosis.[6]

Aim of the work

The aim of this study is to investigate the association between microalbuminuria& carotid intima-media thickness in diabetic patients presenting with acute coronary syndrome.