

بسم الله الرحمن الرحيم



SALWA AKL



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



SALWA AKL

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



SALWA AKL



بعض الوثائق الأصلية تالفة



SALWA AKL



بالرسالة صفحات

لم ترد بالأصل



SALWA AKL



B 17352
6



KASR ALAINY

PROGNOSTIC VALUE of CYSTATIN-C for STRATIFYING RISK in PATIENTS with ACUTE CORONARY SYNDROME

Thesis

Submitted for Fulfillment of Master Degree

in Critical Care Medicine.

by

Khaled Mustafa Gabr Gabr

M.B, B.Ch

Supervisors

Prof Dr. Osama Mohamed Tayeh.

Assistant Professor of Critical Care Medicine, *Kasr Alainy,*
Cairo University.

Prof Dr. Ahmed Hossam EL Dine Mowafy.

Assistant Professor of Critical Care Medicine, *Kasr Alainy,*
Cairo University.

Dr. Sally Salah EL Dine Mohamed.

Lecturer of Critical Care Medicine, *Kasr Alainy,*
Cairo University.

Kasr Alainy Faculty of Medicine,
Cairo University.

2011

ACKNOWLEDGEMENT

"First and foremost , thanks to ALLAH ,The most beneficent and most merciful"

I would like to express my deepest feelings and profound gratitude to **Prof. Dr. Osama Mohamed Tayeh**, Assistant professor of Critical Care Medicine, Kasr Alainy, Cairo University for his expert guidance and excellent supervision. Without his valuable suggestions and constructive criticism , the performance of this work would have been difficult. I felt a great honor to work under his supervision.

I would like to express my deepest gratitude and sincere thanks to **Prof. Dr. Ahmed Hussam EL Dine Mowafy** , Assistant professor of Critical Care Medicine, Kasr Alainy, Cairo University, for his instructive supervision, continuous guidance, valuable instructions, precious and continuous encouragement. I have a great deal and gained valuable experience with him.

I own much to **Dr Sally Sallah EL Dine Mohamed**, Lecturer of Critical Care Medicine, Kasr Alainy, Cairo University, for her tremendous assistance, continuous guidance, valuable suggestions, kind instructions and support all over the work.

I own much to **Prof. Dr Amal Rizk**, Assistant professor of Clinical Pathology , Critical Care department , Kasr Alainy, Cairo University, for her efforts in planning , supervision and executing all our laboratory work, continuous guidance and support all over the work.

I would like to thank all staff members of **Critical Care Medicine Department**, Cairo University, all thanks for my colleagues in **National Heart Institute** especially **Prof. Dr Ahmed Magdy** , prof of Cardiology and all members of his unit in Cath. Lab. who helped me in completing this work.

LIST OF ABBREVIATION

ACE	Angiotensinogen Converting enzyme.
ACS	Acute coronary syndrome.
ADA	American diabetes association.
ANP	Atrial natriuretic peptide.
ApoE -/-	Apolipoprotein E-deficient mouse.
ARIC	Atherosclerotic risk in communities.
ATN	Acute tubular necrosis.
BMI	Body mass index.
BNP	B-type natriuretic peptide
CAPTURE	Controlled abciximab trial of coronary intervention in refractory unstable angina
CHF	Congestive heart disease.
CKD	Chronic kidneys disease.
COURAGE	Clinical outcomes utilizing revascularization and aggressive drug evaluation.
Cr Cl	Creatinine clearance.
CRP	C reactive protein.
CVD	Cardiovascular disease.
CX	Circumflex artery .
CYS-C	Cystatin-C.
D	Diagonal branch.
D.B.P	Diastolic blood pressure.
Da	Dalton.
DM	Diabetes Mellitus.
DTPA	^{99m} Tc labeled diethylene triamine penta acetic acid.
ECM	Extracellular matrix .
ED	Endothelial dysfunction.
EF%	Ejection fraction percent.
ER	Endoplasmic reticulum.
ESS	Endothelial shear stress.
FDA	Food and drug association.
FFAs	Free Fatty Acids
FRISC II	Pragmin and fast revascularization during instability in coronary artery disease.
GDF	Growth differentiation factor .
GFR	Glomerular filtration rate.
GUSTO	Global utilization of strategies to open occluded arteries.
Hb A _{1c}	Hemoglobin A _{1c} .
HDL-C	High density lipoprotein cholesterol.
HF	Heart failure.
HSP	Heat shock proteins.
HTN	Hypertension.
IFN- γ	Interferon- γ
IGF	Insulin like growth factor.
IGFBP4	IGF binding proteins.
IHD	Ischemic heart disease.
IL-8	Interleukin 8.
IR	Ischemia reperfusion injury .

IVUS	intravascular coronary ultrasound.
KDIGO	Kidney disease improving global outcome organization.
LAD	Left anterior descending artery.
LDL-C	Low density lipoprotein cholesterol.
LM	Left main.
Lp-PLA2	Lipoprotein associated phospholipase A2.
LVEDD	Left ventricular end diastolic diameter.
LVESD	Left ventricular end systolic diameter.
MACE	Major adverse cardiac events.
M-CSF	macrophage colony-stimulating factor.
MDRD	Modification of diet in renal disease.
MI	Myocardial infarction.
MMPs	Metalloproteinases.
MONICA	Monitoring of trends and determinants in cardiovascular disease.
MPO	Myeloperoxidase.
NCEP	National cholesterol education program.
NHANES	National health and examination survey.
NSTEACS	Non-ST segment elevation acute coronary syndrome.
NT-proBNP	Amino terminal pro-B-type natriuretic peptide.
OM	Obtuse marginal branch.
OxLDL	Oxidized LDL particles.
PAI-1	Plasminogen activator 1.
PAPP-A	Pregnancy associated plasma protein A.
PR39	Proteasome peptide regulator for angiogenesis.
Pro-MBP	Proform of eosinophil major basic protein.
RAS	Renin angiotensinogen system.
RCA	Right coronary artery.
RIFLE	Risk of renal dysfunction, injury and failure.
ROS	Reactive oxygen species.
RWMA	Regional wall motion abnormality.
Scr	Serum creatinine.
S.B.P.	Systolic blood pressure.
STEMI	ST segment elevation acute myocardial infarction.
TG	Triglycerides.
T ₂ DM	Type two diabetes Mellitus.
TIMPs	Tissue inhibitors of metalloproteinases.
TLC	Total leucocytic count.
TNF α	Tumor necrosis factor alpha.
UA	Unstable angina.
UBq	Ubiquitin.
UPA	Plasminogen activator.
US	United states.
VCAM-1	Vascular cell adhesion molecule-1.
Vitro	Laboratory.
WC	Waist Circumference.
WOSCOPS	West of Scotland Coronary Prevention Study.

LIST OF TABLES

Table	PAGE
Table 1 : Novel biomarkers in cardiovascular disease.	9
Table 2 : The human Cystatin superfamily.	38
Table 3 : Normal concentrations of human Cystatin-C in body fluids.	39
Table 4 : Ranges and means of ages in both groups.	61
Table 5 : Incidence of DM and mean of R.B.S. in both groups.	61
Table 6 : Prevalence and percentage of risk factors in both groups.	62
Table 7 : Total Cholesterol level in both group.	63
Table 8 : Incidence of high LDL in both group.	63
Table 9 : Incidence of low HDL level among both groups.	64
Table 10 : Prevalence of comorbid diseases in both groups.	64
Table 11 : Range and means of hemodynamics in both groups.	65
Table 12 : Range and mean of measures in both groups.	66
Table 13 : CBC range and mean in both groups.	66
Table 14 : Case control cardiac enzymes on admission.	67
Table 15 : Serum urea and creatinine level in both groups.	67
Table 16 : Level of Creatinine Clearance and GFR in both groups	68
Table 17 : Level of serum Cystatin-C in both groups.	68
Table 18 : CYS-C correlations for group I.	69
Table 19 : Group I CYS-C correlations regarding number of diseased vessels ,Troponin peak , EF% and Killip class.	70
Table 20 : Correlation of CYS-C to percentage of stenosis in group I.	70
Table 21 : Correlation of CYS C in group II.	71
Table 22 : Regression analysis of high CYS-C and risk factors in group I.(Model 1)	72
Table 23 : Regression analysis of high CYS-C and risk factors in group I.(Model 2)	72
Table 24 : Trans thoracic echocardiography in both groups.	73
Table 25 : Level of Cys-C in ACS sub groups.	73
Table 26 : ACS patients according to high CYS-C level.	74

Table 27	: Killip classification and CYS-C level.	75
Table 28	: Lipid profile according to CYS-C level in patients subgroups.	77
Table 29	: Incidence of dyslipidemia according to CYS-C level.	77
Table 30	: Transthoracic echocardiography finding in patients subgroups regarding high CYS-C.	77
Table 31	: Mean of diseased vessels in both patients subgroups.	78
Table 32	: Distribution of lesion number and sites in patients subgroups.	78
Table 33	: Incidence of thrombus and CYS-C level.	79
Table 34	: ACS Subtypes according to incidence of MACE in hospital.	80
Table 35	: Incidence of MACE and risk factors in patients subgroups.	81
Table 36	: Prediction of MACE incidence and risk factors in patients subgroups	81
Table 37	: Prevalence of MACE and number of diseased vessels.	82
Table 38	: Incidence of MACE and ACS management.	82
Table 39	: Prevalence of MACE in hospital in both subgroups.	84
Table 40	: CYS-C as independant risk factor for failure complications.	85
Table 41	: Prevalence of rehospitalization in follow up period.	85
Table 42	: Incidence of mace in both patients subgroups during follow up.	86
Table 43	: Outcomes concerning total death and survival.	87
Table 44	: Death in hospital and follow up period.	88
Table 45	: Gender and percent of death.	89

LIST OF FIGURES.

Fig		Page
Fig 1	Novel biomarkers can facilitate the diagnosis of AMI.	5
Fig 2	Proposed updated biomarker prognostic profile in acute coronary syndromes.	6
Fig 3	High-sensitivity cardiac troponin assays.	8
Fig 4	Proposed natural history of coronary atherosclerosis.	20
Fig 5	Rupture-prone and ruptured plaques at autopsy.	22
Fig 6	Ischemia reperfusion-induced cardiac dysfunction due to activation of proteases and phospholipases.	31
Fig 7	Percent of each gender in both groups.	60
Fig 8	Prevalence and percentage of risk factors in both groups..	62
Fig 9	Incidence of high LDL and low HDL in both groups.	63
Fig 10	Level of serum Cystatin-C in both groups.	69
Fig 11	Level of CYS-C in ACS sub groups.	74
Fig 12	ACS patients according to level of CYS-C.	75
Fig 13	Killip classification and CYS-C level.	76
Fig 14	Distribution of lesion number and sites in patients subgroups.	79
Fig 15	Incidence of thrombus and CYS-C level.	79
Fig 16	ACS Subtypes according to incidence of MACE in hospital.	80
Fig 17	Incidence of MACE and risk factors in patients subgroups.	81
Fig 18	Incidence of MACE and ACS management.	83
Fig 19	Prevalence of MACE in hospital in both subgroups.	84
Fig 20	Prevalence of rehospitalization in follow up period.	85
Fig 21	Incidence of MACE in both patients subgroups during follow up.	87
Fig 22	Outcomes concerning total death and survival in subgroup B.	88
Fig 23	Death in hospital and follow up period in subgroup B.	88
Fig 24	Gender and percent of death.	89
Fig 25	ROC curve for prediction the sensitivity and specificity for occurrence of MACE during hospital stay.	90
Fig 26	ROC curve for prediction of death in hospital patients with ACS.	91

