

Temporal Changes in Management of Acute Coronary Syndromes

Thesis

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Cardiovascular Medicine*

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Dedication

I dedicate this work to my Father the man I will always look up to till the day I die, my Mother the charm of my life, and my brother and sister for the happiness they fill my heart with.

ABSTRACT

❖ **BACKGROUND:** Acute Coronary Syndromes(ACS) represent a continuum of disease ranging from unstable angina, associated with reversible myocardial cell injury, to ST-segment elevation of myocardial infarction, associated with irreversible myocardial necrosis [\[1\]\[2\]](#). It represents the acute life threatening phase of coronary artery disease ⁽³⁾. Current knowledge regarding the characteristics, treatments and outcomes of patients diagnosed with the complete spectrum of acute coronary syndromes is limited to data derived from

clinical trials and/or from national registries. Acute coronary syndrome patients enrolled in randomized, clinical trials are a highly selected, lower-risk subgroup. Hence, unless the trial is very large and heterogeneous, it tends to reflect an ‘ideal’ study set rather than the diversity of clinical practice. ⁽⁴⁾

❖ **Objective:** To better delineate the change in the characteristics, treatments, and outcomes of patients with (ACS) by comparing current results with those of previous local registries that have been done in the past years.

❖ **METHODS:** This study was performed in the National Heart Institute CCU and Kasr Einy hospitals, including a total of 1807 patients diagnosed as having acute coronary syndrome. 606 patients were collected prospectively (group 3) and compared with 1201 patients collected retrospectively from previous national registries performed in the national Heart Institute from 2007(group 1) to 2010 (group 2). Data of all patients included: Full history taking including risk factors, full clinical examination, ECG, echocardiography management including modality of reperfusion, adjunctive medical treatment and whether

coronary angiography+/- PCI was done or not; outcome and in hospital mortality.

❖ **RESULT:** percentage of STEMI increased among those presenting with ACS. (from 59% in G1 vs. 63% in G2 reaching almost 74% in G3) $P < 0.001$. The mean ages were 54.5 ± 11.8 G1, 56.9 ± 10.6 in G2, and 54.3 ± 10.9 in G3. Significant drop in mean age occurred G2 vs. G3 ($P = 0.001$). Gender distribution hasn't change significantly. Smoking and diabetes increased with no statistical significance. Patients with previous PCI increased significantly 5% in G1 5.6% in G2 reaching 12% in G3 ($P = 0.001$). Coronary Angiography increased from 40 % in G1 to 52% in G3 ($P < 0.001$). PCI was done to 48.3 % of admitted patients of G3 vs. 22% in G2 ($P < 0.001$) and 26% in G1 ($P < 0.001$). Primary PCI has increased significantly 12.36% G1 ($P = 0.001$), 13% G2 ($P = 0.001$), and almost 40% G3. Door to needle (DTN) and door to balloon (DTB) showed no statistical difference. DTN 20 ± 8 min G1 vs 21.5 ± 7.3 minutes ($P = 0.105$), while DTB 102 ± 10.9 min G1 vs. 101.5 ± 26.6 min ($P = 0.86$). Overall complications have decreased significantly. Mortality has improved, 4.24% G1 vs. 2.5% in G3 ($P = 0.044$)

❖ **CONCLUSION:** Smoking, Hypertension, and diabetes are significant risk factors, which increased over the past years. This finding necessitates the formulation of programs for primary and secondary prevention of coronary artery disease. The intervention strategies have seen some flourishment. The percentage of PCI increased significantly, but still thrombolysis is the primary reperfusion modality. That shows the need for developing our insurance system to cover a broader spectrum with more services.

Keywords

Acute coronary syndromes

Registry

Primary PCI

Temporal changes

CONTENTS

List of Abbreviation	I
List of Figures	IV
List of Tables	VI
Introduction	1
Aim of the Work	3
Review of Litreature	4
Chapter I :- Pathophysiology	4
Chapter II :- Risk Factors	13
Chapter III :- Management of ACS	28
• Management of STEMI	28
• Management of NSTE-ACS	42
• Adjunctive Medical treatment in ACS :-	46
Chapter IV :- Important Registries of ACS	54
• Importance of registries in clinical practice:-	54
• Examples of Important registries and findings:-	56
Patients and Methods	63
Results	70
Discussion	86
Summary	99
Conclusion	104
Recommendations	105
Limitations of the Study	106
Reference	107
Arabic Summary	-----

List of Abbreviation

ACS	Acute Coronary Syndrome
ACC	American college of cardiology
ACE	Acetyl Choline Esterase
ADP	Adenosine Di-Phosphate
AMI	Acute Myocardial infarction
ATP	Adenosine Tri-Phosphate
BMI	Body Mass Index
BMS	Bare metal Stents
BP	Blood Pressure
CABG	Coronary Artery Bypass Grafting
CARESS - AMI	Combined Abciximab RE-teplase Stent Study in Acute Myocardial Infarction
CHD	Coronary Heart Disease
COURAGE	Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation
CPR	CardioPulmonary Resuscitation
CT	Computed Tomographic
CVD	Cardiovascular Disease
D2B	Door-to-Balloon
D2N	Door-to-Needle
DBP	Diastolic Blood Pressure
DES	Drug Eluting Stens
DIDO	Door In Door Out
ECG	Electro-Cardio-Graphy
ED	Emergency Department
EHS	Euro Heart Survey

EMS	Emergency Medical Service
ESC	European Society of Cardiology
FAST-MI	The French registries of Acute ST-elevation and non-ST-elevation Myocardial Infarction
FMC	First Medical Contact
GFR	Glomerular Filtration Rate
GP	Glycoprotein
GRACE	The Global Registry of Acute Coronary Events
GUSTO-I	Global Utilization of Streptokinase and TPA (alteplase) for Occluded Coronary Arteries
HDL	High-Density Lipoprotein
HF	Heart Failure
HR	Hazard Ratio
ICH	Intracranial Hemorrhage
IMT	Intima-media thickness
LBBB	Left Bundle Branch Block
LDL	Low-Density Lipoprotein
LOE	Level Of Evidence
MI	Myocardial Infarction
MMP	Matrix-metalloproteinase
NCDR	National Cardiovascular Data Registry
NCEP/ATP-III	National Cholesterol Education Program/ Adult Treatment Panel
NRMI	The National Registry of Myocardial Infarction
OAT	Occluded Artery Trial
OR	Odds Ratio
PAD	Peripheral Arterial Disease
PPCI	Primary Percutaneous Coronary Intervention

RCT	R andomized C ontrolled T rials
REACH	R eduction of A therothrombosis for C ontinued H ealth
RR	R elative R isk
SBP	S ystolic B lood P ressure
SK	S treptokinase
STEMI	ST -Elevation M yocardial I nfarction
STREAM	ST rategic R eperfusion E arly A fter M yocardial infarction
TIMI	T hrombolysis in M yocardial I nfarction
TRANSFER-AMI	T rial of R outine A ngioplasty and S tenting after F ibrinolysis to E nhance R eperfusion in A cute M yocardial I nfarction
TxA2	T hromboxane A2
UFH	U nfractionated H eparin
VLDL	V ery L ow D ensity L ipoprotein
VO₂	V olume of O xygen

List of Figures

- Figure 1 Characteristics of Atherosclerotic Plaques Associated with Various Presentation of Coronary Artery Disease 7
- Figure 2 Superficial Erosion of Plaques..... 12
- Figure 3 Percutaneous Coronary Angiography and Intervention in the Treatment of Arterial Stenosis 29
- Figure 4 Relative Risk of In-Hospital Death with Each Additional 15-Minute Interval and Number of Deaths Associated with Increases in Door-to-Balloon Time as Compared with Treatment within 90 Minutes..... 32
- Figure 5 shows the flow chart of patients presenting by STEMI..... 34
- Figure 6 Symptom onset to FMC ⁽¹⁷⁹⁾ 58
- Figure 7 Reperfusion modalities over the years ⁽¹⁷⁹⁾ 58
- Figure 8 Reperfusion modalities across time ⁽¹⁸⁰⁾ 60
- Figure 9 Trends in reperfusion for reperfusion-eligible STEMI patients, 1990 to 2006 61
- Figure 10 Door to Balloon times over the years..... 62
- Figure 11: Initial Diagnosis of study groups 71

• Figure 12: Mean Age over the years	72
• Figure 13 Gender distribution	72
• Figure 14: Previous Events	75
• Figure 15 Main presentation	75
• Figure 16 Invasive in hospital Procedures	79
• Figure 17 Management of STEMI	80
• Figure 18 Medical therapy	82
• Figure 19 In hospital Complications	84
• Figure 20 In- hospital Mortality	85

List of Tables

• Table1 Grades of Hypertension.....	23
• Table2 Differential Diagnosis of NSTEMI-ACS	43
• Table 3 initial diagnosis	70
• Table 4 Mean Age over the years.....	72
• Table 5 Risk Factors	73
• Table6 : Previous Events/Interventions	74
• Table 7 : Symptom to admission interval in all patients presenting with ACS	76
• Table8 : Time to FMC in STEMI.....	77
• Table 9 vital signs	78
• Table10 showing Invasive in hospital procedures	78
• Table 11 showing reperfusion Strategies.....	79
• Table 12 Adjunctive medical treatment.....	81
• Table 13 Inhospital Complications.....	83
• Table 14 Left ventricular Ejection Fraction over years.....	84
• Table 15 in hospital mortality	85

Introduction

Acute coronary syndromes (ACS) represent the acute life threatening phase of coronary artery disease ⁽¹⁾. Current knowledge regarding the characteristics, treatments and outcomes of patients diagnosed with the complete spectrum of acute coronary syndromes is limited to data derived from clinical trials and/or from national registries. ACS patients enrolled in randomized, clinical trials are a highly selected, lower-risk subgroup. Hence, unless the trial is very large and heterogeneous, it tends to reflect an ‘ideal’ study set rather than the diversity of clinical practice. ⁽²⁾

In contrast, registries and surveys have the potential to define the ‘gaps’ between evidence and practice as well as implementation of guidelines. ⁽³⁾

Randomized trials provide robust evidence for the impact of pharmacological and interventional treatments in patients with ST-segment elevation and non-STsegment elevation acute coronary syndromes (NSTEMI ACS), leading to changes in practice guidelines. ⁽⁴⁾

However, the extent and time course of changes in clinical practice are uncertain, and it is unknown whether such changes are associated with improved outcome. Previous studies have documented substantial gaps between guideline recommendations and clinical practice. Thus, there is a clinical priority to determine the extent to which evidence is

applied in practice, whether this is changing over time, and whether such changes are associated with improved outcomes.⁽⁵⁾

Also, in the past few years a lot of non-governmental organizations helped the governmental hospitals financially to improve the outcome of the ACS patients by supplying the hospitals with Stents and other supplies which are necessary for performing Primary PCI.

This phenomenon had to be studied in order to know its effect on the outcome of patients with ACS.

So the best way to do so was to compare a registry of the present time with those of the past years, and correlate this to the outcome on the morbidity and mortality of the patients suffering from ACS.

Aim of the Work

To delineate the change in the characteristics, treatments, and outcomes of patients with ACS over the years in tertiary centers.