Temporal Changes in Management of Acute Coronary Syndromes

Thesis
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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

❖ ***BACKROUND:*** 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 stratigies have seen some flourishment. The percentage of PCI increased significantly, but still thombolysis 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

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List of Abbreviation

ACS	**A**cute **C**oronary **S**yndrome
ACC	**American college of cardiology**
ACE	**A**cetyl **C**holine **E**sterase
ADP	**A**denosine **D**i-**P**hosphate
AMI	**Acute Myocardial infarction**
ATP	**A**denosine **T**ri-**P**hosphate
BMI	**B**ody **M**ass **I**ndex
BMS	**Bare metal Stents**
BP	**B**lood **P**ressure
CABG	**Coronary Artery Bypass Grafting**
CARESS - AMI	**Combined Abciximab RE-teplase Stent Study in Acute Myocardial Infarction**
CHD	**C**oronary **H**eart **D**isease
COURAGE	**C**linical **O**utcomes **U**tilizing **R**evascularization and **A**ggressive **D**rug **E**valuation
CPR	**C**ardio**P**ulmonary **R**esuscitation
CT	**C**omputed **T**omographic
CVD	**C**ardio**v**ascular **D**isease
D2B	**D**oor-**to**-**B**alloon
D2N	**D**oor-**to**-**N**eedle
DBP	**D**iastolic **B**lood **P**ressure
DES	**D**rug **Eluting Stens**
DIDO	**D**oor **I**n **D**oor **O**ut
ECG	**E**lectro-**C**ardio-**G**raphy
ED	**E**mergency **D**epartment
EHS	**E**uro **H**eart **S**urvey

EMS	**E**mergency **M**edical **S**ervice
ESC	**E**uropean **S**ociety of **C**ardiology
FAST-MI	The **F**rench registries of **A**cute **ST**-elevation and non-**ST**-elevation **M**yocardial **I**nfarction
FMC	**F**irst **M**edical **C**ontact
GFR	**G**lomerular **F**iltration **R**ate
GP	**G**lyco**p**rotein
GRACE	The **G**lobal **R**egistry of **A**cute **C**oronary **E**vents
GUSTO-I	**Global Utilization of Streptokinase and TPA (alteplase) for Occluded Coronary Arteries**
HDL	**H**igh-**D**ensity **L**ipoprotein
HF	**H**eart **F**ailure
HR	**H**azard **R**atio
ICH	**I**ntra**c**ranial **H**emorrhage
IMT	**Intima-media thickness**
LBBB	**L**eft **B**undle **B**ranch **B**lock
LDL	**L**ow-**D**ensity **L**ipoprotein
LOE	**L**evel **O**f **E**vidence
MI	**M**yocardial **I**nfarction
MMP	**M**atrix-**m**etallo**p**roteinase
NCDR	**National Cardiovascular Data Registry**
NCEP/ATP-III	**National Cholesterol Education Program/ Adult Treatment Panel**
NRMI	The **N**ational **R**egistry of **M**yocardial **I**nfarction
OAT	**O**ccluded **A**rtery **T**rial
OR	**O**dds **R**atio
PAD	**Peripheral Arterial Disease**
PPCI	**P**rimary **P**ercutaneous **C**oronary **I**ntervention

RCT	**R**andomized **C**ontrolled **T**rials
REACH	**Re**duction of **A**therothrombosis for **C**ontinued **H**ealth
RR	**R**elative **R**isk
SBP	**S**ystolic **B**lood **P**ressure
SK	**S**trepto**k**inase
STEMI	**ST-E**levation **M**yocardial **I**nfarction
STREAM	**STrategic Reperfusion Early After Myocardial infarction**
TIMI	**Thrombolysis in Myocardial Infarction**
TRANSFER-AMI	**Trial of Routine ANgioplasty and Stenting after Fibrinolysis to Enhance Reperfusion in Acute Myocardial Infarction**
TxA2	**T**hromboxane **A2**
UFH	**U**nfractionated **H**eparin
VLDL	**V**ery **L**ow **D**ensity **L**ipoprotein
VO_2	**V**olume of **O**xygen

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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 (NSTE 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.