شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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Culprit-only versus complete revascularization (non-CTO) during primary percutaneous intervention in acute STEMI with cardiogenic shock

Thesis

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of M.D Degree in ***Cardiology***

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Tarek Abdelsalam Abdelfattah Ibrahim

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LIST OF ABBERVIATIONS:

ACEIs	**:**	angiotensin-converting enzyme inhibitors
AF	**:**	atrial fibrillation
AHA	**:**	american heart association
AMI	**:**	acute myocardial infarction
AV	**:**	atrio-ventricular
BB	**:**	beta-blockers
CAD	**:**	coronary artery disease
CIN	**:**	contrast-induced nephropathy
CS	**:**	cardiogenic shock
DBP	**:**	diastolic blood pressure
DM	**:**	diabetes mellitus
FFR	**:**	fractional flow reserve
FWR	**:**	free-wall rupture
HF	**:**	heart failure
HR	**:**	hazard ratio
IMR	**:**	ischemic mitral regurgitation
IRA	**:**	infarct-related artery
LAD	**:**	left anterior descending
LCX	**:**	left circumflex
LV	**:**	left ventricle
LVEF	**:**	left ventricular ejection fraction
MACE	**:**	major adverse cardiovascular events
MR	**:**	mitral regurgitation
MV	**:**	multivessel
PCI	**:**	percutaneous coronary intervention
RA	**:**	right atrium
RCA	**:**	right coronary artery
RCTs	**:**	randomized controlled studies
RRT	**:**	renal replacement therapy
RV	**:**	right ventricle
SBP	**:**	systolic blood pressure
VF	**:**	ventricular fibrillation
vs.	**:**	Versus
VSD	**:**	ventricular septal defect
VSR	**:**	ventricular septal rupture
VT	**:**	ventricular tachycadia

Abstract

Background: There is marked controversy as regards the proper management approach among patients with STEMI, cardiogenic shock who show multi-vessel affection during the initial coronary angiography. A debate is present regarding culprit only versus total revascularization during the index procedure and the proper strategy needs to be readdressed.

Aim: This is an observational multicenter study that aims at assessing the best strategy for revascularization of STEMI patients with multivessel affection and cardiogenic shock excluding patients showing CTO lesions.

Methods We followed up 100 patients to either culprit-lesion-only PCI or immediate multivessel PCI. The results for the primary end point of death or renal-replacement therapy at 3 months have been reported previously. Prespecified secondary end points at 3 months included recurrent myocardial infarction, repeat revascularization, re-hospitalization for congestive heart failure, stroke, significant bleeding, the development of CIN and the amount of dye used.

Results: As reported previously, at 3 months, the all-cause mortality was much lower the total revascularization group (32% vs. 52%, P=0.043), the need for replacement therapy was higher in the total revascularization group (10% vs. 2%, P=0.204) as well as the rates of CIN (28% vs. 9%, P=0.235). The rate of recurrent infarction was higher among the culprit-only group (10% vs 2%, P=0.204) as well as the need for urgent revascularization (18% vs. 2%, P=0.008).

Conclusion: Among the selected groups of patients presetting with STEMI, cardiogenic shock and multi-vessel disease total revascularization provided better outcomes as regards 3-months mortality, recurrent infection and need for urgent re-intervention with no significant increment in the rates of CIN or renal replacement therapy.

Keywords: complete revascularization; culprit; STEMI; Primary PCI; cardiogenic shock

INTRODUCTION

Primary percutaneous coronary intervention, defined as an emergency percutaneous intervention for patients presenting with STEMI, without previous thrombolysis, is the preferred reperfusion strategy, provided it can be performed within guideline-mandated times and by an experienced team.[1]

Cardiogenic shock (CS) is uncommon in patients with acute myocardial infarction (AMI). However, an AMI complicated by CS is a complex syndrome which may induce low cardiac output and hypotension resulting in multi-organ dysfunction and mortality. Even with the introduction of modern intensive care units, advanced medical treatment and invasive devices, the short-term mortality and morbidity of AMI complicated by CS remain high.[2] The mortality rate for AMI complicated by CS after early revascularization, including percutaneous coronary intervention (PCI), is approximately 40% to 60%. In addition, as for age and gender, patients with AMI complicated by CS who are older than 75 years of age may have a higher one-year mortality than their younger counterparts [3].

In terms of an invasive strategy for CS, there was no difference in 30-day survival rate between PCI and coronary artery bypass graft (CABG) group[4]. On the other hand, the

outcome data comparing multivessel with culprit lesion PCI is controversial. Thus, the best revascularization strategy for CS patients remains obscure [5, 6]. According to the ESC guidelines of myocardial revascularization, primary PCI should be limited to the culprit artery in patients presenting with STEMI with exception to cardiogenic shock patients when full revascularization should be the standard [7].

In reference to the most recent CULPRIT-SHOCK study, the outcomes indicated that culprit-lesion-only PCI is superior to multivessel PCI among patients with AMI and cardiogenic shock and evidence of MVD on angiography. The mechanisms of this dichotomy are somewhat unclear, but it seems that worsening renal dysfunction due to higher dye loads with multivessel PCI may be at least partially responsible. The trial mandated CTO PCI when CTOs were present (nearly a quarter of patients), which is probably somewhat different from clinical practice, even in the presence of cardiogenic shock [8].

In our study, we aim at evaluating the outcomes from culprit only PCI versus total revascularization at the initial procedure in patients presenting with STEMI and cardiogenic shock. However, we are planning to exclude CTO lesions from the study since the trial of their revascularization is considered the major factor for the amount of dye consumed, procedure time required, rates of developed CIN and mortality.

AIM OF THE WORK

To study the safety and efficacy of culprit lesion only percutaneous coronary intervention versus multivessel PCI among patients presenting with acute myocardial infarction and cardiogenic shock in the setting of multivessel disease excluding revascularization of lesions showing chronic total occlusion as measured by the 1 month mortality and the incidence of developed complications after the procedure.

REVIEW OF LITERATURE

Complications of ST-elevation myocardial infarction (STEMI)

Coronary heart disease was responsible for 1 of each 7 deaths in the United States (US) and was the cause of 375,295 deaths in 2011 [9]. According to the latest WHO data published in 2017, Coronary artery disease mortality in Egypt were estimated at 126,312 or 24.58% of the total mortality[10]. There has been a significant decline in the incidence of mechanical complications with the advance of percutaneous coronary intervention. The incidence of mechanical complications after acute ST- elevation myocardial infarction (STEMI) when primary PCI was the reperfusion method was 0.9% as reported by the Assessment of Pexelizumab in Acute Myocardial Infarction (APEX-MI) trial [11]. Although the incidence has declined in the recent years, mortality in patients with complications of acute myocardial infarction still remains high. As reported by a registry of AMI in US hospitals, overall mortality dropped from 10.45% in 1994 to 6.3% in 2006, and a similar decline in mortality was detected in different countries[12]. The complications of AMI can be classified from a broad view into 5 categories (Table 1): mechanical, electrical,