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HOSSAM MAGHRABY



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



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جامعة عين شمس

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**Role of Nitroglycerin Echocardiography in
Detection of Viable Myocardium in Post
Myocardial Infarction Patients in
Comparison to the Standard Low Dose
Dobutamine Stress Echocardiography**

Thesis

*Submitted in Partial Fulfillment for MD degree in
Cardiology*

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2021

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قَالَ

لَسِبْتَ أَنْكَ لَا تَعْلَمُ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدقة الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgment

I would like to express my deepest gratitude to Prof. Dr. Ahmed Ibrahim Nassar, Professor of Cardiology, Faculty of Medicine - Ain Shams University, for his close supervision, his scientific advice and for the great effort he has done throughout the whole work,

Also, it is my great pleasure to express my deepest gratitude to all my Professors (Dr. Mazen Tawfik, Dr. Sameh Samir and Dr. Adham Abdel Jawab), Department of Cardiology, Faculty of Medicine - Ain Shams University, for their great efforts and the time they spent.

Lastly, I would like to thank my family for their support and great help to accomplish this work,

Heidi Amin

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List of Abbreviations

Abb.	Full term
2C	Apical 2 chamber view
2D	Two dimensional.
4C	Apical 4 chamber view
AF	Atrial fibrillation
AMI.....	Acute myocardial infarction.
CA.....	Coronary angiography
CABG.....	Coronary artery bypass graft surgery.
CAD	Coronary artery disease
DCM	Dilated cardiomyopathy
DM	Diabetes mellitus.
ECG	Electrocardiogram.
EF	Ejection fraction.
HCM	Hypertrophic cardiomyopathy
HTN	Hypertension
IDDM.....	Insulin dependent diabetes mellitus
LAD	Left anterior descending artery
LAX	Parasternal long axis view
LCX.....	Left circumflex artery
LDDE.....	Low dose dobutamine echocardiography
LM	Left main
LV	Left ventricle.
LV.....	Left ventricle
LVSD	Left ventricular systolic dysfunction
MBF.....	Myocardial blood flow
MVD	Multi vessel disease
NA.....	Non applicable
NTG	Nitroglycerin
NIDDM.....	Non insulin dependent diabetes mellitus
NSTEMI	Non ST elevation myocardial infarction.
OM1	Obtuse marginal branch.
RBBB.....	Right bundle branch block.

List of Abbreviations Cont...

Abb.	Full term
RCA	Right coronary artery
RWMAs	Resting wall motion abnormalities.
SAX	Parasternal Short-axis view
WMSI.....	Wall motion score index
EDRF.....	Endothelial derived relaxing factor.
NO.....	Nitric oxide
PDGF.....	Platelet derived growth factor
CGMP:.....	Cyclic guanosine monophosphate
AMP.....	Adenosine monophosphate.

Abstract

Objectives: Dobutamine as an agent used in stress echocardiography is known to cause some side effects that can be severe and annoying to the patient during the study. Alternatively, Nitroglycerin (NTG) can give the same results without these side effects and relatively low cost. Therefore, we evaluated the role of using NTG echo in assessing viable myocardium in post Myocardial infarction patients in comparison to low dose dobutamine echocardiography (LDDE).

Methods: This prospective interventional study was performed on 45 adult patients who developed previous myocardial infarction and LV systolic dysfunction (EF <40%). All the patients had echo findings showing akinetic segments related to the infarcted territory. 24 patients underwent viability test using LDDE while 21 patients underwent NTG echo. Coronary angiography (CA) was performed only in patients with positive viability with LDDE or NTG echo intervening in the artery consistent with the results of the non invasive test. Patients who underwent CA based on the results of LDDE and NTG echo were followed up 3 months later by a “2D” echocardiographic examination to assess improvement in wall motion in segments showing positive viability.

Results: All the patients underwent a viability test using either LDDE or NTG echo and only patients with viable akinetic segments underwent coronary revascularization. 2D Echo was followed up 3 months after revascularization in those patients showing viable akinetic territories, concluding that ejection fraction was significantly improved in the follow up echo of the improved cases in the NTG group (55.57 ± 5.94), compared to LDDE group (45.00 ± 7.91) and this was statistically significant. The wall motion score index (WMSI) in the NTG group decreased from (2.33 ± 0.31) to (0.97 ± 0.22), while for the LDDE group, the mean WMSI decreased to (1.91 ± 0.03) instead of (2.76 ± 0.22) and this was statistically highly significant. From this result, we found that WMSI showed a significant improvement in the NTG group compared to the LDDE group confirming myocardial viability in the group that underwent viability test using NTG.

Conclusion: Nitroglycerin echocardiography is a safe tool and may provide an interesting diagnostic alternative to dobutamine echo to detect myocardial viability in post-MI patients.

Keywords: trans-thoracic echocardiography, low dose dobutamine echocardiography, Nitroglycerin echocardiography, wall motion score index.