BAOJ Cellular & Molecular Cardiology

Liaquat Ali, et al., BAOJ Cell Mol Cardio 2017, 3: 2
3: 015

Mini Review

# Localization of Different Culprit Artries in Patients with Acute Inferior Wall Myocardial Infaction along with Deviation in Lead aVr.

**Liaquat Ali[1], Muhammad Waqas Mazhar[2*], Hafiz Abdul Kabeer[2] and Han Naung Tun[3]**

[1]*Shaikh Zayed Hospital Rahim yar khan*

[2]*Chaudhary Pervaiz Elahi Institute of Cardiology Multan*

[3]*Hypertension and Stroke Council Zurich Switzerland*

## Introduction

Standard 12-lead electrocardiography (ECG) is a widely available technology that is routinely applied in the setting of chest pain to identify patients with ST-elevation myocardial infarction (STEMI) who would benefit from primary PCI [1]. The use of ECG to predict the location of the culprit coronary lesion within the infarct-related artery (IRA) could provide additional valuable information to augment clinical decision making and expedite reperfusion therapy. Previous studies in patients with acute coronary syndromes have correlated ECG findings to the results of coronary angiography, leading to the formulation of ECG criteria capable of identifying the coronary artery housing the culprit lesion and the site of the culprit lesion within that artery [2-5].

The culprit artery of anterior STEMI is nearly always the left anterior descending artery (LAD), but inferior STEMI can be caused by an occlusion of either the right coronary artery (RCA) or left circumflex (LCX) artery. Various ECG criteria have been suggested to predict the culprit artery based on the analysis of ST-segment elevation and ST-segment depression in different leads [6].

More recently, ST-segment depression in lead aVR has been suggested as a predictor of LCX artery involvement [7], aVR depression was also shown to be associated with significantly impaired myocardial perfusion [8].

Prediction of the culprit artery in inferior STEMI can be challenging because the dominance of the RCA and LCX can vary significantly among patients [9].

Recently the conventional ECG findings used to predict culprit artery in inferior STEMI were less useful in patients with dominant LCX infarction. The culprit artery was LCX in 47% and RCA in 53% patients [10]. With the use of this study we can easily predict the culprit artery and manage accordingly----

## Objective

To determine LOCALIZATION OF DIFFERENT CULPRIT ARTRIES IN PATIENTS WITH ACUTE INFERIOR WALL MYOCARDIAL INFACTION ALONG WITH DEVIATION IN LEAD aVR.

### Operational Definition

Acute inferior wall ST segment depression myocardial infarction: Presence of all of the following:

- History of typical chest pain for more than 20 minutes
- ECG findings: ST-segment elevation in inferior leads and depression in lead aVR≥0.1 mV
- Raised CKMB enzymes and Troponins

## Materials and Methods

### Study Design

Cross sectional study

### Duration of Study

Six months.

Setting: Cardiology department of Shaikh Zaid Hospital, Rahim Yarkhan, Pakistan, Chaudhary Pervaiz Elahi Institute of Cardiology Multan, Pakistan

### Sampling Technique

Non-probability Consecutive

***Corresponding author:** Muhammad Waqas Mazhar, Institute of Cardiology, Multan, Pakistan, E-mail: Dr.waqas19@hotmail.com

**Sub Date:** July 15, 2017, **Acc Date:** July 26, 2017, **Pub Date:** July 26, 2017.

**Citation:** Liaquat Ali, Muhammad Waqas Mazhar, Hafiz Abdul Kabeer and Han Naung Tun (2017) Localization of Different Culprit Artries in Patients with Acute Inferior Wall Myocardial Infaction along with Deviation in Lead aVr.. BAOJ Cell Mol Cardio 3: 015.

**Sample Size**

The previous study reprted LCX as a culprit artery in 47% 10 of patients, using 95% confidence level and 10% absolute precision the sample size acquired is around 100 patients of acute ST segment depression in lead aVR MI.

**Selection Criteria**

**Inclusion Criteria**

- Patients age between 35-85 years
- Either Gender
- Diagnosed Acute inferior wall having ST segment elevation in inferior leads and ST segment depression myocardial infarction (as defined in operational definition)

**Exclusion Criteria**

- Non consenting patients
- A history of previous myocardial infarction.
- Right or left bundle branch block.
- Patients not candidate for thrombolytic therapy.
- Pericarditis.

## Data Collection Procedure

As per sample size of this study, admitted acute ST segment depression in lead aVR MI patients at Shaikh Zaid Hospital, Rahim Yar Khan, will be included in this study. The purpose, procedure and risk/benefit ratio of the study will be explained and informed consent will be taken from patient. The study will be started after the approval of institutional ethical committee. All patients will undergo coronary angiography. Presence of 70% or more occlusion of RCA or LCX will be taken as culprit artery.

## Data analysis Procedure

Statistical Packages for social science (SPSS-10) will be used to analyze data. Frequency and percentage will be computed for qualitative variables like gender, culprit artery (RCA/LCX). Mean and standard deviation will be computed for age. As it's a descriptive study no statistical test will be applicable.

## Annexure I

FREQUENCY OF DIFFERENT CULPRIT ARTERIES IN PATIENTS WITH ACUTE INFERIOR WALL ST SEGMENT DEPRESSION MYOCARDIAL INFARCTION IN LEAD A VR PRESENTING TO A TERTIARY CARE HOSPITAL

**Proforma**

Date:________/2014

S. No:______________________ Reg. No:___________________

Name:_________________________________________

–

Age: _______________ Years

Gender: ☐ Male ☐ Female

CULPRIT ARTERY

RCA: Yes No

LCX: Yes No

## References


1. Atar S, Barbagelata A, Birnbaum Y (2006) Electrocardiographic diagnosis of ST-elevation myocardial infarction. Cardiol Clin 24: 343.
2. Sgarbossa EB, Birnbaum Y, Parrillo JE (2001) Electrocardiographic diagnosis of acute myocardial infarction: current concepts for the clinician. Am Heart J 141(4): 507-517.
3. Engelen DJ, Gorgels AP, Cheriex EC (1999) Value of the electrocardiogram in localizing the occlusion site in the left anterior descending coronary artery in acute anterior myocardial infarction. J Am Coll Cardiol 34(2): 389-395.
4. Zimetbaum PJ, Krishnan S, Gold A, Carrozza II JP, Josephson ME (1998) Usefulness of ST-segment elevation in lead III exceeding that of lead II for identifying the location of the totally occluded coronary artery in inferior wall myocardial infarction. Am J Cardiol 81(7): 918-919.
5. Wellens HJ, Gorgels AP, Doevendans PA (2004) The ECG in acute myocardial infarction and unstable angina: diagnosis and risk stratification. 2nd ed. Boston (Mass): Kluwer Academic Publishers 5: 117.
6. Tierala I, Nikus KC, Sclarovsky S, Syvanne M, Eskola M (2009) Predicting the culprit artery in acute ST-elevation myocardial infarction and introducing a new algorithm to predict infarctrelated artery in inferior ST-elevation myocardial infarction: correlation with coronary anatomy in the HAAMU Trial. J Electrocardiol 42(2): 120-127.
7. Sun TW, Wang LX, Zhang YZ (2007) The value of ECG leadaVR in the differential diagnosis of acute inferior wall myocardial infarction. Intern Med 46: 795-799.
8. Kosuge M, Kimura K, Ishikawa T (2005) ST-segment depression in aVR: a useful predictor of impaired myocardial reperfusion in patients with inferior acute myocardial infarction. Chest 128(2): 780-786.
9. Zhong-Qun Z, Wei W, Shu-Yi D, Chong-Quan W, Wang Jung, et al. (2009) Electrocardiographic characteristics in angiographicallydocumented occlusion of the dominant left circumflex artery with acute inferior myocardial infarction: limitations of ST elevation III/II ratio and ST deviation in lateral limb leads. J Electrocardiol 42(5): 432-439.
10. Mahmoud KS, Abd Al Rahman TM, Taha H, Mostafa S (2014) Significance of ST-segment deviation in lead aVR for prediction of culprit artery and infarct size in acute inferior wall ST-elevation myocardial infarction. The Egypt Heart J :dx.doi.org/10.1016/j.ehj.2013.12.082