

# Average Ischemia Time in NSTEMI vs STEMI Among Local Population of Pakistan

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Article History:

Submitted: 11.05.2021

Accepted: 25.05.2021

Published: 01.06.2021

## ABSTRACT

**Introduction:** Coronary heart diseases is a major disease causing significant mortality and long term complications in patients.

**Objectives of the study:** The main objective of the study is to analyse the average ischemia time in Non-ST-Elevation Myocardial Infarction in comparison of ST-Elevation Myocardial Infarction among local population of Pakistan.

**Material and methods:** This comparative study was conducted in Shiekh Zayed Medical College, Rahim Yar Khan during August 2019 to January 2020. The data was collected 100 patients of both genders. The data was divided into two groups.

**Results:** The data was collected from 100 patients. The mean age of the patients was  $51.3 \pm 11.5$  years

in STEMI patients and  $57.4 \pm 9.4$  in NSTEMI. 45 (45%) have diabetic history with STEMI and 55 (55%) with NSTEMI patients. 81 (81%) have smoking history and 17 (17%) have family history of CVD with STEMI. All the data is represented in *table 1*.

**Conclusion:** It is concluded that there is no difference among the heart rate variability indices in Ischemic heart disease, MI, age group and gender.

**Key words:** Acute; Risk; Score; Patients; Hypertension

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## INTRODUCTION

Coronary heart diseases is a major disease causing significant mortality and long term complications in patients. It is a term that demonstrate a range of illnesses going from angina upto ST-portion rise myocardial dead tissue. Cardiovascular danger factors for ischemic heart sickness and AMI are on the ascent in Pakistan (Wiliński J, *et al.*, 2014). 18% of grown-up population experiences hypertension, smoking and tobacco use has expanded and weight is expanding. 16.2% men and 11.7% ladies have diabetes mellitus while another 8.2% men and 11.7% ladies have debilitated glucose resilience (Brateanu A, 2015). With expanding opulence and offices of life, there is a clear change in way of life and there is increasingly more inclination for inactive propensities. Exercise and open air exercises appear to have diminished. As an outcome, cardiovascular illnesses like myocardial dead tissue and stroke have become the main sources of bleakness and mortality in Pakistan (Steg PG, *et al.*, 2012).

Heart Rate Variability (HRV) has been known as a measurable parameter of the cardiac autonomic function. The cardiac autonomic innervation is heterogeneous and hence leads to different patterns of autonomic modulation (Roffi M, *et al.*, 2016). The normal pattern of autonomic modulation is altered in the case of Myocardial Infarction, the pattern of alteration is not uniform, and it depends on the infarcted wall or region of the heart. This altered autonomic modulation starts within a few hours after the acute event (Coviello I, *et al.*, 2013). In ST-segment Elevation Myocardial Infarction (STEMI) patients, cardiac autonomic modulation is predominantly characterized by activated sympathetic and withdrawn parasympathetic activity in the early hours after STEMI. It is worth mentioning that this autonomic modulation shows a difference according to the location of the infarction, with the inferior/posterior/right ventricular infarctions showing a more pronounced vagal/vaso-depressive response while the anterior infarctions showing a more pronounced sympathetic response (Kozieradzka Al, *et al.*, 2011).

An anterior wall myocardial localized necrosis otherwise called foremost divider MI, or AWTMI, or foremost ST section height MI, or foremost STEMI happens when foremost myocardial tissue normally provided by the left front sliding coronary conduit endures injury because of absence of blood supply (Elbarouni B, *et al.*, 2009). At the point when an AWTMI reaches out to the septal and sidelong areas too, the guilty party sore is typically more proximal in the LAD or even in the left principle coronary supply route. This enormous front myocardial dead tissue is named a broad foremost (Eagle KA, *et al.*, 2004).

## OBJECTIVE

The main objective of the study is to analyse the average ischemia time in Non-ST-Elevation Myocardial Infarction in comparison of ST-Elevation Myocardial Infarction among local population of Pakistan.

## MATERIAL AND METHODS

This comparative study was conducted in Shiekh Zayed Medical College, Rahim Yar Khan during August 2019 to January 2020.

### Sample size

The data was collected from 100 patients of both genders. Sample size is calculated with 95-96% confidence level, 4-5% margin of error and taking expected percentage of sensitivity of 92.3% with margin of error 5% and specificity 100%.

### Inclusion criteria:

- Age 20 to 60 years
- Patients with symptoms of ischemia.
- History of coronary artery disease.

### Exclusion criteria:

- Those who are not willing to participate in this study.
- Those having abnormal cardio biomarkers.
- Non-cardiac trauma and non ischaemic cardiomyopathy

**Data collection**

After acceptance from Ethical Committee and higher board of study, and then after taking informed, written consent, patients was enrolled for data collection. The data was collected 100 patients of both genders. The data was divided into two groups.

- Group A: Patients with diagnosis of NSTEMI
- Group B: Patients with STEMI

The acute risk of the in-hospital mortality and the assignment to the respective risk groups was calculated prospectively for these patients using the online calculator. Patients were divided into three parts according to risk score, low score, intermediate and high risk score. All patients of anterior and inferior wall ST Elevation Myocardial Infarction got thrombolytic therapy.

**Statistical analysis**

The statistical analysis of data was performed using SPSS version 19.

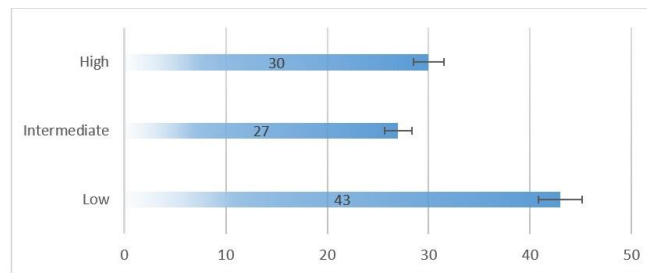
**RESULTS**

The data was collected from 100 patients. The mean age of the patients was 51.3 ± 11.5 years in STEMI patients and 57.4 ± 9.4 in NSTEMI. 45 (45%) have diabetic history with STEMI and 55 (55%) with NSTEMI patients. 81 (81%) have smoking history and 17 (17%) have family history of CVD with STEMI. All the data is represented in Table 1 (Table 1).

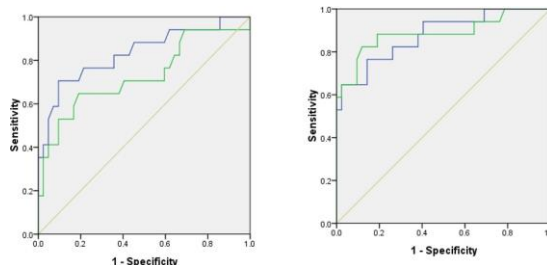
**Table 1: Demographic data of patients with ST-elevation myocardial infarction and non-ST-elevation Myocardial Infarction**

	STEMI	NSTEMI	P <sup>2</sup>
Age, years	51.3 ± 11.5	57.4 ± 9.4	
Cardiovascular risk factors			
Diabetes, n (%)	45 (45%)	55 (55%)	0.045
Hypertension, n (%)	34 (34)	66 (66)	<0.001
Smoking habit, n (%)	81 (81)	19 (19)	0.001
Family history, n (%)	17 (17)	83 (83)	0.159
Previous CABG, n (%)	71 (71)	29 (29)	<0.001
PCI, n (%)	13 (13)	87 (87)	<0.001
AMI Previously, n (%)	21 (10)	39 (33)	<0.001
Stroke history, n (%)	5 (2)	6 (5)	0.187
AMI characteristics			
Anterior, n	38	62	<0.001
Inferior, n	76	24	0.002
Other, n	4	96	<0.001
Left ventricle ejection fraction, %	46.8 ± 8.2	43.4 ± 13.1	
Patients with LVEF < 40%, n	43	57	0.005
Patient with heart failure at initial admission, n	15	75	0.002

Patients with NSTEMI were more established than those with STEMI, and introduced all the more regularly history of hypertension, past MI and coronary revascularization techniques, and clinical indications of metabolic disorder. Patients with NSTEMI had more noteworthy number of basic coronary stenoses, revascularization was all the more regularly deficient, and such patients introduced all the more frequently with side effects of cardiovascular breakdown on beginning admission to the coronary care unit (Figures 1 and 2).



**Figure 1: Grace Risk Score**



**Figure 2: ROC curve of group A with NSTEMI and group B with STEMI**

Table 3 shows the Grace Risk Score of patients. According to analysis 43% patients have low score, 27% patients with intermediate score and 30% patients have high Grace Risk Score. All the values are presented in Table 3 (Tables 2 and 3).

**Table 2: Different types of therapies**

Therapy	STEMI	NSTEMI	P-value
Warfarin	22	78	0.401
β-blocker	89	11	0.201
Ca-antagonist	18	82	0.023
ACE-inhibitor	80	20	0.001
AT-II-antagonist	16	84	< 0.001
Statin	20	80	0.789

**Table 3: Grace Risk Score of selected participants (n=100)**

Grace Risk score	N	% age
Low	43	43%
Intermediate	27	27%
High	30	30%

**DISCUSSION**

Worldwide various long term examines have additionally assessed and approved the prescient estimation of the Grace hazard score in NSTEMI. The GRACE Risk Score for anticipating in-medical clinic passing was surveyed in a few Acute Coronary Syndrome understanding libraries, the MINAP database (Eagle KA, et al., 2004). Bradshaw et al found that the prejudicial limit of GRACE model was acceptable generally speaking. Fox Ka et al (Fox KA, et al., 2006) decided expectation of danger of death and myocardial dead tissue in the a half year after introduction with Acute Coronary Syndrome by means of planned worldwide observational examination (GRACE) and discovered C-measurement of 0.81 for foreseeing demise and 0.73 for death or myocardial localized necrosis from admission to a half year after release which is similar to our investigation. This investigation likewise found that GRACE score demonstrated great prescient exactness for the consolidated endpoint of cardiovascular sicknesses or myocardial dead tissue in emergency clinic (Canto JG, et al., 2011).

Past examinations alluded to autonomic adjustments in STEMI patients with not many really contemplating the impact of revascularization on the example of autonomic regulation. Vagal overactivity is notable to be more incessant in second rate STEMI contrasted with thoughtful overactivity in anterior STEMI, this can be clarified by the particular circulation of vagal afferents to the inferoposterior mass of the left ventricle (Naqvil SM, *et al.*, 2015). Accordingly, the impact of revascularization whether by essential PCI or by fibrinolysis should be related with various cardiovascular autonomic examples of recuperation relying upon the site of STEMI. Essential PCI offers the best quality level treatment by reestablishing the stream in the IRA as per the rules of treatment of STEMI, while its impact on reestablishing the ordinary autonomic regulation example stays indistinct (Samad Z, *et al.*, 2002).

## CONCLUSION

It is concluded that there is no difference among the heart rate variability indices in Ischemic heart disease, MI, age group and gender. Grace Risk score is also considered to be the useful tool for predicting the hospital stay and death rate in NSTEMI patients.

## REFERENCES

1. Wiliński J, Sondej T, Kusiak A, Wiliński B, Kameczura T, Bacior B, *et al.* Heart rate variability in the course of ST--segment elevation myocardial infarction treated with primary percutaneous transluminal coronary angioplasty in elderly and younger patients. *Przeegl Lek.* 2014; 71: 61-65.
2. Brateanu A. Heart rate variability after myocardial infarction: what we know and what we still need to find out. *Curr Med Res Opin.* 2015; 31: 1855-1860.
3. Steg PG, James SK, Atar D, Badano LP, Blömmstrom-Lundqvist C, Borger MA, *et al.* ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. *Eur Heart J.* 2012; 33: 2569-2619.
4. Roffi M, Patrono C, Collet JP, Mueller C, Valgimigli M, Andreotti F, *et al.* 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation. *Eur Heart J.* 2016; 37: 267-315.
5. Coviello I, Pinnacchio G, Laurito M, Stazi A, Battipaglia I, Barone L, *et al.* Prognostic role of heart rate variability in patients with ST-segment elevation acute myocardial infarction treated by primary angioplasty. *Cardiology.* 2013; 124: 63-70.
6. Koziaradzka AI, Kamiski KA, Maciorkowska D, Olszewska M, Dobrzycki S, Nowak K, *et al.* GRACE, TIMI, Zwolle and CADILLAC risk scores-do they predict 5-year outcomes after ST-elevation myocardial infarction treated invasively?. *Int J Cardiol.* 2011; 148: 70-75.
7. Elbarouni B, Goodman SG, Yan RT, Welsh RC, Kornder JM, Deyoung JP, *et al.*, Validation of the Global Registry of Acute Coronary Event (GRACE) risk score for in-hospital mortality in patients with acute coronary syndrome in Canada. *Am Heart J.* 2009; 158: 392-399.
8. Eagle KA, Lim MJ, Dabbous OH, Pieper KS, Goldberg RJ, Van de Werf F, *et al.* A validated prediction model for all forms of acute coronary syndrome: estimating the risk of 6-month postdischarge death in an international registry. *JAMA.* 2004; 291(22): 2727-2733.
9. Fox KA, Dabbous OH, Goldberg RJ, Pieper KS, Eagle KA, Van de Werf F, *et al.* Prediction of risk of death and myocardial infarction in the six months after presentation with acute coronary syndrome: prospective multinational observational study (GRACE). *BMJ.* 2006; 333: 1091.
10. Canto JG, Kiefe CI, Rogers WJ, Peterson ED, Frederick PD, French WJ, *et al.* Number of coronary heart disease risk factors and mortality in patients with first myocardial infarction. *JAMA.* 2011; 306(19): 2120-2127.
11. Naqvil SM, Rao TR, Chandra SJ. Haemoglobin levels in acute coronary syndrome patients admitted in cardiology intensive care units in a tertiary care hospital. *J Assoc Physicians India.* 2015; 63(6): 26-29.
12. Samad Z, Rashid A, Khan MA, Mithani S, Khan MH, Khan MS, *et al.* Acute myocardial infarction: Profile and management at a tertiary care hospital in Karachi. *J Pak Med Assoc.* 2002; 52(1): 45-50.