

Lampiran 1

PERBEDAAN KEBERHASILAN TERAPI FIBRINOLITIK PADA PENDERITA *ST-ELEVATION MYOCARDIAL INFARCTION* (STEMI) DENGAN DIABETES DAN TIDAK DIABETES BERDASARKAN PENURUNAN ST-ELEVASI

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ABSTRAK

ST-elevation myocardial infarction (STEMI) adalah kondisi yang terjadi akibat rupturnya plak aterosklerosis yang menyebabkan oklusi total pada arteri koroner. Salah satu tindakan reperfusi yang dapat dilakukan pada pasien STEMI adalah pemberian fibrinolitik yang sebaiknya diberikan dalam waktu <12 jam setelah munculnya nyeri dada. Keberhasilan terapi fibrinolitik dapat dipengaruhi oleh beberapa hal salah satunya adalah pasien menderita diabetes atau tidak. Tujuan penelitian ini adalah membedakan keberhasilan terapi fibrinolitik pada penderita STEMI dengan diabetes dan tidak diabetes berdasarkan penurunan ST-elevasi. Metode dalam penelitian ini analitik observasional dengan pendekatan *cross sectional prospective*. Jumlah sampel 34 responden diambil dengan pendekatan *consecutive sampling*. Pengukuran dilakukan dengan cara observasi langsung ke pasien dan mengobservasi catatan rekam medis pasien STEMI dengan diabetes dan tidak diabetes di emergensi jantung PJT RSUP Sanglah Denpasar, ICCU RSUD Badung dan ICU BRSU Tabanan. Uji analisis yang digunakan untuk membedakan keberhasilan terapi fibrinolitik pada penderita STEMI dengan diabetes dan tidak diabetes adalah uji Fisher. Hasil analisis uji Fisher menunjukkan bahwa terdapat perbedaan keberhasilan terapi fibrinolitik yang signifikan pada pasien diabetes dan tidak diabetes ($p < 0.000$), dimana keberhasilan terapi fibrinolitik pada pasien diabetes (10%) lebih sedikit dibandingkan pada pasien yang tidak diabetes (79%). Dapat disimpulkan bahwa terdapat perbedaan keberhasilan terapi fibrinolitik yang signifikan pada pasien diabetes dan tidak diabetes, dimana dalam penelitian ini keberhasilan terapi fibrinolitik ini kemungkinan juga dipengaruhi oleh waktu

pemberian fibrinolitik dan faktor resiko STEMI lain yang dialami oleh pasien seperti hipertensi, obesitas, hiperlipidemia dan merokok.

Kata kunci: STEMI, terapi fibrinolitik, diabetes dan tidak diabetes, penurunan ST-elevasi

Lampiran2

Original Research Paper		Volume-9 Issue-3 March-2019 PRINT ISSN - 2249-555X
		Medicine
		A COMPARATIVE STUDY OF IN HOSPITAL OUTCOME OF PATIENTS WITH ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION WITH AND WITHOUT DIABETES MELLITUS, AFTER THROMBOLYTIC THERAPY IN A TERTIARY CARE CENTRE IN EASTERN BIHAR.
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ABSTRACT	<p>INTRODUCTION: Diabetes mellitus is considered as a major health problem and an epidemic throughout the world. The mortality of patients with diabetes is almost twice that of non-diabetic. The outcome of in-hospital patients with myocardial infarction with and without diabetes after thrombolytic therapy is presented here.</p> <p>AIMS AND OBJECTIVES: To compare the outcome of patients with myocardial infarction after thrombolysis in diabetics and non-diabetics in patients of Medicine Department of Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar.</p> <p>MATERIAL AND METHODS: A retrospective, observational study was carried out at Medicine Department of Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar between the period of October 2016 to September 2018. Patients who presented with acute myocardial infarction having ST-elevation as MI picture, were treated with streptokinase as a thrombolytic agent. Baseline ECG was taken on admission and the one after 60 minutes of thrombolysis. The study group involved two types: (i) diabetic (ii) nondiabetics.</p> <p>RESULTS: A total of 790 patients were included in the present study. Out of them around 208 were females and 582 were males. ST-segment resolution in non-diabetic patients was found in 360 patients out of 372 and in diabetics it was found in 348 patients out of 416. Complications related to post thrombolytic therapy was more prevalent in diabetics 296 patients (71.15%) as compared to those in non-diabetics 94 patients (25.26%). Mortality was observed only with diabetics (23.52%) as compared to no mortality in non-diabetics.</p> <p>CONCLUSION: Overall, morbidity and mortality of diabetic patients with Acute Myocardial Infarction was found to be greater as compared to non-diabetics, post thrombolysis.</p>	
KEYWORDS : Myocardial Infarction, ST segment, ECG, Thrombolysis, Diabetes.		

Lampiran 3

Outcome of Thrombolytic Therapy in Acute Coronary Syndrome in Diabetic versus Non-Diabetic Patients

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ABSTRAK

Introduction: Diabetes mellitus (DM) has emerged as a modern epidemic and is at raising trend globally and will continue to be in future. Also, Acute Coronary Syndrome (ACS) is one amongst the major causes of mortality and morbidity globally. The mortality in diabetics is nearly twice as that of non-diabetic. Thus, this study was carried to compare the outcome of thrombolytic therapy in acute coronary syndrome in diabetic versus non-diabetic patients.

Objective: To compare the outcome of thrombolytic therapy in acute coronary syndrome in diabetic versus non-diabetic patients.

Material and Method: Prospective observational study was undertaken in Rohilkhand Medical College and Hospital, Bareilly including 50 patients presented with ACS admitted in the medical wards from 1st Jan 2018 to 31st Dec 2018. Detailed clinical examination and routine investigations were done. These patients were treated with streptokinase as a thrombolytic agent. ECG was taken on admission and the one after 60 minutes of thrombolysis. The study groups were divided in two i.e. diabetic and non-diabetics. Data was collected, computed and analyzed statistically. **Results:** 50 cases were enrolled in the study, out of which 31 were male and 19 were female. Two study groups were made one of diabetic and other of non-diabetic for comparison each of 25 cases. Resolution of ST-segment in non-diabetic patients was found in 17 patients out of 25 and in diabetics it was found in patients 11 out of 25. Post fibrinolytic therapy complications were more prevalent in diabetics as compared to those in non-diabetics. Mortality was 12% with diabetics as compared to 4% mortality in non-diabetics.

Conclusion: A considerable number of diabetics failed achieve complete reperfusion after thrombolytic therapy, despite the established fact that fibrinolytic therapy benefits in acute myocardial infarction. The mortality and morbidity was more in diabetic when compared with non diabetic after thrombolytic therapy in ACS in our study. Complications after fibrinolytic therapy were more prevalent in diabetics. Thus, one must be aware about this fact and special attention must be given for the better management and care of diabetic myocardial infarction patients.

Keywords: thrombolytic therapy, acute coronary syndrome, diabetic versus non-diabetic patients.

Lampiran 4

Succes of Streptokinase in Diabetic Smokers with ST-Elevation Myocardial Infarction (STEMI) with Absence of Other Factors

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ABSTRACT

Objective: The objective of this study was to find success of streptokinase in diabetic smokers with ST-Elevation Myocardial Infarction (STEMI) with absence of other factors. **Study Design:** Experimental study

Place and Duration of Study: This study was conducted at the Punjab Institute of Cardiology, Lahore, Imran Idris Teaching Hospital Sialkot from Feb, 2018 to Aug, 2018.

Materials and Methods: A total of 382 cases meeting inclusion criteria were taken in this study after approval from hospital ethical committee. After taking informed consent all data was taken from Emergency department of emergency department of Cardiology, Punjab Institute of cardiology Lahore, Imran Idris Teaching Hospital Sialkot. Basic demographer information of all cases such as age and their address, contact details were taken. Streptokinase was given to each patient at a dose of 1.5 million units, diluted in 100 ml of normal saline, in 1 hour. Informed written consent of the patient/attendant was taken. Success of Streptokinase (SK) was determined on ECG after 90 min as per operational definition. All data was collected by researchers them self on attached Performa.

Results: The mean age of cases was 46.45 ± 11.44 years with minimum and maximum age as 25 and 65 years. There were 370(96.9%) male and 12(3.1%) female cases. According to operational definition, a total of 200(52.4%) cases had success while 182(47.6%) cases did not have success of medication.

Conclusion: The frequency of success of streptokinase in diabetic smokers with ST-Elevation Myocardial Infarction (STEMI) with absence of other factors is 52.4%. So the cases with these conditions must be managed accordingly and the treatment strategies must be revisited in order to improve the treatment outcome of these cases. **Key Words:** Myocardial infarction, diabetes, smoking, Streptokinase, ST elevations, fibrinolysis

Lampiran 5**REDUCTION OF ST SEGMENT ELEVATION IN DIABETIC PATIENTS WITH MYOCARDIAL INFARCTION AFTER THROMBOLYTIC THERAPY**

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Background: Acute coronary artery disease (CAD) is one of the main causes of death in today's world. Myocardial infarction (MI) tends to be more common among diabetic patients. One of the most effective and used (in our settings) methods of resolution of MI is administration of streptokinase (SK). This study was conducted with the aim to determine the efficacy of thrombolytic therapy in reduction of ST segment elevation in acute MI patients presenting with diabetes. **Methods:** A descriptive case series with selection of 130 patients through non-probability purposive sampling was conducted at the Medical Departments of Services Hospital Lahore. The study was completed in 6 Months. Patients 18–80 years of age having either gender diagnosed with confirmed acute myocardial infarction were included in this study. All patients were then injected with streptokinase 1.5 mu. Pre S and Post SK ECGs were done and ST segment elevation measured also measuring reduction of ST segment. **Results:** The mean age of the patients was noted as 54.42 ± 8.80 years. There were 62.31% males. Mean reduction in ST-segment elevation of the patients was noted as 58.53 ± 26.01 . The efficacy was achieved in 47.7% patients. **Conclusion:** It is concluded that SK can be effective in almost half of diabetic patients with myocardial infarction.

Keywords: Coronary artery disease; Myocardial infarction; Streptokinase; ST segment reduction

Lampiran 6

Effectiveness of thrombolytic therapy in patients with acute myocardial infarction within 12 hours of symptoms

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ABSTRACT

Background: Atherosclerotic coronary artery disease particularly myocardial infarction is the leading cause of morbidity and mortality all over the world and its incidence is also on the rise in Pakistan. This study was done to assess the effectiveness of thrombolytic therapy in patients with acute myocardial infarction and comparison between diabetics and non- diabetics.

Methods: This cross sectional study was conducted at Department of Cardiology, Bahawal Victoria Hospital, Bahawalpur from January to June 2019. Total 380 patients of aged 30-70 years either male or female with diagnosis of acute ST-elevation myocardial infarction presenting within 12 hours of the onset of chest pain were selected. Patients were given thrombolytic therapy with Streptokinase 1.5 MIU over 1 hour and post therapy, efficacy was assessed.

Results: Mean age of the patients was 51.37 ± 10.08 years. Mean duration of diabetes mellitus was 5.99 ± 3.47 years. Duration of chest pain ranged from 1 hour to 12 hours with mean duration of 4.66 ± 2.98 hours. Out of 380 patients of MI, treatment was found effective in 202 (53.2%) patients. Female gender, type of MI, and duration of chest pain were significantly associated with reduced efficacy (p value < 0.05). Presence of hypertension, smoking, dyslipidemia or family history of MI did not alter the efficacy significantly ($p > 0.05$) while patients having diabetes had significantly reduced efficacy (p value < 0.001).

Conclusions: There is reduced effectiveness of thrombolytic therapy in diabetic patients with ST elevation myocardial infarction.

Keywords: Diabetes mellitus, ST-elevation myocardial infarction, ST-segment resolution, Thrombolytic therapy

Lampiran 7

EFFICACY OF STREPTOKINASE IN DIABETIC PATIENTS WITH ACUTE ST ELEVATION MYOCARDIAL INFARCTION

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Background: The efficacy of streptokinase in Myocardial Infarction is usually evaluated either by coronary angiographic measurement of thrombolysis in myocardial infarction or by the measurement of ST segment resolution at 90 minutes after streptokinase infusion, in 12-lead electrocardiogram (ECG). This study was carried out to determine the efficacy of streptokinase in diabetic patients with acute ST Elevation Myocardial Infarction (STEMI). **Methods:** This was a descriptive cross-sectional study carried out at the Cardiology Department of Ayub Teaching Hospital from June 2015 to July 2016. A total of 169 patients with STEMI were included in the study using non-probability consecutive sampling. Patients were administered injection Streptokinase in a dose of 1.5 million units, diluted in 100 ml of normal saline, in 1 hour and repeat ECG was done at 90 mins to assess ST segment resolution. A repeat ECG was performed within 90 minutes of start of therapy to check the efficacy of fibrinolytic therapy. Fifty percent or >50% reduction in height of ST segment elevation (ST resolution) towards baseline within 90 minutes after start of streptokinase infusion was considered effective. **Results:** Mean age of the patients was 53.76 ± 4.76 years. **Most of the patients were >55 years of age. Out of 169 patients, 69.23% (n=117) were male while 30.77% (n=52) were female. Streptokinase administration in acute STEMI in diabetics revealed ST segment resolution at 90 mins in 15.38% (n=26), while 84.62% (n=143) showed no ST segment resolution. Conclusion:** Thrombolytic therapy is not effective in diabetic subjects with STEMI. In diabetics to improve outcome, newer strategies such as peri-infarction metabolic control and primary angioplasty should be investigated.

Keywords: ST segment elevation myocardial infarction, STEMI, Streptokinase, diabetes mellitus

Lampiran 8

Computation of Clinical Efficacy and Post-Thrombolytic Effects of Streptokinase in ST-Segment Elevated Myocardial Infarction Patients

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ABSTRACT

Rationale: Atherosclerosis is a prominent underlying factor to Diabetes and Hypertension seen in 80% of patients leading to increased formation of thrombus thus blocking blood supply to myocardium. Fibrinolytics, such as streptokinase in the dose of 1,500,000 U in slow IV infusion has good activity for reperfusion. The study is aimed to evaluate the clinical efficacy and post-thrombolytic effects of streptokinase in STEMI patients. **Materials and Methods:** A prospective observational study of 100 patients of both sexes with STEMI was included based on inclusion and exclusion criteria. Demographic details of the patient, including ECG, Numerical Pain Rating Scale pain scale before and after fibrinolytic therapy were collected to record pain. Statistical significance was carried out with Students *t*-test, Chi-square test and SPSS software. **Results:** A marked change in ST segment elevation was observed with streptokinase therapy and decrease in coronary pain was measured when comparing before and after fibrinolytic therapy. At 90 min post thrombolytic therapy, 32 patients had pain relief (complete + partial), 11 patients had ST segment settlement (complete + partial) and 0 patients has T wave inversion. At the end of 48 hr of post thrombolytic therapy > 75% had pain relief, \geq 50% patients had ST segment settlement and

\leq 10% patients had T wave inversion which was the least marker of reperfusion. **Conclusion:** Significant activity of streptokinase was obtained when used within 12 hr of resolution period. Chest pain, ST segment variations were the prominent markers for testing the efficacy of therapy.

Key words: Acute coronary syndrome, Myocardial infarction, Streptokinase, Thrombolysis, ST segment elevation.

Lampiran 9

A Comparative Study of ST Segment Resolution between Diabetic and Non-Diabetic ST Segment Elevation Myocardial Infarction Patients following Streptokinase Thrombolysis

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Abstract

Background: *One of the most effective and used (in our settings) methods of reperfusion of ST elevation myocardial infarction (STEMI) is administration of streptokinase (SK) infusion. This study was conducted with the aim to compare ST segment resolution between diabetic and non-diabetic patients with ST segment elevation myocardial infarction after thrombolysis by streptokinase.*

Methods: *A total of 100 patients with ST elevation myocardial infarction with or without diabetes mellitus were studied from December 2016 to November 2017. Among these half of patients were diabetic while rests were non-diabetic. Streptokinase was administered to all patients. Resolution (reduction) of elevated ST segment was evaluated after 90 min of streptokinase administration.*

Results: *Failed reperfusion (<30% ST resolution) was significantly higher in diabetic as compared to non-diabetic patients (42% vs. 12%, $p < 0.001$). In hospital complications were more in diabetic patients who has failed reperfusion following streptokinase thrombolysis. Cardiogenic shock occurred in 44% and acute LVF in 30% patients and EF (46.54%) was significantly lower in diabetic patients and higher number of diabetic patients had prolong hospital stay than non-diabetic patients with STEMI.*

Conclusion: *The outcome of thrombolytic therapy is adversely affected by diabetes mellitus in patients with ST-elevation myocardial infarction.*

Lampiran 10

Impaired Fibrinolysis Predicts Adverse Outcome in Acute Coronary Syndrome Patients with Diabetes: A PLATO Sub-Study

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Abstract

Hypofibrinolysis is a key abnormality in diabetes but the role of impaired clot lysis in predicting vascular events and mortality in this population is yet to be determined. We aimed to investigate the relationship between fibrin clot properties and clinical outcomes in patients with diabetes and recent acute coronary syndrome (ACS). Plasma samples were collected at hospital discharge from 974 ACS patients with diabetes randomised to clopidogrel or ticagrelor in the PLATO trial. A validated turbidimetric assay was employed to study fibrin clot lysis and maximum turbidity. One-year rates of cardiovascular (CV) death, spontaneous myocardial infarction (MI) and PLATO-defined major bleeding events were assessed after sample collection. Hazard ratios (HRs) were determined using Cox proportional analysis. After adjusting for CV risk factors, each 50% increase in lysis time was associated with increased risk of CV death/MI (HR 1.21; 95% confidence interval [CI] 1.02–1.44; $p \frac{1}{4}$ 0.026) and CV death alone (HR 1.38; 1.08–1.76; $p \frac{1}{4}$ 0.01). Similarly, each 50% increase in maximum turbidity was associated with increased risk of CV death/MI (HR 1.25; 1.02–1.53; $p \frac{1}{4}$ 0.031) and CV death alone (HR 1.49; 1.08–2.04; $p \frac{1}{4}$ 0.014). The relationship between lysis time and the combined outcome of CV death and MI remained significant after adjusting for

Keywords

- ▶ acute coronary syndrome
- ▶ diabetes
- ▶ fibrinolysis

multiple prognostic vascular biomarkers ($p \frac{1}{4}$ 0.034). Neither lysis time nor maximum turbidity was associated with major bleeding events. Impaired fibrin clot lysis predicts 1-year CV death and MI in diabetes patients following ACS. Clinical Trial Registration URL: <http://www.clinicaltrials.gov>. Unique identifier NCT00391872.