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Determine the Mortality in Diabetics with ST-Segment Elevation Acute Myocardial Infarction

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Abstract

Background: Determine the mortality in diabetics with ST-segment elevation acute myocardial infarction.**Material and Methods:**The current research included 100 diabetes (group A) and non-diabetic (group B) patients with acute ST-segment elevation myocardial infarction (STEMI) of both genders. Demographic information was gathered. Each patient's 12-lead ECG was recorded. The patients were split into four groups based on the presence of ST-segment elevation in various leads. ST-segment elevation in leads V1-V6 (anterior AMI), II, III, aVF (inferior AMI), II, III, aVF+ V4R (inferior + right ventricular AMI), and I, aVL, V5, V6 (inferior + right ventricular AMI) (Lateral AMI). A blood sample of 5 mL was obtained and analysed for serum CK, CK-MB, and Trop-T levels. All patients received treatment. The results were collated and statistically evaluated. A P value of less than 0.05 was deemed significant.**Results:**The age group under 40 years had 10 diabetics and 10 non-diabetics, the age group 40-50 years had 14 diabetics and 10 non-diabetics, the age group 50-60 years had 6 diabetics and 13 non-diabetics, and the age group over 60 years had 20 diabetics and 17 non-diabetics. The change was not statistically significant (P< 0.05). The location was anterior in 15 and 13, inferior in 22 and 20, inferior+ right ventricular in 8 and 11, and lateral in 5. Mortality was seen in groups I and II when streptokinase was provided in 3 and 2 and when it was not given in 8 and 5 (P<0.05). Streptokinase was used in 81 patients, aspirin in 100, beta-blockers in 75, ACE inhibitors in 89, statins in 91, and diuretics in 24. The change was statistically significant (P< 0.05).**Conclusion:**The authors discovered that streptokinase treatment reduced mortality in both diabetic and non-diabetic patients. However, diabetics who were not taking streptokinase had a greater death rate than non-diabetics.

Keywords: Mortality, Diabetics, Acute Myocardial Infarction.

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Introduction

The rising incidence of type 2 diabetes is a substantial and independent coronary risk factor, increasing cardiovascular morbidity and mortality—the primary cause of death among type 2 diabetes patients. The existing information suggests that cardiovascular disease develops much more often and significantly sooner in diabetic people than in non-diabetic persons. It is generally known that the risk of coronary artery disease in middle-aged men is 2.5 times greater than in women, who acquire cardiovascular disease 10 years later.[1] A number of studies have shown that the increases in cardiovascular risk associated with type 2 diabetes are larger in women than in males.[2,3]However, several studies have questioned the reversal of the female advantage in diabetic populations, particularly after controlling for traditional coronary risk factors.[4]A number of randomised and observational studies have revealed that type 2 diabetes not only increases the risk of acute coronary syndrome (ACS), but also considerably affects the course of myocardial infarction and decreases the prognosis. Recent

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advancements in thrombolytic therapy and primary percutaneous coronary intervention (pPCI) have greatly improved the prognoses of individuals suffering from ST-segment elevation myocardial infarction (STEMI). Despite technical breakthroughs in cardiac revascularization and therapy, the death rate among diabetic patients with ACS remains much greater, particularly among women, as compared to those without diabetes. Although individuals with diabetes account for a large number of STEMI patients, clinical investigations on changes in the course of myocardial infarction in patients with diabetes, and even less often in women with diabetes, are uncommon. This may be due to women's underrepresentation in the bulk of noteworthy trials (at most, 30 percent of the research population in the previous century); this underrepresentation has impacted the formation of presently accessible standards and recommendations.[5-7]National registers, as a result, offer crucial information on the real scope of the issue in each particular country. The Polish Registry of Acute Coronary Syndromes (PL-ACS).[8] provides unique data that may be used for epidemiological research, as well as information on different treatment regimens and their efficiency in the community of Polish women with type 2 diabetes and ACS.

Materials and Methods

The current research included 100 diabetes (group A) and non-diabetic (group B) patients with acute ST-segment elevation myocardial infarction (STEMI) of both genders. Demographic information was gathered. Each patient's 12-lead ECG was recorded. The patients were split into four groups based on the presence of ST-segment elevation in various leads. ST-segment elevation in leads V1-V6 (anterior AMI), II, III, aVF (inferior AMI), II, III, aVF+ V4R (inferior + right ventricular AMI), and I, aVL, V5, V6 (inferior + right ventricular AMI) (Lateral AMI). A blood sample of 5 mL was obtained and analysed for serum CK, CK-MB, and Trop-T levels. All patients received treatment. The results were collated and statistically evaluated. A P value of less than 0.05 was deemed significant.

Results

Table 1: Distribution of patients

Age group (Years)	Group A=50	Group B=50	P value
Below 40	10	10	0.01
40-50	14	10	
50-60	6	13	
Above 60	20	17	

Table 2: Comparison of parameters

Parameters	Variables	Group I	Group II	P value
Site	Anterior	15	13	0.05
	Inferior	22	20	
	Inferior+ right ventricular	8	11	
	Lateral	5	0	
Mortality	Streptokinase given	3	2	0.01
	Streptokinase not given	8	5	

[Table 1] reveals that the age group under 40 years had 10 diabetics and 10 non-diabetics, the age group 40-50 years had 14 diabetics and 10 non-diabetics, the age group 50-60 years had 6 diabetics and 13 non-diabetics, and the age group over 60 years had 20 diabetics and 17 non-diabetics. The change was not statistically significant (P< 0.05).

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The location was anterior in 15 and 13, inferior in 22 and 20, inferior+ right ventricular in 8 and 11, and lateral in 5. Mortality was seen in groups I and II when streptokinase was provided in 3 and 2 and when it was not given in 8 and 5 (P<0.05).
[Table 3] demonstrates that streptokinase was used in 81 patients, aspirin in 100, beta-blockers in 75, ACE inhibitors in 89, statins in 91, and diuretics in 24. The change was statistically significant (P< 0.05).

Table 3: Type of treatment given

Treatment given	Number	P value
Streptokinase	81	0.01
Aspirin	100	
Beta- blockers	75	
ACE inhibitors	89	
Statins	91	
Diuretics	24	

Discussion

Diabetes significantly increases the risk of coronary heart disease (by a ratio of two to four). Clinically proven coronary heart disease is related with a three to sevenfold increase in coronary heart disease mortality, depending on the method of presentation.[9] The plasma cholesterol level is a powerful predictor of the risk of cardiovascular events in both diabetic and coronary heart disease patients. The National Cholesterol Education Programme and the American Diabetes Association have both acknowledged these individuals' high risk status and the necessity for more aggressive lipid-lowering medication.[11] The National Cholesterol Education Programme recommends a larger decrease in plasma lipids for people with coronary heart disease than for those with diabetes.[12]Members of the National Cholesterol Education Programme panel, however, had conflicting perspectives, with some arguing that diabetic individuals should get the same level of cholesterol-lowering medicine as patients with coronary heart disease. As a result, there is debate on how aggressively to treat cardiovascular risk factors in diabetic individuals. It has been proposed that such people be treated as if they already had coronary heart disease.[13] The current research was designed to look at complications and death in diabetes and non-diabetic individuals who had an ST-segment elevation acute myocardial infarction.
In the current research, the age group below 40 years had 10 diabetics and 10 non-diabetics, the age group 40-50 years had 14 diabetics and 10 non-diabetics, the age group 50-60 years had 6 diabetics and 13 non-diabetics, and the age group over 60 years had 20 diabetics and 17 non-diabetics. The change was not statistically significant (P< 0.05). In their research, Iqbal et al,[14] evaluated the complications of acute myocardial infarction (AMI) and the outcome between diabetics and non-diabetic individuals. After correcting for diabetes, the various problems evaluated differed greatly among diabetics, non-diabetics, and overall. Complications followed a similar pattern in diabetic and non-diabetic individuals (heterogeneity test P >0.5). Cardiogenic shock, left ventricular failure (OR = 2.6), re-infarction (OR = 2.3), arrhythmia (OR = 2.14), and ventricular septal defect (OR = 2.27) were all 4.3, 4.8, 21.4, 4.3, and 85.25 times more common in diabetics. However, diabetics had a lower rate of post-myocardial angina than non-diabetics. Diabetic individuals had 1.9 times the odds of having diastolic dysfunction. Diabetics had 3.4 and 2.6 times more moderate and severe LV dysfunction, respectively, whereas non-diabetics had 2.2 times more mild LV dysfunction. Diabetics had 2.4 times the mortality rate from STEMI as non-diabetics. After correcting for diabetes, mortality differed considerably across various age groups among non-diabetics and overall. In the non-diabetic group, mortality was 8.5 times

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greater in patients who were not given streptokinase than in those who were, but in the diabetic group, mortality was 2.6 times higher in patients who were not given streptokinase than in those who were. The findings imply that diabetics have a greater chance of death.
The location was determined to be anterior in 15 and 13, inferior in 22 and 20, inferior+ right ventricular in 8 and 11, and lateral in 5. Mortality was seen in groups I and II when streptokinase was provided in 3 and 2 and when it was not given in 8 and 5 ($P< 0.05$). Streptokinase was administered to 81 patients, aspirin to 100, beta blockers to 75, ACE inhibitors to 89, statins to 91, and diuretics to 24 individuals. The change was statistically significant ($P <0.05$). Haffner et al[15] compared the seven-year incidence of fatal and nonfatal myocardial infarction among 1373 nondiabetic participants to the incidence among 1059 diabetic subjects. In nondiabetic participants with and without previous myocardial infarction at baseline, the seven-year incidence rates of myocardial infarction were 18.8 percent and 3.5 percent, respectively ($P<0.001$). In diabetic patients with and without antecedent myocardial infarction, the seven-year incidence rates of myocardial infarction were 45.0 percent and 20.2 percent, respectively ($P<0.001$). After adjusting for age and gender, the hazard ratio for death from coronary heart disease for diabetic subjects without prior myocardial infarction was not significantly different from 1.0 (hazard ratio, 1.5; 95 percent confidence interval, 0.7 to 2.7). This suggests that the two groups face similar risks of infarction.

Conclusion

The authors discovered that streptokinase treatment reduced mortality in both diabetic and non-diabetic patients. However, diabetics who were not taking streptokinase had a greater death rate than non-diabetics.

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