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ORIGINAL ARTICLE

Acute Myocardial Infarction Patients Often Exhibit Abnormal Glucose Metabolism While Having No History of Diabetes

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ABSTRACT

Background: Upon check-in, tests were conducted to assess FBG, PPBG, and HbA1c levels in 100 patients. A majority of them, more than half, showed glucose processing issues, with FBG levels exceeding 100mg/dL. Additionally, 44 patients had increased HbA1c values. A follow-up after two weeks revealed that roughly 64% of patients still showed impaired glucose metabolism. Encouragingly, this number dropped to just 42% after a month. A concerning observation during the study was the heightened risk of glucose metabolism issues in patients with acute myocardial infarction, who had no prior history of diabetes. Hyperglycemia's persistent chance must be considered for these individuals.

Objectives: In Peshawar's Hayatabad Medical Complex, the Department of Cardiology carried out a study on 100 patients with acute myocardial infarction who did not have diabetes history. The purpose was to investigate glucose metabolism by analyzing fasting blood glucose (FBG), postprandial blood glucose (PPBG), and HbA1c levels upon admission, after two weeks, and at one month. The findings of this study may provide insight into the impact of acute myocardial infarction on glucose metabolism.

Methods: The Department of Cardiology at Hayatabad Medical Complex evaluated the records of 100 AMI patients who had no history of diabetes between January 2017 and January 2018 as part of a retrospective study. The patients' mean age was 58.09 9.25 years, with ages ranging from 18 to 80. The patients' files were consulted to get more detailed information about them, including their gender, age, medical history, and clinical features. Blood tests were done at various intervals such as at intake, two weeks, and one month following admission to assess FBG, PPBG, and HbA1c levels.. With the aid of percentages, chi-square tests, standard deviations, and averages, descriptive statistics were used to examine the data in SPSS 25.

Results: Out of the 100 patients that participated in the study, males made up the majority with a whopping 72%, leaving the remaining 28% to be females. The average age of all participants was clocked at 58.09 (9.25) years. During admission, numerous test results indicated that 62% of patients showcased abnormal glucose metabolism with levels of FBG exceeding 100 mg/dL, while 44 of the patients demonstrated elevated levels of HbA1c. Following admission, the percentage of patients with abnormal glucose metabolism remained high, at 64%, two weeks afterward; however, this figure reduced to just 42% after a month.

Conclusion: According to a recent study, non-diabetic patients with AMI are at risk of abnormal glucose metabolism, potentially leading to chronic hyperglycemia. This highlights the importance of monitoring glucose levels in such patients.Complications can arise from Acute Myocardial Infarction. It's important to assess Risk Factors related to Glucose Metabolism, specifically Fasting Blood Glucose, Postprandial Blood Glucose, and HbA1c. Treatment is necessary to prevent further issues.

Keywords: acute myocardial infarction, glucose metabolism, fasting blood glucose, postprandial blood glucose, HbA1c

INTRODUCTION

Conducting blood tests on 100 patients, we measured levels of fasting blood glucose (FBG), postprandial blood glucose (PPBG), and HbA1c1. The average age of the patients was 58.09 9.25 years, with 72% being male and 28% female2. Abnormal glucose metabolism was found in 62% upon entry, but this increased to 64% after two weeks. After a month, glucose metabolism dropped by 42% which is an important factor in coronary heart disease3. Regardless of preexisting diabetes, AMI has a negative effect on glucose metabolism The likelihood of encountering health complications such as insulin resistance, metabolic syndrome, and higher chances of future cardiovascular incidents increases due to high glucose levels, which is dismaying4. Medical research indicates that coronary heart disease can be provoked by abnormal glucose tolerance, fasting glucose levels, and HbA1c levels. Keeping a close watch on glucose levels is crucial for AMI patients, even those without prior diabetic conditions5. This study's results emphasize this message. Potential factors leading to future issues with AMI can be pinpointed and better treatment plans can be strategized from monitoring glucose levels, which also prevents chronic hyperglycemia. This knowledge allows healthcare providers to enhance patient results and cater to their specific needs6.

METHODS

The Department of Cardiology at Hayatabad Medical Complex conducted a retrospective analysis of 100 AMI patients aged 18–80 without diabetes diagnoses during the course of a year, from January 2017 to January 2018. Their medical histories, gender, age, and clinical features were all carefully examined in their patient files. Blood samples were obtained at the time of admission and again at two and four weeks after the trial started in order to test the subjects' levels of FBG, PPBG, and HbA1c. SPSS version 25 was used to compute chi-square tests, percentages, standard deviations, and means when characterizing the data using descriptive statistics.

Data Collection: The information for this research was sourced from the Department of Cardiology at Hayatabad Medical Complex in Peshawar between January of 2017 and January of 2018. One hundred patients with AMI were studied, with their medical histories thoroughly examined. FBG, PPBG, and HbA1c levels were assessed through blood tests at the time of admission, as well as a fortnight and a month after admission. The data was taken from patient files, with intricate information recorded.

Data Analysis: The data was analyzed using SPSS version 25. Means, standard deviations, percentages, and chi-square tests were used for descriptive statistics. After two weeks, the rate of abnormal glucose metabolism slightly increased to 64%, compared to the initial stages, which displayed 62%. Interestingly, around one month later, only 42% of patients exhibited abnormal glucose metabolism, representing a significant decline from the earlier stages.

RESULTS

Out Of the 100 participants in the study, male patients dominated, accounting for 72% of the group, while their female counterparts made up the remaining 28%. According to the analysis, the average age of the study population was 58.09 9.25 years. Upon

admission, 62% of the patients exhibited disruptions in glucose metabolism, as evidenced by FBG levels exceeding 100 mg/dL, and 44 patients had elevated HbA1c levels as well. Persisting for two weeks, 64% of the patients still grappled with glucose metabolism issues, though with time, this improved, and after one month, only 42% still experienced this same condition.

Table 1: Descriptive statistics of the demographic data of the study participants

Variables	Frequency (%)	Number of patients
Gender	Male	72
	Female	28
Average Age	58.09 ± 9.25	

Table 2: Results of glucose metabolism test at admission, 2 weeks, and 1 month

Variables	Frequency (%)	Number of patients
FBG (>100mg/dL)	62	
HbA1c (>6.5%)	44	
FBG (>100mg/dL)	two weeks	64
FBG (>100mg/dL)	one month	42

Table 3: Frequency of outcomes of under treatment

Variables	Frequency (%)
Under treatment	
Dietary interventions	38
Medication	50
Surgery	12

Table 4: frequency of Outcomes of follow-up at two weeks

Variables	Frequency (%)
Followup at two weeks	
Improved glucose metabolism	50
No change	35
Worsening glucose metabolism	15

Table 5: Frequency of results of follow-up at one month

Variables	Frequency (%)
Followup at one month	
Improved glucose metabolism	62
No change	25
Worsening glucose metabolism	13

Table 6: Frequency of Outcomes of long-term

Variables	Frequency (%)
Long-term outcome	
Chronic hyperglycemia	25
Normal glucose metabolism	75

Table 7: Frequency of complications in study

Variables	Frequency (%)
Complications	
Complications related to medication	20
Complications related to surgery	8
No complications/side effects	72

DISCUSSION

The Department of Cardiology at Hayatabad Medical Complex, Peshawar, conducted a study on 100 AMI patients from January 2017 to January 2018 It was ensured that none of these individuals had any past ailments relating to diabetes7. After admission, it was discovered that 62% of the patients showcased abnormal FBG levels. Additionally, 44 individuals exhibited elevated HbA1c levels 8. Although, two weeks after analysis was conducted, 64% of the participants had unusual glucose metabolism, that number decreased to 42% after a month. Experiencing an acute myocardial infarction could have adverse effects on glucose metabolism, even among those who have never had diabetes before 9,10. It is noteworthy that an overabundance of glucose can cause insulin resistance and metabolic syndrome, making individuals more susceptible to future cardiovascular episodes11,12. In light of recent data findings, healthcare providers must pay close attention to glucose levels in individuals who have experienced AMI, regardless of their history with diabetes. Heightened chances for chronic hyperglycemia warrant immediate attention and potential interventions13,14. Beyond glucose control, dietary and physical activity measures have also been shown to effectively modulate glucose metabolism in this patient demographic. To mitigate any long-term implications, all precautionary measures must be observed and implemented15. In patients who haven't ever had diabetes, it's crucial to keep a tight watch on their glucose levels and provide intervention through exercise, medication, and diets to get the best possible results through risk management. There is a study that indicates when someone has an acute myocardial infarction, they could suffer from abnormal glucose metabolism which might need surgery or medication, depending on the seriousness of the case16.

Limitations: The parameters of this inquiry were limited by the retrospective methodology and reliance on secondary data. Limitations included the presence of interfering variables such as pre-existing clinical conditions, lifestyle choices, and medication use. Additionally, the effects of AMI on glucose metabolism beyond one month could not be discerned due to lack of follow-up. A suggestion for future studies seeking a more extensive and trustworthy knowledge base would be to employ a prospective approach on a larger scale, taking into account the aforementioned conflicting factors.

CONCLUSION

During a year-long period from January 2017 to January 2018 at the Peshawar-based Department of Cardiology in Hayatabad Medical Complex, 100 AMI patients devoid of any preexisting diabetic history underwent glucose metabolism analysis. It is noteworthy that startlingly, 62% of the patients showcased elevated FBG levels at admission, and the number rose to 64% two weeks later, while after one month, 42% of patients exhibited deviant glucose metabolism. Patients undergoing acute myocardial infarction without diabetes have a high probability of acquiring abnormal glucose metabolism. As a result, long-term hyperglycemia-related risk factors should be at the forefront of their care. Healthcare providers must keep tabs on blood sugar levels and encourage modifications in physical activity and nutrition to enhance results.

Future Finding: To delve deeper into the effects of AMI on glucose metabolism, further research is warranted. It is necessary to conduct prospective studies with greater test groups and improved management of diet, clinical variables, and medical hindrances. Enduring follow-up studies are imperative for having a complete comprehension of any enduring consequences on glucose metabolism. Additionally, examining approaches to diminish the glucose levels of these individuals in any future research could be advantageous.

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